

Final Basic Assessment Report

Tembisa Licencing Hub

Portion 67 of the farm Witfontein 15 IR



BOKAMOSO

LANDSCAPE ARCHITECTS &
ENVIRONMENTAL CONSULTANTS CC

P.O. BOX 11375

MAROELANA

0161

TEL: (012) 346 3810

Fax: 086 570 5659

Email: Lizelle@mweb.co.za

Part 1 of 2

November 2015

Gaut reference: 002/15-16/E0081

Application Form



GAUTENG PROVINCE

AGRICULTURE AND RURAL DEVELOPMENT
REPUBLIC OF SOUTH AFRICA

Application Form for Environmental Authorisation in terms of National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended and the Environmental Impact Assessment Regulations, 2014

For official use only

Application Number:

NEAS Reference number:

Date Received:

Kindly note that:

1. This application form is current as of December 2014. It is the responsibility of the applicant to ascertain whether subsequent versions of the form have been published or produced by the competent authority.
2. This form must be used for an application(s) for Environmental Authorisation in terms of Chapter 4 of the Environmental Impact Assessment Regulations, 2014.
3. If, in addition to this application, you must also apply for a Waste Management Licence in terms of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) ("the Waste Act") and/or an Atmospheric Emission Licence in terms of the National Environmental: Air Quality Act, 2004 (Act No. 39 of 2004) ("NEM:AQA"), then separate application forms in terms of the applicable legislation must be completed and submitted simultaneously to the relevant licensing authorities, but a single EIA process must be undertaken. Copies of such applications must be attached to this Application Form. However, if the intention of the applicant is to undertake an Integrated Process (Integrated Authorisation), the applicant or the EAP is advised to seek guidance from the competent authority prior to commencing with the EIA process.
4. 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. Spaces are provided in tabular format and will extend automatically when each space is filled with typing.
5. The use of the phrase "not applicable" in the form must be done with circumspection. Should it be done in respect of material information required by the competent authority for assessing the application, it may result in the refusal of the application.
6. Three copies of this form must be submitted at the offices of the relevant competent authority as detailed below prior or simultaneously with the submission of the Basic Assessment Report or the Scoping and Environmental Impact Report.
7. No faxed or e-mailed applications shall be accepted. Only hand delivered, couriered or posted applications will be accepted
8. Unless protected by law, all information filled in on this application will become public information on receipt by the competent authority. Any interested and affected party should be provided with the information contained in this application on request, during any stage of the application process.

1. DEPARTMENTAL DETAILS

Postal Address

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

Physical Address

Administrative Unit of the Sustainable Utilisation of the Environment (SUE) Branch
Ground floor, Diamond Building, 11 Diagonal Street
Johannesburg

Queries should be directed to the Strategic Administrative Unit at:

Administrative Unit telephone number (011) 240 3051/3052

Administrative Unit fax number (011) 240 3055

Departmental central telephone number (011) 240 2500

View the Department's website at <http://www.gdard.gov.za> for the latest version of the documents

Application for Environmental Authorisation in terms of NEMA

Proof of payment must accompany this application. The application will not be processed without proof of payment unless one of the exclusions provided for in the fee Regulations is applicable AND such information in the exclusion section of this application form has been confirmed by this Department.

2. FEES

Gauteng Department of Agriculture and Rural Development' details for the payment of application fees

Payment Enquiries:

Contact person: Boniswa Belot

Tel: (011) 240 3377/3051

Email: Boniswa.Belot@gauteng.gov.za

Department Banking details:

Bank Name: FNB Bank

Account Name: GPG Agriculture and Rural Development PMG

Account Number: 62298144058

Branch Name and Number: Global Transactional Services Johannesburg - 255005

Reference number: EIA - Date (Y – M – D) of payment e.g. EIA20140401 (please quote this reference number when making payment)

Application form to be submitted with proof of payment attached- Annexure 1

Tax exemption status:

Status: Tax Exempted

EXCLUSIONS

An applicant is excluded from paying fees if:

- The activity is a community based project funded by a government grant; or
- The applicant is an organ of state.

Applicants are required to tick the appropriate box below to indicate that either proof of payment is attached or that, in the applicant's view, exclusion applies. Proof and a motivation for exclusions must be attached to this application form as Annexure 2.

Proof attached

Exclusion applies

TYPE OF EXCLUSION	Tick where applicable. Proper motivation must be attached to the application
The activity is a community based project funded by a government grant	
The applicant is an organ of state	X

FEE AMOUNT

Application	Fee
Applications for an environmental authorisation for which basic assessment is required in terms of the Environmental Impact Assessment Regulations	R2 000
Application for an environmental authorisation, for which S&EIR is required in terms of the Environmental Impact Assessment Regulations	R10 000
Applications dealt with in terms of section 24L of the Act (where an environmental authorisation is required in terms of NEMA and a waste management license is required in terms of NEMWA and the same competent authority is dealing with both these applications)	100% of the most expensive application, namely, R10 000 (Ten Thousand Rand) if S&EIR is triggered and R2 000 (Two Thousand Rand) if the basic assessment is triggered; (b) 50% of the other application, namely, R5 000-00 (Five Thousand Rand) if the S&EIR is triggered or R1 000 (One Thousand Rand) if the basic assessment is triggered.

3. APPLICANT INFORMATION

Project applicant:	Ekurhuleni Metropolitan Municipality		
Trading name (if any):	Ekurhuleni Metropolitan Municipality		
Contact person:	Thomas Chongo		
Physical address:	Room B609; 6 th Floor Kempton Park Civic Centre; Kempton Park		
Postal address:	-		
Postal code:	1620	Cell:	079 881 5048
Telephone:	011 999 4432	Fax:	086 581 8502

Please duplicate the above section in instances where there is more than one applicant.

Local municipality	Ekurhuleni Metropolitan Municipality		
Contact person:	Cecilia Rakgoale		
Postal address:	-		
Postal code:	1620	Cell:	-
Telephone:	011 999 331	Fax:	086 581 8502
E-mail:	cecilia.rakgoale@ekurhuleni.gov.za		

Please duplicate the above section in instances where there is more than one Municipality.

Land owner	Ekurhuleni Metropolitan Municipality		
Contact person:	Thomas Chongo		
Postal address:	-		
Postal code:	1620	Cell:	079 881 5048
Telephone:	011 999 4432	Fax:	086 581 8502
E-mail:	thomas.chongo@ekurhuleni.gov.za		

Please duplicate the above section in instances where there is more than one landowner. **Consent use form in Addendum 1 must be filled if the applicant is not landowner or person in control of the land where the development will / is taking place. Further, the above section must be duplicated in instances where there is more than one landowner.**

4. ENVIRONMENTAL ASSESSMENT PRACTITIONER (EAP) INFORMATION

Company of Environmental Assessment Practitioner (EAP):	Bokamoso Landscape Architects & Environmental Consultants		
Name of the EAP:	Anè Agenbacht		
EAP Qualifications	PGCE (Education – Cum Laude) BA Environmental Mangement		
Professional affiliation or registration:	-		
Physical address:	36 Lebombo Road, Lebombo Garden Building, Ashlea Gardens, 0081		
Postal address:	P.O. Box 11375, Mamelona		
Postal code:	0161	Cell:	083 533 0420
Telephone:	012 346 3810	Fax:	086 570 5659
E-mail:	lizelleg@mweb.co.za		

5. PROJECT TITLE (SCOPE OF THE ACTIVITY)

Tembisa/Ekurhuleni Licencing Hub

6. PROPERTY DESCRIPTION

Application process followed (BA OR Scoping & EIA)	BA		
Description of the property/properties where activity is proposed to be undertaken:	Farm Wilfontein 15 IR, Kempton Park		
Farm/ Erf name(s) & number(s) (including portion/ holding) of all proposed sites:	Portion 67		
Property size(s)(ha) of all proposed sites	3.42 ha		
Property size(s) (m ²) of all proposed sites:			
Development footprint size(s) in ha/m ² :	3.42 ha		
SG Digit code(s) of all proposed sites:	TOIR00000000001500015		
Coordinates of all proposed sites: Latitude (S)	26°	2'2	13"S
Longitude (E)	28°	14'58	23"E

Note: Coordinates must be provided in degrees, minutes and seconds using the Hartebeesthoek94 WGS84 co-ordinate system. Where numerous properties/sites are involved (e.g. linear activities), please attach a list of property descriptions separately.

Physical/Street address of proposed sites:	Situated within Esselen Park Ext 1 north of Sam Mobebe Drive and west of the railway servitude (west of the Pretoria Road, M57)
Current Zoning of site(s)	Agricultural

7. ACTIVITY(S) APPLIED FOR

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 below.

Indicate the number of the relevant Government Notice: Activity No (s) (relevant notice): e.g. Listing notices 1, 2 or 3 Describe each listed activity as per the wording in the listing notices:

e.g. GN. R 983, 8 December 2014	1.(i)	the development of facilities or infrastructure for the generation of electricity from a renewable resource where – the electricity output is more than 10 megawatts but less than 20 megawatts
R983 December 2014	Listing Notice Activity 9	1 The development of infrastructure exceeding 1000 metres in length for the bulk transportation of water or storm water- (i) with an internal diameter of 0,36 metres or more; or (ii) ...- (a) ...; or (b) ...
R,983 December 2014	Listing Notice Activity 10	1 The development and related operation of infrastructure exceeding 1000 metres in length for the bulk transportation of sewage, effluent, process water, waste water, return water, industrial discharge or slimes (i) with an internal diameter of 0,36 metres or more; or (ii) ...- (a) ...; or (b) ...
R,983 December 2014	Listing Notice Activity 11	1 The development of facilities or infrastructure for the transmission and distribution of electricity- (i) outside urban areas or industrial complexes with a capacity of more than 33 but less than 275 kilovolts; or (ii) inside urban areas or industrial complexes with a capacity of 275 kilovolts or more.
R,983 December 2014	Listing Notice Activity 27	The clearance of an area of 1 hectares or more, but less than 20 hectares of indigenous vegetation, ...
R,983 December 2014	Listing Notice Activity 28	1 Residential, mixed, retail, commercial, industrial or institutional developments where such land was used for agriculture or afforestation on or after 01 April 1998 and where such development: (i) will occur inside an urban area, where the total land to be developed is bigger than 5 hectares; or (ii) will occur outside an urban area, where the total land to be developed is bigger than 1 hectare; excluding where such land has already been developed for residential, mixed, retail, commercial, industrial or institutional purposes.

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

8. ORIENTATION MAPS

Locality map:	<p>A locality map must be attached to the application form as Annexure 3, as an Appendix. The scale of the locality map must be at least 1:50 000. For linear activities of more than 25 kilometres, a smaller scale e.g. 1:250 000 can be used. The scale must be indicated on the map. The map must include the following:</p> <ul style="list-style-type: none"> • an accurate indication of the project site position as well as the positions of the alternative sites, if any; • road names or numbers of all the major roads as well as the roads that provide access to the site(s) • a north arrow; • a legend; • the prevailing wind direction; and • GPS co-ordinates (Indicate the position of the proposed activity with the latitude and longitude at the centre point for each alternative site. The co-ordinates should be in degrees and decimal minutes. The minutes should be to at least three decimal places. The projection that must be used in all cases is the WGS-84 spheroid in a national or local projection)
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Should any activities in GN R. 985 be applied for, please provide a map indicating the triggering area (e.g. Critical Biodiversity Area, Protected Area, etc) overlaid by the study area as **Annexure 4**.

9. PUBLIC PARTICIPATION PROCESS

If public participation process and other aspects of EIA process had already been undertaken prior to submission of this application form to the competent authority, a summary of public participation processes and steps followed to date must be described in the table below.

The first phase of the public participation was carried out on the 22th of May 2015 – 21st of June 2015

Stakeholders (I&AP's) were notified of the Environmental Evaluation Process through:

- 1) A site notice that was erected (at a prominent point on the study area) on 22 May 2015
- 2) Notices were distributed to the surrounding land-owners and interested and affected parties by means of faxes, hand delivery and e-mail.
- 3) An advertisement was placed in the Beeld newspaper on 22 May 2015

10. PROJECT SCHEDULE

A project schedule, indicating the different phases and timelines of the project (commencement and completion where possible), must be attached as **Annexure 5**.

11. OTHER AUTHORISATIONS REQUIRED

LEGISLATION	AUTHORISATION REQUIRED		APPLICATION SUBMITTED	
	YES	NO	YES	NO
SEMA's				
National Environmental Management: Air Quality Act		X		
National Environmental Management: Biodiversity Act		X		
National Environmental Management: Integrated Coastal Management Act		X		

National Environmental Management: Protected Areas Act		X		
National Environmental Management: Waste Act		X		
National legislation				
Mineral and Petroleum Development Resources Act		X		
National Water Act		X		
National Heritage Resources Act		X		
Others: Please specify		X		

Please provide proof of any authorisations obtained in terms of the above as **Annexure 6**.

12. LIST OF ANNEXURES

		YES	N/A
Annexure 1	Proof of payment of a fee for this application		X
Annexure 2	Proof and a motivation for exclusions from paying a fee	X	
Annexure 3	Locality map	X	
Annexure 4	Geographical area map triggering a listed		X
Annexure 5	Project schedule	X	
Annexure 6	Proof by way of copies of Environmental Authorisations obtained for the same property or submission of such applications		X
Addendum 1	Consent use of land form		X
Addendum 2	Declaration by the applicant	X	
Addendum 3	Declaration by the environmental assessment practitioner	X	

ADDENDUM 1 (NOT APPLICABLE – THE LANDOWNER IS THE APPLICANT)

13. CONSENT USE

Consent in terms of Regulation 39 of the 2014 NEMA EIA Regulations by the landowner or person in control of the land that the proposed activity/ies may be undertaken on the land in question

When to use this form

Note: This form must be completed when an application for amendment in terms of the 2014 NEMA EIA Regulations is submitted where the proposed amendment will impact on the activity undertaken/to be undertaken on the land or if the amendment relates to the transfer of rights and obligations.

Notes for completing and submitting this form

- (1) This form is current as of December 2014. It is the responsibility of the applicant to ascertain whether subsequent versions of the form have been released by the Department.
- (2) This form must be attached to the application form for amendment.
- (3) Unless protected by law, all information contained in the form will become public information.

CONTACT INFORMATION

Name of land owner/ person in control of the land		
Trading name (if any):		
Contact person:		
Physical address:		
Postal address:		
Postal code:	Cell:	
Telephone:	Fax:	
E-mail:		

CONSENT

1. I/we the undersigned (insert the name/s of the owner/s of the land)

of identity number/registration number (insert the owner/s ID number/s or the registration number of the legal entity)

am/ are the registered owner/s of the property (insert description of the property/ies and title deed numbers)

located at (insert physical address or a brief description of the location of the property)

2. I/ we hereby give consent to the applicant /person to whom the rights are to be transferred *(insert the name/s of the applicant/person/s)*

of identity number/registration number *(insert the owner/s ID number/s or the registration number of the legal entity)*

to undertake the following activity(ies) on the property *(insert a brief description of the project and identified activity(ies) in question and amendment that will be applied for):*

Signature of land owner/person in control of the land or authorised representative _____

Name of authorised person if the landowner is a legal entity _____

Date

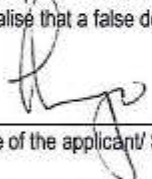
ADDENDUM 2

15. DECLARATIONS

DECLARATION OF THE APPLICANT

I Thomas Chongo, declare under oath that I

- am, or represent, the applicant in this application;
- have appointed / will appoint (delete that which is not applicable) an Environmental Assessment Practitioner (EAP) to act as the independent EAP for this application
- will provide the EAP 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 Regulations, including but not limited to –
 - costs incurred in connection with the appointment of the EAP or any person contracted by the EAP;
 - 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 such 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 EAP is competent to undertake the EIA process with respect to this application and that the EAP-
 - o know the Act and the regulations, and how they apply to the proposed development
 - o know any applicable guidelines and policies
 - o performs the work objectively, even if the findings do not favour the applicant
 - o disclose all information which is important to the application and the proposed development
- will inform all registered I&APs 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 EAP 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;
- all the particulars furnished by me in this form are true and correct; and
- I realise that a false declaration is an offence in terms of the EIA Regulations, 2014 and the NEMA.



Signature of the applicant/ Signature on behalf of the applicant:

Ekurhuleni Metropolitan Municipality

Name of company (if applicable):

19/11/2015

Date:

GESERTIFIEERDE WAARE AFSKRIF
VAN DIE OORSPRONKLIKE
CERTIFIED A TRUE COPY OF THE ORIGINAL

Signature of the Commissioner of Oaths:

19/11/2015

Date:

Commissioner of Oaths
Professionele Rekenmeester (SAIPA), Ltd no : 8140
Chris Hougaardstr 262, Wierdapark, 0149

Designation:

Commissioner of Oaths Official stamp (below)

ADDENDUM 3

DECLARATION OF THE EAP

I, Anè Agenbacht, declare that -

- I act as the independent environmental practitioner in this application
- 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, policies and guidelines;
- 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 at large and that participation by interested and affected parties is facilitated in such a manner that all interested and affected parties, state department and competent authority 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
- all the particulars furnished by me in this form are true and correct;
- I will perform all other obligations as expected from an environmental assessment practitioner in terms of the Regulations; and



Signature of the Environmental Assessment Practitioner:

Bokamoso Landscape Architects and Environmental Consultants

Name of company:

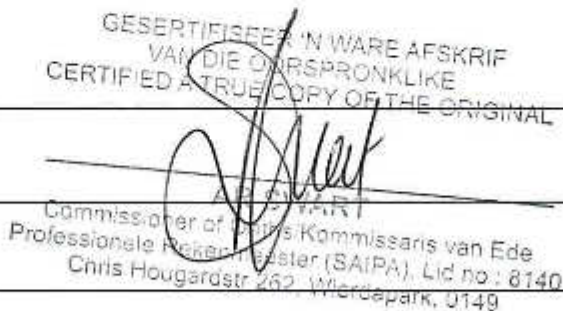
19/11/2015.

Date:

Signature of the Commissioner of Oaths:

19/11/2015

Date:

GESERTIFIEERDE WARE AFSKRIF
VAN DIE OORSPRONKLIKE
CERTIFIED A TRUE COPY OF THE ORIGINAL

Kommissaris van Ede
Professionele Rekenmeester (SAIPA), Lid no: 8140
Chris Hougaardstr 262, Wierdepark, 0149

Designation:

Commissioner of Oaths Official stamp (below)

In the event where the EAP or specialist is not independent (Regulation 13(2) and (3) of the EIA Regulations, 2014), the proponent or applicant must, prior to conducting public participation, appoint another EAP or specialist which meets all the general requirements including being independent, to externally review all work undertaken by the EAP or specialist, at the applicant's cost appointed to manage the application.

Acknowledgement Letter



agriculture and rural development

Department: Agriculture and Rural Development
GAUTENG PROVINCE

11 Diagonal Street, Diamond Building, Newtown, Johannesburg
P O Box 8769, Johannesburg, 2000

Telephone: (011) 240-2500

Fax: (011) 240-2700

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

Reference:	002/15-16/E0081
Enquiries:	Faith Mlambo
Telephone:	(011) 240-3053
Email:	Faith.mlambo@gauteng.gov.za

Email/Fax. Bokamoso Landscape Architects & Environmental Consultants

Dear Sir / Madam

Application for Environmental Authorisation: Tembisa / Ekurhuleni licencing hub

The Department acknowledges having received the application form for environmental authorisation of the above-mentioned project on 07/08/2015.

The application has been assigned the reference number Gaut: 002/15-16/E0081. 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 three (3) copies (full colour **two CDs-PDF and one hard copy**) 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-ordinate 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 **2014**, this application will lapse should you fail to submit the requested information within 3 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 Belot

Deputy Director: Strategic Administration Support

Date: 12/08/2015

CC: Ekurhuleni Metropolitan Municipality

Att:

T Chongo

Email/Fax:

thomas.chongo@ekurhuleni.gov.za

Basic Assessment Report

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

Kindly note that:

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

DEPARTMENTAL DETAILS

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

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

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

(For official use only)

NEAS Reference Number:						
File Reference Number:						
Application Number:						
Date Received:						

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

N/A

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

Not applicable

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

N/A

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

yes

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

Yes

If no, state reasons for not attaching the list.

Have State Departments including the competent authority commented?

yes

See Appendix E: Public Participation: Comments and Responses Report.

If no, why?

N/A

SECTION A: ACTIVITY INFORMATION

1. PROPOSAL OR DEVELOPMENT DESCRIPTION

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

Tembisa/Ekurhuleni Licencing Hub

Select the appropriate box

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

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

YES NO

If yes, describe the legislation and the Competent Authority administering such legislation

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

YES	NO
YES	NO

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

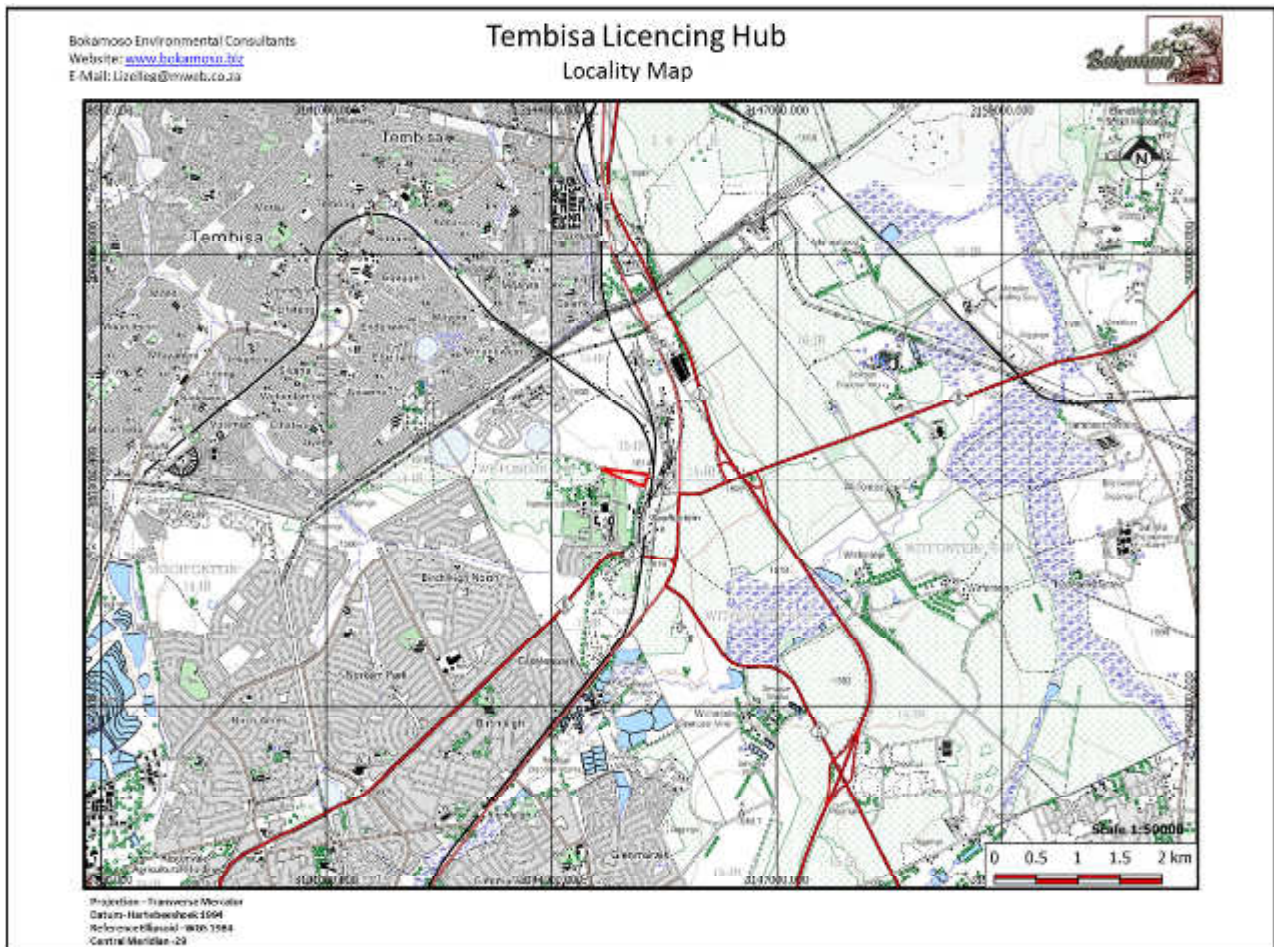


Figure 1 – Locality Map



Figure 2 – Aerial Map

This application is for the proposed development of a Licensing Hub in the Ekurhuleni area. The licensing hub development will include the following:

- Motor vehicle registration and licensing;
- Driver's license testing centre;
- Motor vehicle testing centre; and
- Grounds Area.

Government Notice:	Activity No	Listed activity as per the wording in the listing notices:
R983 December 2014	Listing Notice 1 Activity 9	The development of infrastructure exceeding 1000 metres in length for the bulk transportation of water or storm water- (i) with an internal diameter of 0,36 metres or more; or (ii) ...- (a) ...; or (b) ...
R,983 December 2014	Listing Notice 1 Activity 10	The development and related operation of infrastructure exceeding 1000 metres in length for the bulk transportation of sewage, effluent, process water, waste water, return water, industrial discharge or slimes (i) with an internal diameter of 0,36 metres or more; or

		<p>(ii) ...-</p> <p>(a) ...; or</p> <p>(b) ...</p>
R,983 December 2014	Listing Notice 1 Activity 11	<p>The development of facilities or infrastructure for the transmission and distribution of electricity-</p> <p>(i) outside urban areas or industrial complexes with a capacity of more than 33 but less than 275 kilovolts; or</p> <p>(ii) inside urban areas or industrial complexes with a capacity of 275 kilovolts or more.</p>
R,983 December 2014	Listing Notice 1 Activity 27	The clearance of an area of 1 hectares or more, but less than 20 hectares of indigenous vegetation, ...
R,983 December 2014	Listing Notice 1 Activity 28	<p>Residential, mixed, retail, commercial, industrial or institutional developments where such land was used for agriculture or afforestation on or after 01 April 1998 and where such development:</p> <p>(i) will occur inside an urban area, where the total land to be developed is bigger than 5 hectares; or</p> <p>(ii) will occur outside an urban area, where the total land to be developed is bigger than 1 hectare;</p> <p>excluding where such land has already been developed for residential, mixed, retail, commercial, industrial or institutional purposes.</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:	Administering authority:	Promulgation Date:
National Environmental Management Act, 1998 (Act No. 107 of 1998 as amended)	National & Provincial	27 November 1998
National Water Act (Act No. 36 of 1998)	National & Provincial	20 August 1998
National Environmental Management: Air Quality Act (Act 39 of 2004)	National & Provincial	2004
National Heritage Resources Act (Act No. 25 of 1999)	National & Provincial	1999
National Environmental Management	National	2003

Protected Areas Act (Act No. 57 of 2003)		
National Environmental Management: Biodiversity Act, (Act 10 of 2004)	National	2004
GDARD Draft Ridges Policy	Provincial	2001
Conservation of Agricultural Resources Act (Act No. 43 of 1983)	National	1 June 1983
GDARD Agricultural Hub Policy	Provincial	2006
Gauteng Urban Edge	Provincial	2010
National Environmental Management: Waste Act (Act 59 of 2008)	National	2008
Red List Plant Species Guidelines	Provincial	26 June 2006
Gauteng Noise Control Regulations	Provincial	1999
The Gauteng Transport Infrastructure Act	Provincial	2001
Gauteng Spatial Development Framework	Provincial	February 2011
The Integrated Development Plan (IDP) for Ekurhuleni Metropolitan Municipality	Local	2013/ 2014
Gauteng Environmental Management Framework, 2015 (GEMF, 2015)	Provincial	2015

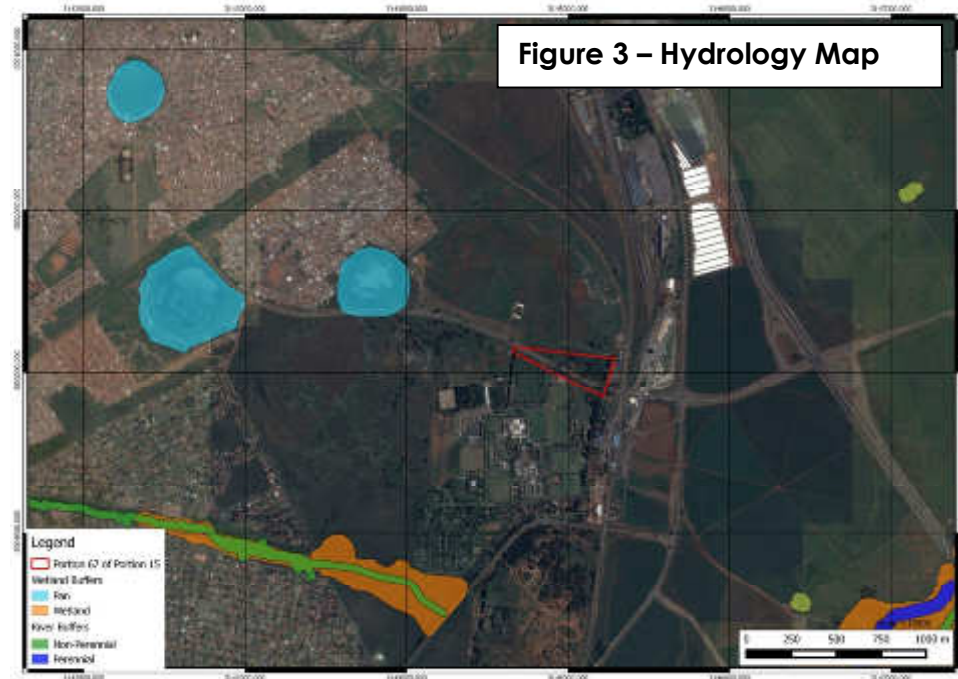
Description of compliance with the relevant legislation, policy or guideline:

Legislation, policy of guideline	Description of compliance
National Environmental Management Act, 1998 (Act No. 107 of 1998 as amended)	<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). These Regulations have been amended and the latest Regulations have been published in 2014. The NEMA EIA Regulations were amended on 4 December 2014 and came into effect on 8 December 2014.</p> <p>Notice No. R 983, R 984 and R 985 of the Amended Regulations list the activities that indicate the process to be followed. The activities listed in Notice No. R 983 requires that a Basic Assessment process be followed and the Activities listed in terms of Notice No. R 984 requires that the Scoping and EIA process be followed. Notice No. 985 has been introduced to make provision for Activities in certain geographical and sensitive areas.</p> <p>Subsequently, Listing (R. 983) 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</p>

	<p>whole application.</p> <p>Implications for the development:</p> <p>Significant – The application for the proposed licensing hub consist of activities listed under Notice R. 983 (Listing No. 1) and therefore a Basic Assessment Report will be submitted to GDARD for consideration.</p>
<p>National Water Act (Act No. 36 of 1998)</p>	<p>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:</p> <ul style="list-style-type: none"> ❑ 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. <p>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:</p> <ul style="list-style-type: none"> 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. <p>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.</p>

Implications for the development:

The proposed development is not subject to flood lines or wetlands. Therefore in terms of Section 21 of the National Water Act, it is not expected that the developer will need a water use license for the proposed development. The Department of Water and Sanitation will receive a copy of this Report in order to provide comments. (Refer to Figure 3 – Hydrology Map)



National Environmental Management: Air Quality Act (Act 39 of 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.

	<p>The Act describes various regulatory tools that should be developed to ensure the implementation and enforcement of air quality management plans. These include:</p> <ul style="list-style-type: none"> • 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. <p>On 22 November 2013 the list of activities which result in atmospheric emissions that have or may have a detrimental effect on the environment, was amended.</p> <p>Implications for the development:</p> <p>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 licensing hub's contribution to air pollution and the generation of air pollution can become less significant. None of the listed activities, according to this Act, have been triggered.</p>
<p>National Heritage Resources Act (Act No. 25 of 1999)</p>	<p>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).</p> <p>Implications for the development:</p> <p>A heritage specialist were appointed to conduct a study and investigate the site. This specialist report is attached to the Basic Assessment Report. Nothing of cultural or historical importance were identified on the site. If any historical 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.</p>
<p>National Environmental Management Protected Areas Act (Act No. 57 of 2003)</p>	<p>The purpose of this Act is to provide for the protection, conservation and management of ecologically viable areas representative of South Africa's biological biodiversity and its natural landscapes.</p> <p>Implications for the development:</p> <p>The proposed development is not subject to any protected areas (please refer to Figure 4).</p>

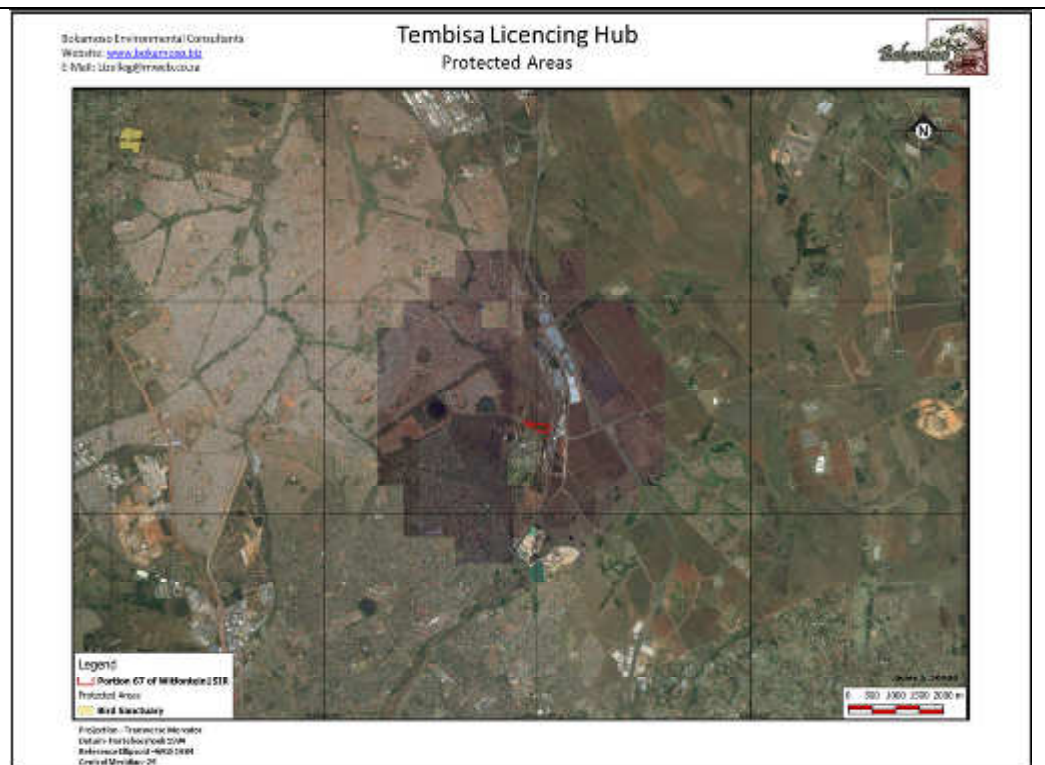


Figure 4 – Protected Areas Map

National Environmental Management: Biodiversity Act, (Act 10 of 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 National 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.

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

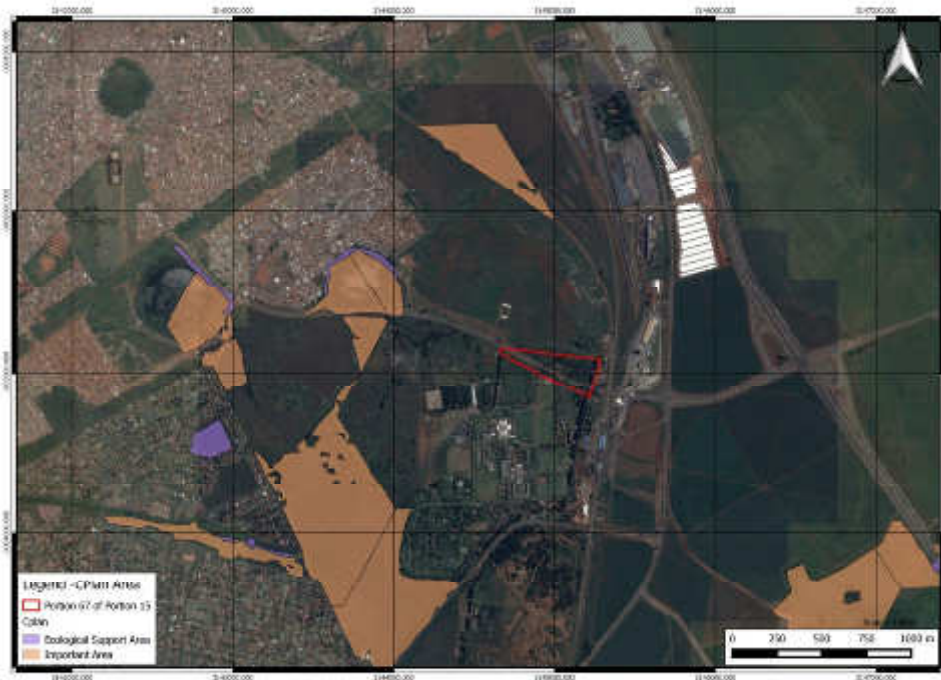


Figure 5 – GDARD C-Plan Areas

Implications for the development:

The proposed development is situated within the Carletonville Dolomite Grassland Carletonville Dolomite Grassland vegetation type according to Mucina and Rutherford (2006). No red data plant species nor any threatened plant species have been recorded on the study area. A single specimen of the geophyte *Bonatea antennifera* (Orchidaceae) was recorded from the transformed secondary grassland. This species is not threatened or near-threatened (*sensu* Raimondo *et al.*, 2009), but it is protected under Schedule 11 of the Transvaal Nature Conservation Act (No.12 of 1983). The vegetation communities was considered to be of low to negligible sensitivity. According to the GDARD C-Plan the proposed development is not situated in any Ecological Support Areas or Important Areas. Please refer to Figure 5 for the GDARD C-Plan Areas Map.

GDARD Draft Ridges Policy

The biodiversity and socio-cultural value of ridges and their essential role in ecosystem processes will be established in order to show why it is absolutely imperative that the Department adopts a no-go development policy for the ridges of Gauteng. It is important to remember that the quartzite ridges of Gauteng, together with the Drakensberg Escarpment, should be regarded as one of the most important natural assets in the entire region of the northern provinces of South Africa. They are characterized by a unique plant species composition that is found nowhere else in South Africa or the world (Bredenkamp & Brown, 1998). Ridges are important for biodiversity hotspots, red data/threatened species, invertebrates, wildlife corridors,

ecosystem processes and socio-cultural value (aesthetic value). A ridge is defined as any topographic feature in the landscape that is characterized by slopes of 5° or more, as determined by means of a GIS digital elevation model.

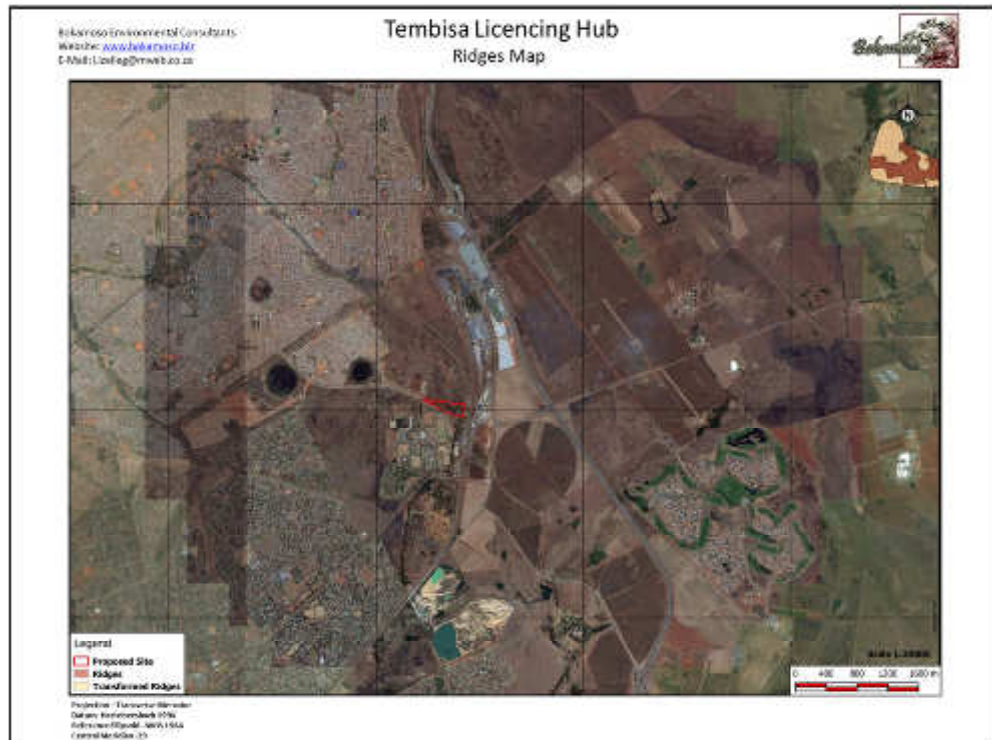


Figure 6 – Ridges

Implications for the development:

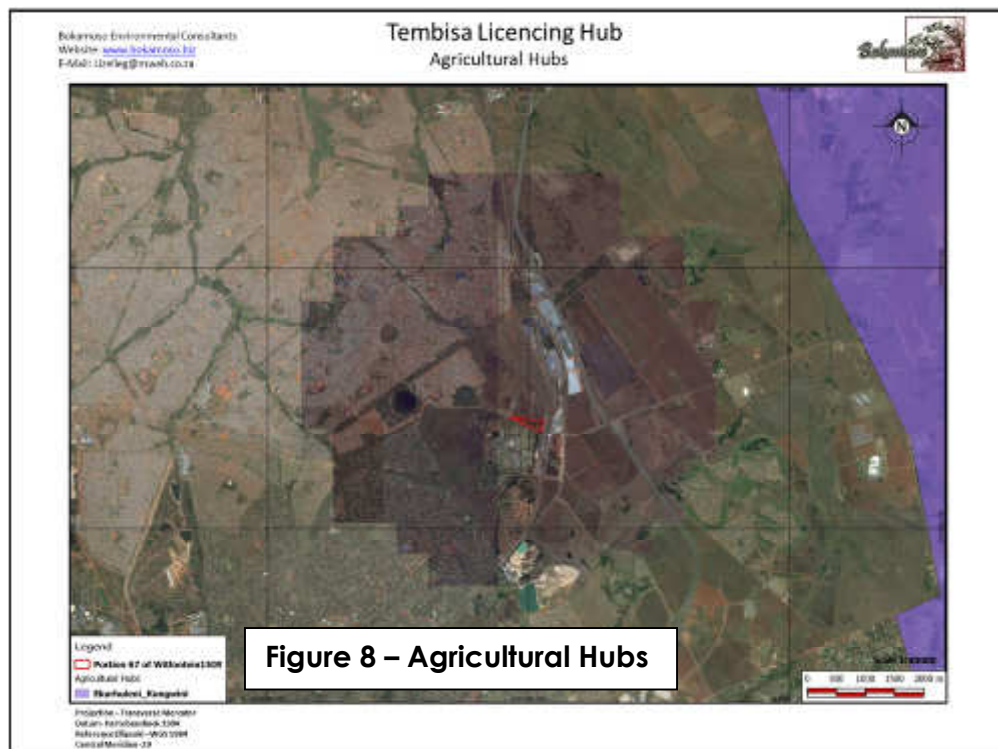
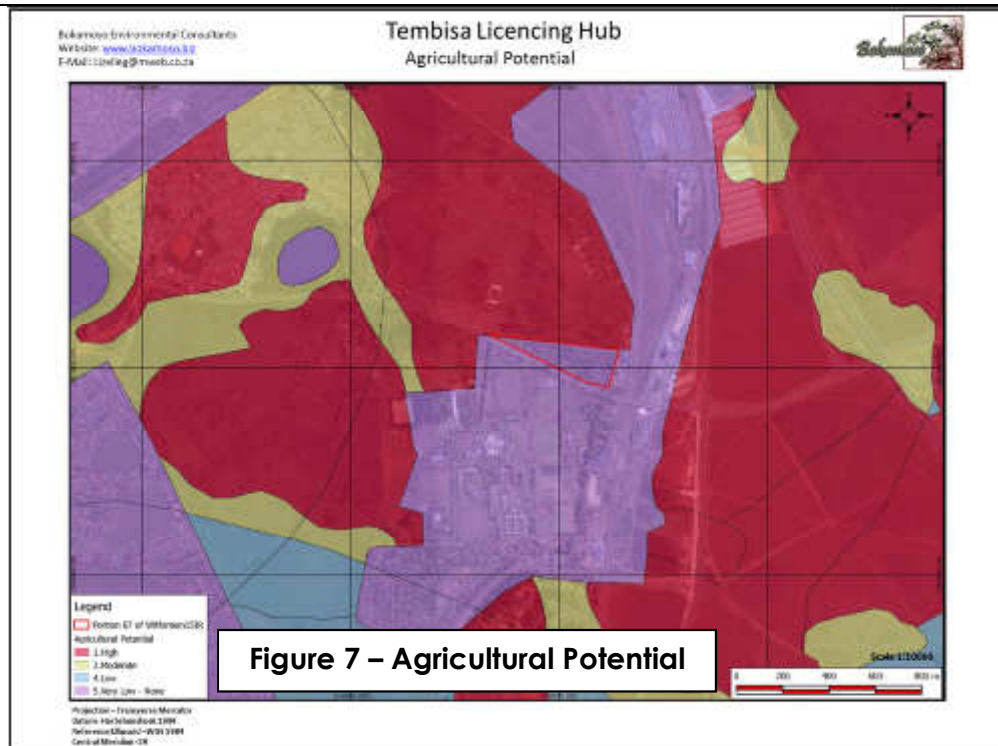
According to the data there are no ridges (or transformed ridges) on the study area and the slope of this study area is between 0 and 5% (Refer to Figure 6).

Conservation of Agricultural Resources Act (Act No. 43 of 1983)

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), the proposed development is located on land with high agricultural potential. The study area does not fall within any of the Seven Agriculture Hubs identified for the Gauteng province.



GDARD
Agricultural
Hub Policy

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.

	<p>Implications for the development:</p> <p>Not significant - The study area is not situated within any of the 7 agricultural hubs identified for Gauteng. Please refer to Figure 8.</p>
<p>Gauteng Urban Edge</p>	<p>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.</p> <p>Implication for the development:</p> <p>The proposed study area is included into the urban edge as indicated on the spatial development framework, the 2007 provincial urban edge and into the revised 2010 urban edge.</p> <div data-bbox="376 696 1378 1435" data-label="Figure"> <p>The figure is a map titled 'Tembisa Licencing Hub Urban Edge'. It shows a satellite-style aerial view of the area. A large portion of the map is shaded in yellow, representing the urban edge. A red triangle is drawn on the map, indicating the location of the proposed study area. The map includes a legend in the bottom left corner with two entries: 'Portion 67 of 881646611111' and 'Urban Edge'. A scale bar and a north arrow are also present in the bottom right corner. Text at the top left of the map area provides contact information for Solomiso Environmental Consultants.</p> </div> <p>Figure 9 – Urban Edge</p>
<p>National Environmental Management: Waste Act (Act 59 of 2008)</p>	<p>This Act aims to consolidate waste management in South Africa, and contains a number of commendable provisions, including:</p> <ul style="list-style-type: none"> • 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.

On 29 November 2013 the Minister of Environmental Affairs and Tourism amended the list of waste management activities that might have a detrimental effect on the environment.

Implication for the development:

Not significant – No waste management license will be required during the construction or operational phases of the proposed licensing hub. Due to the fact that a small 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

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.

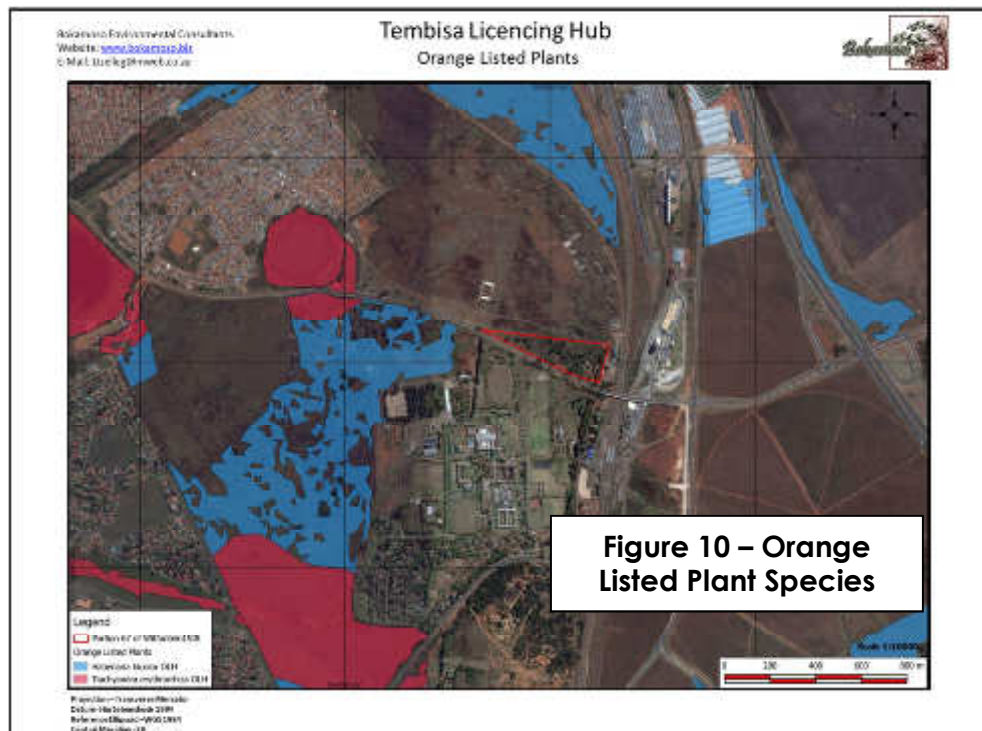


Figure 10 – Orange Listed Plant Species

	<p>Implication for the development:</p> <p>The proposed area to be developed does not have a possibility of any Orange-Listed plant species' habitat according to the map and C-plan data (Figure 10). The specialist did not identify any threatened or near-threatened plant species on the site, they did however identify one specimen of a protected plant species under Schedule 11 of the Transvaal Nature Conservation Act (No.12 of 1983).</p>
<p>Gauteng Noise Control Regulations</p>	<p>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.</p> <p>Implication for the development:</p> <p>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. During the operational phase, there will be no noise impacts. (Please Refer to Appendix H (EMP) for a list of suitable guidelines and mitigation measures)</p>
<p>The Gauteng Transport Infrastructure Act</p>	<p>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.</p> <div data-bbox="376 1160 1390 1910" data-label="Figure"> <p>The figure is an aerial street map titled "Tembisa Licencing Hub Street Map". It shows a red-outlined polygon in an urban area, likely indicating the proposed development site. The map includes a legend, a scale bar (0-800m), and contact information for Bakemiso Environmental Consultants.</p> </div> <p>Figure 11 – Street map</p>

	<p>Implication for the development:</p> <p>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.</p>
Gauteng Spatial Development Framework	<p>The Gauteng Spatial Development Framework aims to:</p> <ul style="list-style-type: none"> • Provide a clear future provincial spatial structure that is robust to accommodate growth and sustainability; • Specify a clear set of spatial objectives for municipalities to achieve in order to ensure realization of the future provincial spatial structures; • Propose a set of plans that municipalities prepare in their pursuit of these objectives; • Provide a common language and set of shared planning constructs for municipalities to use in their planning process and plans; and • Enable and direct growth. <p>Implication for the development:</p> <p>It is evident that the proposed development complies with most of the above-mentioned development directives.</p>
The Integrated Development Plan (IDP) for Ekurhuleni Metropolitan Municipality	<p>According to the Ekurhuleni Metropolitan Municipality IDP 2013/14, its mission statement is to provides sustainable and people centered development services that are affordable, appropriate and of high quality. Furthermore to focus on social, environmental and economic regeneration of our city and communities, as guided by the principles of Batho Pele and through the commitment of a motivated and dedicated team.</p> <p>Implication for the development:</p> <p>The proposed development will encourage economic growth and extent the existing municipal services network and could therefore be regarded as directly in line with the directives of the IDP.</p>

3. ALTERNATIVES

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

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

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

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

The need for a licensing hub has been identified in the Ekurhuleni Metropolitan area. Different sites were identified for this licensing hub. The one site is owned by the applicant (the Ekurhuleni Metropolitan Municipality) and other sites were identified that is closer to engineering services. Prior to professional studies being conducted the preferred site (Proposal) were decided upon and therefore the specialist/professional reports are compiled in terms of the proposed alternative

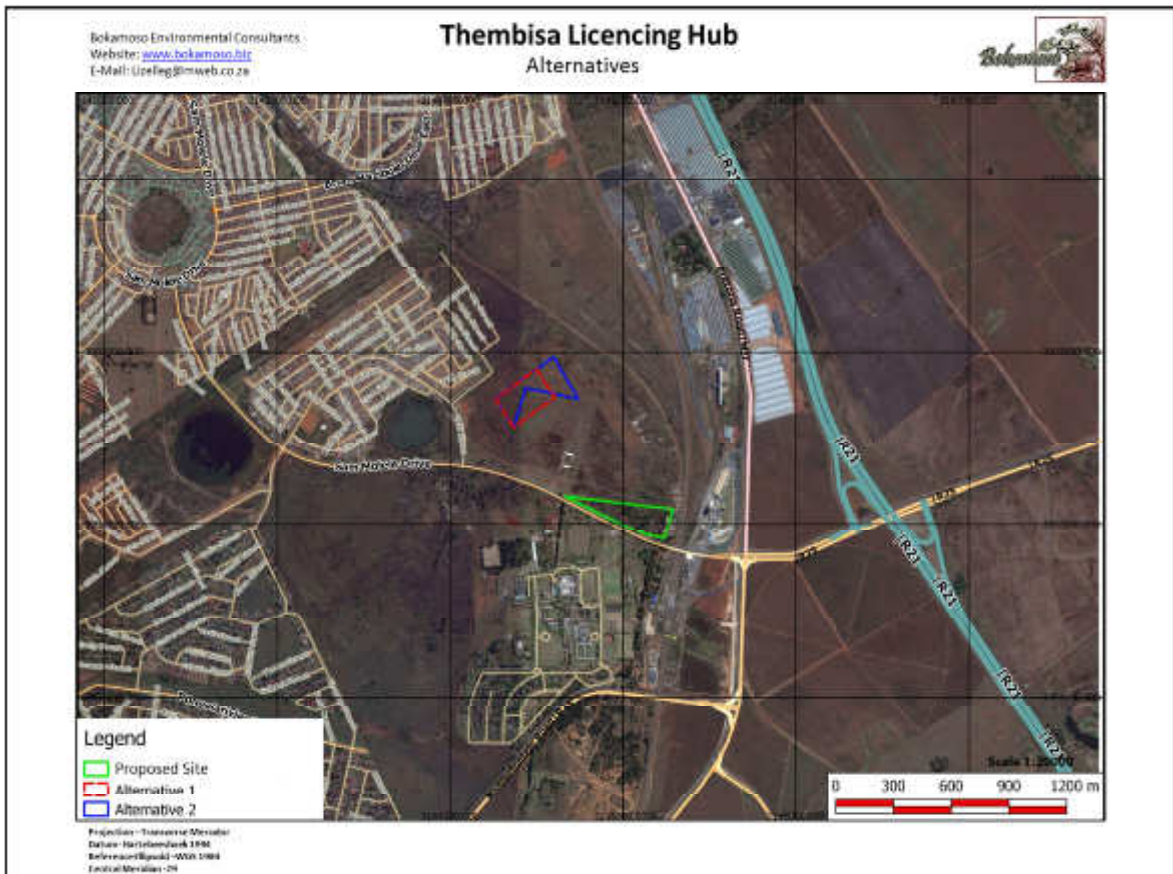
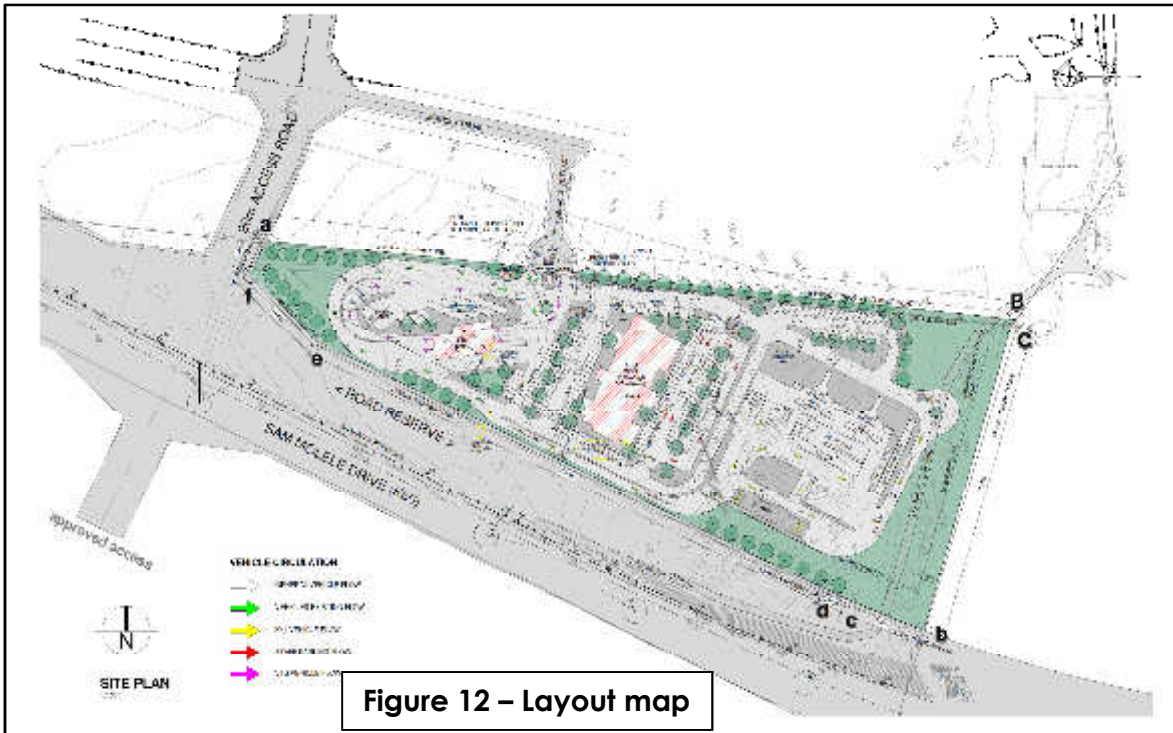
and not the other two alternatives. Same goes for the facility illustrations. Alternative 1 and 2 (as below) were considered more environmentally sensitive and these properties are not owned by the Ekurhuleni Metropolitan Municipality. The proposed site is owned by the Ekurhuleni Metropolitan Municipality and in terms of the fauna and flora and wetland assessments this site is environmentally a better option for the proposed licensing hub.

Provide a description of the alternatives considered

No.	Alternative type, either alternative: site on property, properties, activity, design, technology, energy, operational or other (provide details of "other")	Description
1	Proposal	<p>Licensing Hub for the following:</p> <ul style="list-style-type: none"> • Motor vehicle registration and licensing; • Driver's license testing centre; • Motor vehicle testing centre; and • Grounds Area. <p>Please refer to Figure 1 and 2 in the beginning of the report, as well as Figure 12 and 13 below. Figure 12 is the layout for the proposed site and Figure 13 illustrates all three the alternatives on one aerial photograph.</p>
2	Alternative 1 –Site alternative	<p>Licensing Hub for the following:</p> <ul style="list-style-type: none"> • Motor vehicle registration and licensing; • Driver's license testing centre; • Motor vehicle testing centre; and • Grounds Area. <p>Please refer to Figure 14.</p>
3	Alternative 2 – Site alternative	<p>Licensing Hub for the following:</p> <ul style="list-style-type: none"> • Motor vehicle registration and licensing; • Driver's license testing centre; • Motor vehicle testing centre; and • Grounds Area. <p>Please refer to Figure 15.</p>

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

N/A



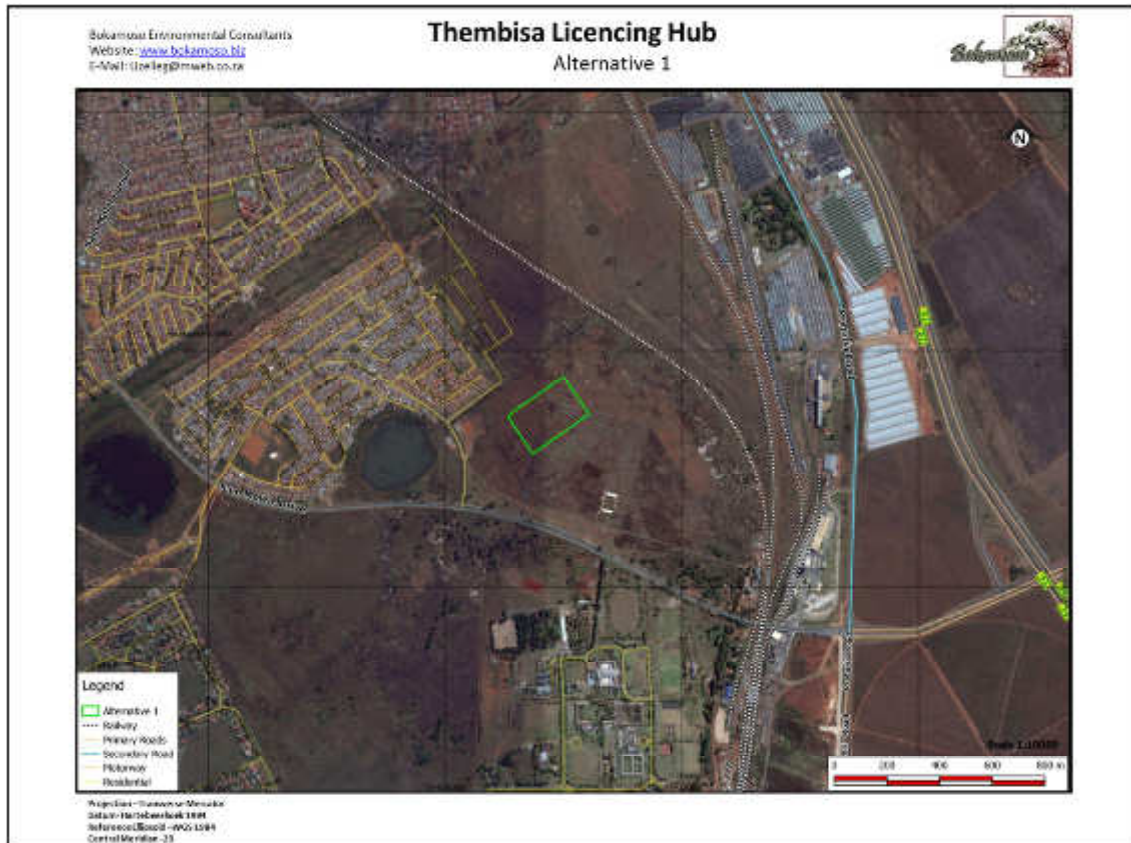


Figure 14 – Alternative 1

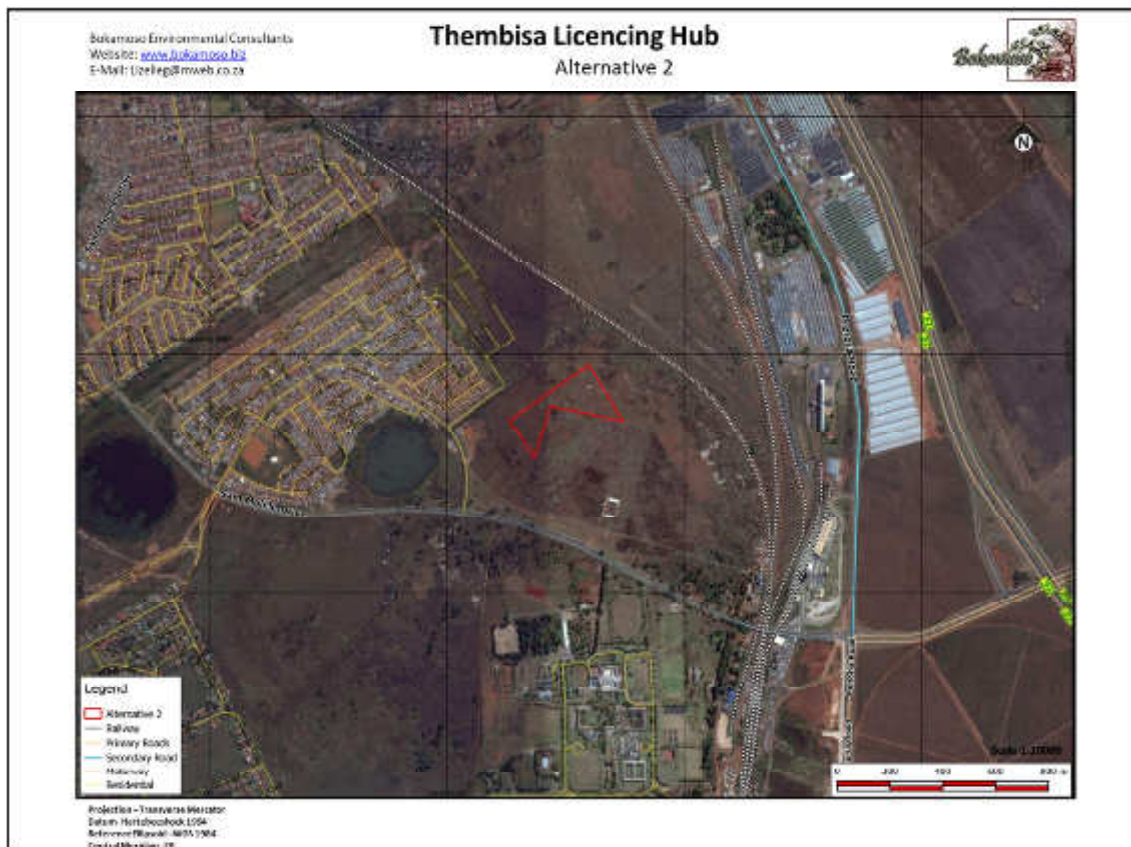


Figure 15 – Alternative 2

4. PHYSICAL SIZE OF THE ACTIVITY

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

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

Size of the activity:

3.42 ha (3.42 ha)

Alternatives:

Alternative 1 (if any)

5.07 ha (5.07 ha)

Alternative 2 (if any)

4.90 ha (4.90 ha)

Ha/ m²

or, for linear activities:

Proposed activity

Length of the activity:

Alternatives:

Alternative 1 (if any)

Alternative 2 (if any)

m/km

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

Proposed activity

Size of the site/servitude:

Alternatives:

Alternative 1 (if any)

Alternative 2 (if any)

Ha/m²

5. SITE ACCESS

Proposal

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

YES	NO
	X

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

± 350m

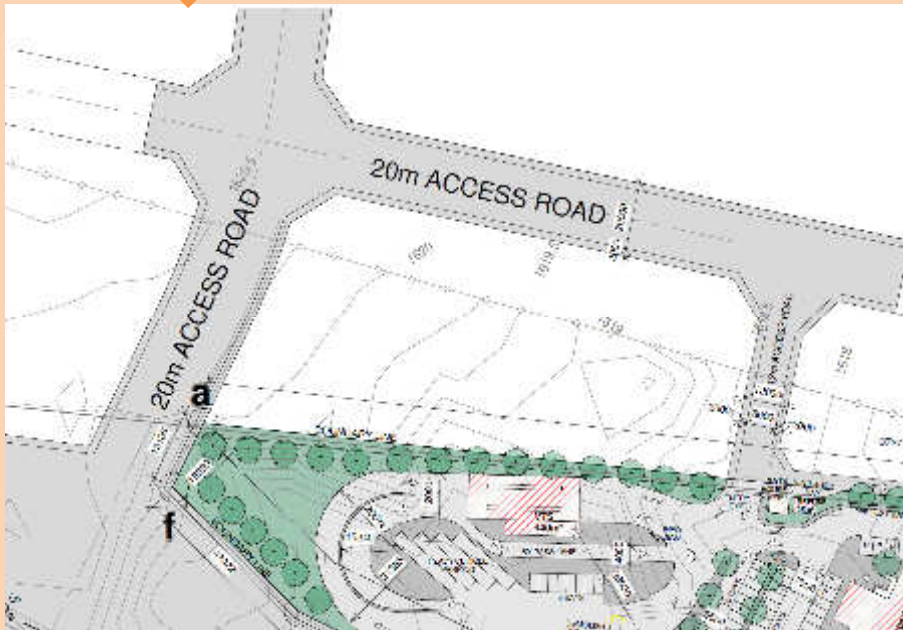
Describe the type of access road planned:

The site is located next to and on the northern side of Sam Molele Drive east of Pretoria Road and just east of the railway line. Access to the site will be off Sam Molele Drive. Sam Molele Drive is part of the provincial road network, becoming K60 in future. Access approval will be required from Gautrans. The proposed access road will be from an access road to the west of the site which will run along the boundary of the site in order to gain access to the site through the northern boundary (see images below).

The proposed development is supported from a traffic flow point of view. It is further recommended that:

- Access be off Sam Molele Drive directly opposite the access to the Esselen Park Sports Complex;
- Provision be made for the following in the layout in terms of the Section 7 report:
 - Future road reserve of K60;
 - 25m access road from the K60 opposite the Esselen Park Sports Complex's access; and
 - 15mx45m splays at the intersection on K60.
- In terms of the Gauteng Transport Infrastructure Act the road reserve of K60 is excluded from the application;
- Provision is made to reinstate access to Transnet via the new access on K60 and the access to the development; and
- The applicant to implement the new access on Sam Molele Drive with the following minimum upgrades (subject to approval from Gautrans):
- Stop control on access road;

- 60m right-turn lane on eastern approach; and
- 60m left-turn lane on western approach.



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

Alternative 1

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

YES	NO
	X
± 500m	

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

Describe the type of access road planned:

The access to this alternative site will be from Sam Molele Drive via a new road that links to an existing gravel road which will be upgraded.

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

Alternative 2

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

YES	NO X
± 500m	

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

Describe the type of access road planned:

The access to this alternative site will be from Sam Molele Drive via a new road that links to an existing gravel road that will be upgraded.

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

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

Section A 6-8 has been duplicated

3

Number of times

(only complete when applicable)

6. LAYOUT OR ROUTE PLAN

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

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

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

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

7. SITE PHOTOGRAPHS

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

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 and alternative(s) (if necessary)

Instructions for completion of Section B for linear activities

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

Section B has been duplicated for sections of the route times

Instructions for completion of Section B for location/route alternatives

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

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

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

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

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

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

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

1. PROPERTY DESCRIPTION

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

Portion 67 of the farm Witfontein 15 IR

Situated within Esselen Park Ext 1 north of Sam Molele Drive and west of the railway servitude (west of the Pretoria Road, M57)

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):
-26.031315°	28.252622°

In the case of linear activities:

Alternative:

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

The 21 digit Surveyor General code of each cadastral land parcel

PROPOSAL	T	0	I	R	0	0	0	0	0	0	0	0	0	1	5	0	0	0	6	7
ALT. 1	T	0	I	R	0	0	0	0	0	0	0	0	0	1	5	0	0	0	6	4
ALT. 2	T	0	I	R	0	0	0	0	0	0	0	0	0	1	5	0	0	0	6	4

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
------	-------------	-------------	-------------	--------------	-------------	------------------

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
-----------	---------	--------------------------	--------	-------	----------------------------	-------------

5. GROUNDWATER, SOIL AND GEOLOGICAL STABILITY OF THE SITE

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

Shallow water table (less than 1.5m deep)

Dolomite, sinkhole or doline areas

Seasonally wet soils (often close to water bodies)

Unstable rocky slopes or steep slopes with loose soil

Dispersive soils (soils that dissolve in water)

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

Any other unstable soil or geological feature

An area sensitive to erosion

YES	NO X
YES X	NO
YES	NO X
YES	NO X
YES The rocks can dissolve in the presence of water combined with carbon dioxide	NO
YES	NO X
YES	NO X
YES	NO X

(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 X
-----	-----------------

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 X
-----	----------------

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 X
-----	----------------

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

J.C. Geotechnical Services was appointed by Gant Project Management (Pty) Ltd to carry out a preliminary geotechnical investigation for the proposed new Licensing Hub at the proposed site.

The site investigation comprised of the excavation of seven test pits at the plan positions shown on the attached site plan. The information provided by the field work shows that the site is situated on shallow and highly variable chert rich dolomitic residuum interspersed with syenite dyke intrusions.

The dolomite rocks belong to the Malmani formation of the Chuniespoort Group strata and were found to be covered by layers of collapsible/compressible hillwash/colluvium. These rocks can dissolve in the presence of water combined with carbon dioxide. This is a slow process that happens naturally as part of the weathering process. If the solution process has been carrying on for many millions of years, landforms, erosion features and subsurface solution cavities and cave systems form a special environment that is referred to as karst. In some places large openings can form underground as dolomite rock weathers and dissolves. If the ground collapses down into the opening, a sinkhole is formed. Sinkholes vary in size from a few centimetres deep to many metres.

The colluvial surface deposit to an average depth of 1.0m and underlying ferruginised soils occurring to depths varying from 1.5 to 3.0m are not suitable as founding soils for the proposed Licensing Hub. These soils possess an open voided grain structure and are susceptible to rapid or "collapse" type settlement under the combined action of loading and saturation.

From the information provided by the site investigation work it has been possible to establish the following generalized soil profile overlying the dolomitic residuum and syenite:

- **Transported Soils:** The site is covered by an approximately 1.0m thick layer of moist reddish orange, loose, fine grained slightly clayey silt/sand. This horizon is of colluvial origin and potentially "collapsible".
- **Pedogenic Soils:** A dark red poorly developed pedogenic ferricrete stratum was encountered below the transported soils. These soils are poorly cemented and friable to depths of varying from 1.5 to 3.0m below ground level.
- **Water Table:** No sub surface water seepage was encountered in any of

the test pits.

Blue Rain Consultants has been appointed by the Ekurhuleni Metropolitan Municipality (EMM) to perform a dolomite stability and soils investigation for the proposed Licensing Hub in Esselen Park at Portion 67 of the farm Witfontein 15 IR, Sam Molela Street.

According to the specialist study, the site is underlain by chert-rich dolomite of the Monte Christo Formation of Malmani Subgroup of the Chuniespoort Group, Transvaal Supergroup. The soil cover often comprises highly erodible soils, which can readily erode by downward percolating water to create leached or voided zones, which may result in the formation of sinkholes or dolines.

Only limited groundwater information is available. According to Hobbs, the site is located in the Sterkfontein West groundwater compartment. The groundwater compartment compiled by DWAF (now DWS) shows for this site, in the Sterkfontein West Compartment, generally deep groundwater can be expected i.e. in the order of 60 m depth. The original groundwater levels for this compartment are between 1490 and 1500 m.a.m.s.l. There was no groundwater encountered during the investigation.

Unfortunately no borehole information exists within relevant proximity to the site. The site investigation consisted of the drilling of seven percussion boreholes within the proposed Licensing Hub site. The boreholes and soil profiles were described according to standard practice. Two disturbed soil samples were taken from the various horizons encountered on site for foundation indicator tests. No bulk samples were collected for Modified AASHTO compaction testing and California Bearing Ratio (CBR) determination. The site is characterised by relatively shallow dolomite bedrock. Virtually moderately to slightly weathered sound dolomite rock was encountered in all the boreholes from a depth of between 15m and 31m. Drilling extended to a depth of at least six meters into bedrock to confirm that bedrock had been reached, and that a large dolomite floater was not misinterpreted as bedrock.

It is recommended that the two storey building and other heavily loaded structure be founded on a reinforced concrete raft design to span a 5m loss of support. A low to medium risk exists for small to medium size sinkhole formation in a non-dewatering and dewatering scenario for the site. A medium to high risk exists for doline formation, particularly with ingress of surface water. Reinforced concrete raft designed to span a 5m loss of support. It is recommended that an experienced Geotechnical Engineer or Engineering Geologist inspect the foundation excavations prior to the placing of concrete or wet services to ensure that suitable foundations have been reached.

The Risk Management Plan as set out in the specialist report should be adhered to and precautionary measures followed. Please refer to Annexure G2 and G5 for the Geological and Dolomitic investigations and mitigation measures that should be adhered to.

6. AGRICULTURE

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

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

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

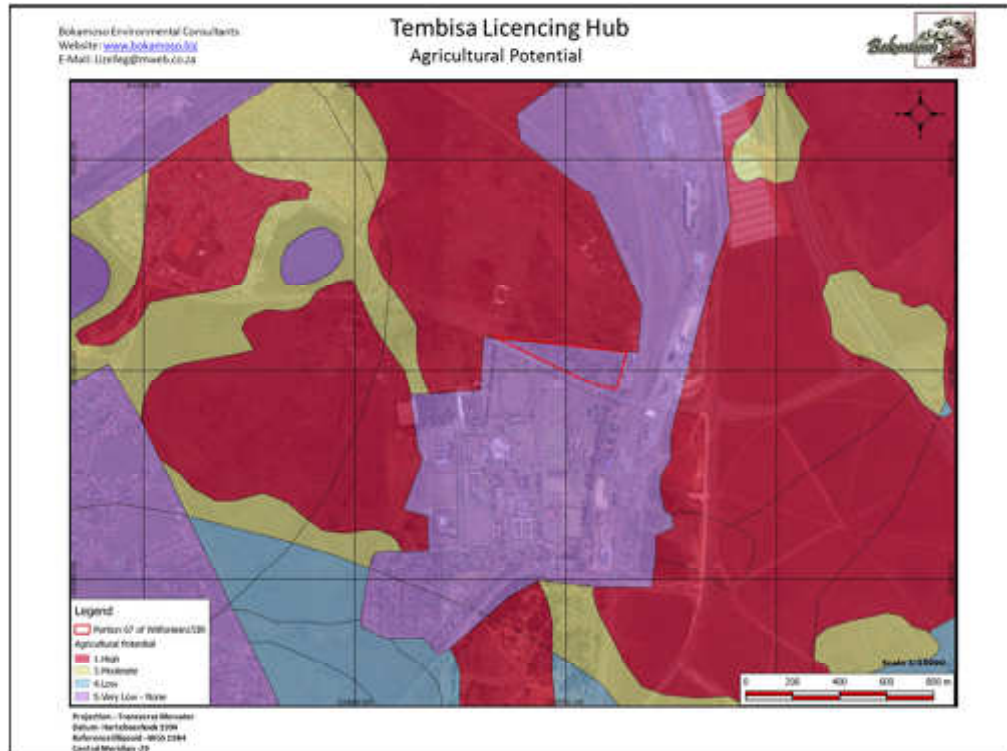


Figure 16 – Agricultural

Terra Soil Science was appointed by Bokamoso Landscape Architects and Environmental Consultants CC to conduct an Agricultural Potential Survey of the proposed Tembisa Licencing Hub site near Tembisa in the Gauteng Province. The geology of the site appears to be influenced by shale and dolomite leading to the dominance of red soils throughout. There are no drainage features on the site.

The soil survey revealed that the soils on the site are predominantly red coloured and of sandy loam to sandy clay loam texture. The dominant soils on the site are of the Hutton form. The site has been altered and degraded drastically through the dumping of rubble and land disturbances associated. In light of the conditions of the site it is considered that large costs would have to be incurred to restore the site to agricultural productions. The site is currently in a poor state with severe alternation and extensive dumping rubble.

According to the specialist, due to the extensive alteration of the site the only option that is considered viable is the development and subsequent management of the site and surrounding area. The site has been degraded and the surrounding land has very similar impact. The agricultural potential of the site is low with no possibility of improving it without significant cost. Please refer to Annexure G1 for the Agricultural Potential Study.

7. GROUNDCOVER

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

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

Natural veld - good condition % = 5	Natural veld with scattered aliens % = 20	Natural veld with heavy alien infestation % = 70	Veld dominated by alien species % =	Landscaped (vegetation) % =
Sport field % =	Cultivated land % =	Paved surface (hard landscaping) % =	Building or other structure % =	Bare soil % = 5

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
-----	----------------

If YES, specify and explain:

--

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

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

If YES, specify and explain:

--

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

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

If YES, specify and explain: Even though the answer is 'NO', it was decided to present the findings of the specialist studies.

Fauna and Flora (Please refer to Annexure G3 for the Fauna and Flora Report)

Enviro-Insight CC was commissioned by Bokamoso Landscape Architects and Environmental Consultants CC to perform a fauna and flora study for a Basic Assessment Report of the proposed Tembisa Licencing Hub. This site falls within the Carletonville Dolomite Grassland regional vegetation unit. It was however evident from the ground-truthing that much of the site is not ecologically intact and reminiscent of both historical and recent perturbation events. As far as the regional vegetation unit, the site shows no ecological resemblance to its original floristic composition which therefore suggests persistent transformation.

Habitat Unit 1: Infrastructure

This vegetation has very low species richness in terms of indigenous species and does not contain suitable habitat for any plant or vertebrate species of conservation concern. This unit is therefore negligible in terms of its ecological importance and function.

Habitat Unit 2: Transformed Secondary Grassland

This habitat unit displays comparatively low species richness and the unit does not provide suitable habitat for any threatened, near-threatened or declining plant or vertebrate species of conservation concern, although a single individual of the protected plant species *Bonatea antennifera* was recorded from this habitat. This plant species is not threatened or near-threatened. The vegetation unit is strongly dominated by grasses, while forb diversity is low. The

dominant species is the grass *Hyparrhenia tamba*. No threatened or near-threatened species were recorded from this unit. This unit has a low ecological sensitivity.

According to the specialist only one faunal “trigger” species was identified namely South African Hedgehog *Atelerix frontalis*. The South African Hedgehog is listed as a national near threatened taxa and historical records show that this species is sympatric to the study areas which overlap with the study site. In general, this species is widespread and shows a wide habitat tolerance, although its occurrence on the study site is regarded to be low base on the high frequency of disturbance present. After the vegetation analysis and the observations made during the survey it is evident that the area currently does not contain any suitable habitat for threatened or near-threatened plant taxa to be present.

The final habitat sensitivity is illustrated below. The overall sensitivity is defined as being low or negligible due to poor ecological condition of the habitat types as well as high levels of disturbance.

It is recommended by the specialist that prior to any development that all the individuals of the *Bonatea antennifera* be identified and be marked. In the event that any of these individuals are threatened by the proposed development, appropriate ex situ conservation measures should be developed and implemented.

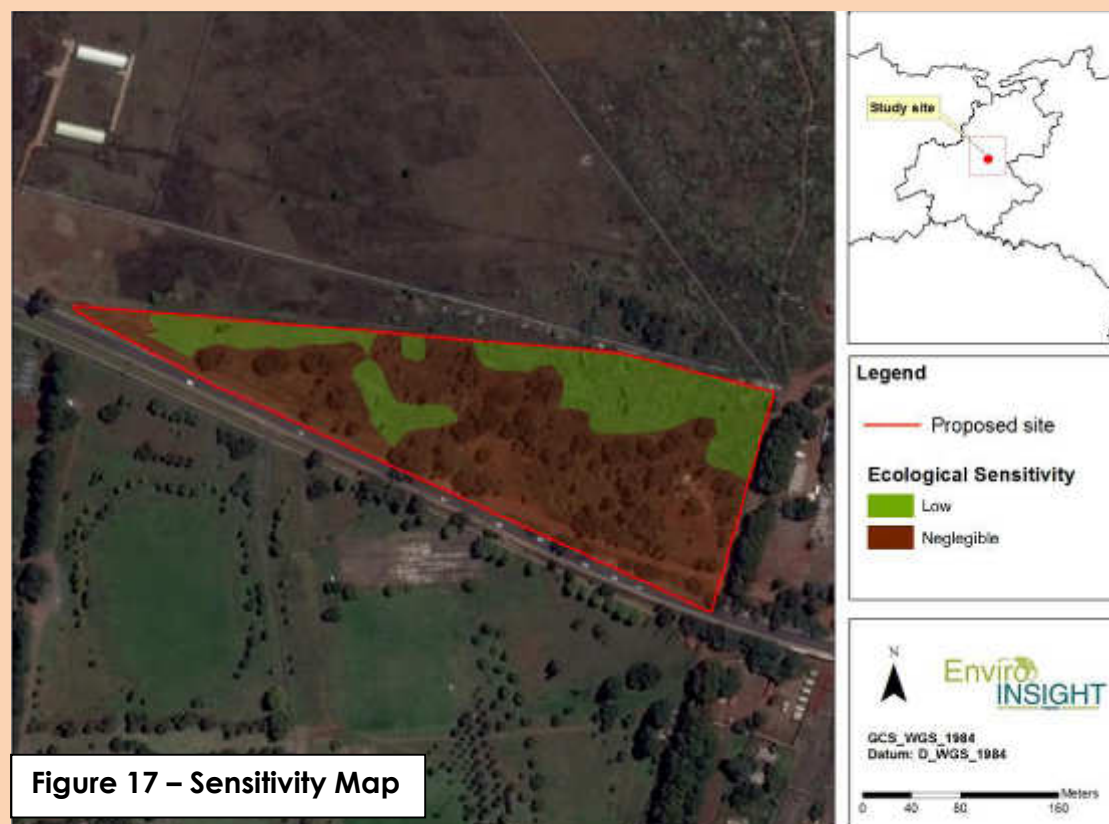


Figure 17 – Sensitivity Map

Wetland (Please refer to Annexure G4 for the Wetland Report)

The Biodiversity Company was commissioned by Enviro-Insight CC to delineate the wetland areas for a basic assessment of the proposed Tembisa Licencing Hub. A general Wetland Desktop Assessment was conducted, whereby a 500m buffer of the project was considered for the identification of any potential wetland areas. No wetland area was identified on site, so no impact was implemented for the project.

No wetland soils forms, as described by the DWAF guidelines were identified for the study. In addition to this, no sign of soil wetness were identified for the study. Based on these findings it may be concluded that there is no evidence of wetlands occurring within the projects area.

Was a specialist consulted to assist with completing this section

YES	NO
X	

If yes complete specialist details
 Name of the specialist: Andrew Husted
 Qualification(s) of the specialist: MAGISTER SCIENTIAE (MSc) - Aquatic Health
 Postal address:
 Postal code:
 Telephone: 072 437 1742 Cell: 072 437 1742
 E-mail: andrew@thebiodiversitycompany.com Fax:

Are any further specialist studies recommended by the specialist?

YES	NO
	X

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

YES	NO
	N/A

If YES list the specialist reports attached below

Signature of specialist: No signature Date: June 2015

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

Name of the specialist: Samuel Laurence
 Qualification(s) of the specialist: (MSc) Wildlife Management Masters (cand)
 Postal address:
 Postal code:
 Telephone: 072 437 1742 Cell: 072 437 1742
 E-mail: sam@enviro-insight.co.za Fax:

Are any further specialist studies recommended by the specialist?

YES	NO
	X

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

YES	NO
	N/A

If YES list the specialist reports attached below

Signature of specialist:  Date: April 2015

Name of the specialist: **Lukas Niemand**

Qualification(s) of the specialist: **M.Sc. (Restoration Ecology/Zoology).**

Postal address: _____

Postal code: _____

Telephone: **072 437 1742** Cell: **072 437 1742**

E-mail: **sam@enviro-insight.co.za** Fax: _____

Are any further specialist studies recommended by the specialist?

YES	NO
	X

If YES, specify: _____

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

YES	NO
	N/A

If YES list the specialist reports attached below

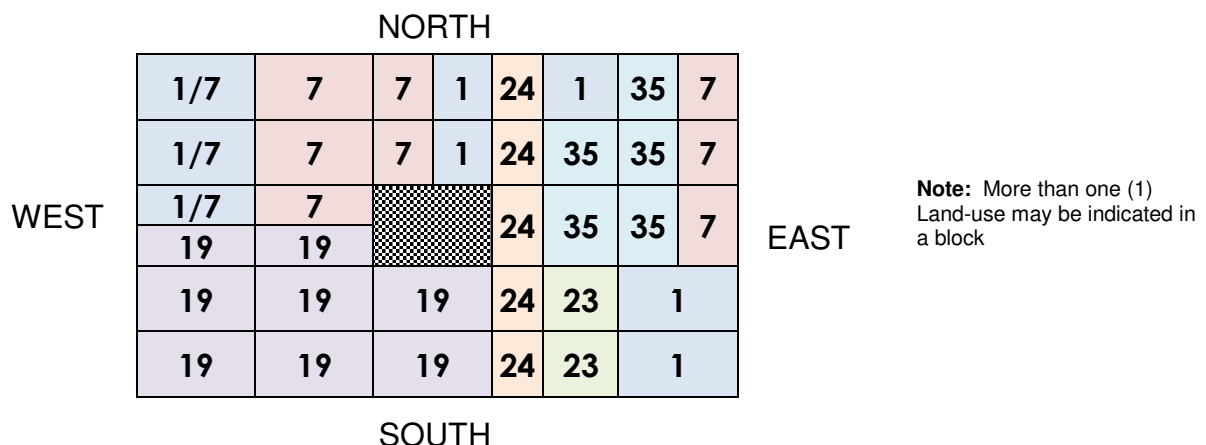
Signature of specialist: No signature Date: **April 2015**

8. LAND USE CHARACTER OF SURROUNDING AREA

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. Archeological site
31. Open cast mine	32. Underground mine	33. Spoil heap or slimes dam ^A	34. Small Holdings	
Other land uses (describe):	35. Cement Depot			

NOTE: Each block represents an area of 250m X 250m, if your proposed development is larger than this please use the appropriate number and orientation of hashed blocks



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 ^A and with an ^N respectively.

Have specialist reports been attached

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

If yes indicate the type of reports below

--

9. SOCIO-ECONOMIC CONTEXT

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

The site (proposal) has been proposed for a Licensing Hub to service the Tembisa Area. The proposed project is in line with the Integrated Development Plan and Ekurhuleni Metropolitan Municipality's objective of establishing Motor Vehicle Registration Authority (MVRA) and facilities and Drivers Licensing Testing Centre (DLTC) throughout the Ekurhuleni Metropolitan Municipality.

In terms of the Ekurhuleni Metropolitan Spatial Development Framework (MSDF)(2011), the proposed Licensing Hub, which will service Tembisa and the surrounds, will alleviate the pressure on surrounding Licensing Hubs. Also, the focused investment will ensure that the Critical Masses, spoken of within the MSDF (2011), will be accommodated and receive efficient and effective licensing services. The proposed Tembisa Licencing Hub will provide a required government service near the Clayville/ Olifantsfontein Industrial Zone, where employment generation and subsequently population densities are high. The industrial areas of Ekurhuleni, generate the bulk of employment and economic activity in Ekurhuleni. These areas should, therefore, be protected from potential negative influences such as informal settlements established near the industrial zones. The available land should then be developed, ideally, as social services. The subject property is located in the vicinity of the Clayville Industrial Hub and the Tembisa Informal Township. Thus, the land could be at risk of further invasion from informal settlers. Rubble is already being dumped on the site and this will probably only increase should no development take place. It can then be concluded, that it would be a matter of urgency and prove desirable that the land be divided for development. Based on the aforementioned, the provision of the Licensing Hub would be highly beneficial to this expanding and highly accessible node.

According to the Esselen Park Local Integrated Development Plan (IDP) the proposed site is within Precinct B which has been earmarked for light industrial use. The proposed use will integrate into the light industrial proposition. In addition to this, the Local Spatial Development Framework (LSDF) outlines that Sam Molele Drive should accommodate a strip of business, social facilities and light industrial uses. The proposed facility is not in contradiction with the LSDF for Esselen Park and will further advance the objectives of the Plan, to ensure the needs of local residents are met within the Local Area.

10. CULTURAL/HISTORICAL FEATURES

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

38. (1) Subject to the provisions of subsections (7), (8) and (9), any person who intends to undertake a development categorised as-

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

Are there any signs of culturally (aesthetic, social, spiritual, environmental) or historically significant elements, as defined in section 2 of the National Heritage Resources Act, 1999, (Act No. 25 of 1999), including archaeological or palaeontological 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:

A heritage specialist were appointed to conduct a study and investigate the site. This specialist report is attached to the Basic Assessment Report. Nothing of cultural or historical importance were identified on the site. If any historical 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.

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

11. PROPERTY DESCRIPTION

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

A part of Portion 64 of the farm Witfontein 15 IR

Situated within Esselen Park Ext 1 north of Sam Molele Drive and west of the railway servitude (west of the Pretoria Road, M57), north-west of the proposed site.

12. 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):
	-26.025828°	28.246914°

In the case of linear activities:

Alternative:	Latitude (S):	Longitude (E):
• Starting point of the activity	°	°
• Middle point of the activity	°	°
• End point of the activity	°	°

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

Addendum of route alternatives attached

The 21 digit Surveyor General code of each cadastral land parcel

PROPOSAL	T	0	I	R	0	0	0	0	0	0	0	0	0	1	5	0	0	0	6	7
ALT. 1	T	0	I	R	0	0	0	0	0	0	0	0	0	1	5	0	0	0	6	4
ALT. 2	T	0	I	R	0	0	0	0	0	0	0	0	0	1	5	0	0	0	6	4

13. 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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14. 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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15. GROUNDWATER, SOIL AND GEOLOGICAL STABILITY OF THE SITE

The specialist report for the proposed site (Portion 67 of the farm Witfontein 15 IR) was used to fill in this section. Separate specialist reports were not done for Alternative 1

and 2. The alternative sites are ± 500m from the proposed site for which the specialist reports have been done. As mentioned earlier in the report, the preferred site were identified (between the alternatives) before the specialists have been appointed.

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 X
YES X	NO
YES	NO X
YES	NO X
YES The rocks can dissolve in the presence of water combined with carbon dioxide	NO
YES X	NO
YES	NO X
YES	NO X

(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 X
-----	-----------------

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 X
-----	-----------------

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 X
-----	-----------------

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

16. AGRICULTURE

Does the site have high potential agriculture as contemplated in the Gauteng Agricultural

YES	NO
------------	----

Potential Atlas (GAPA 4)?

X	
---	--

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

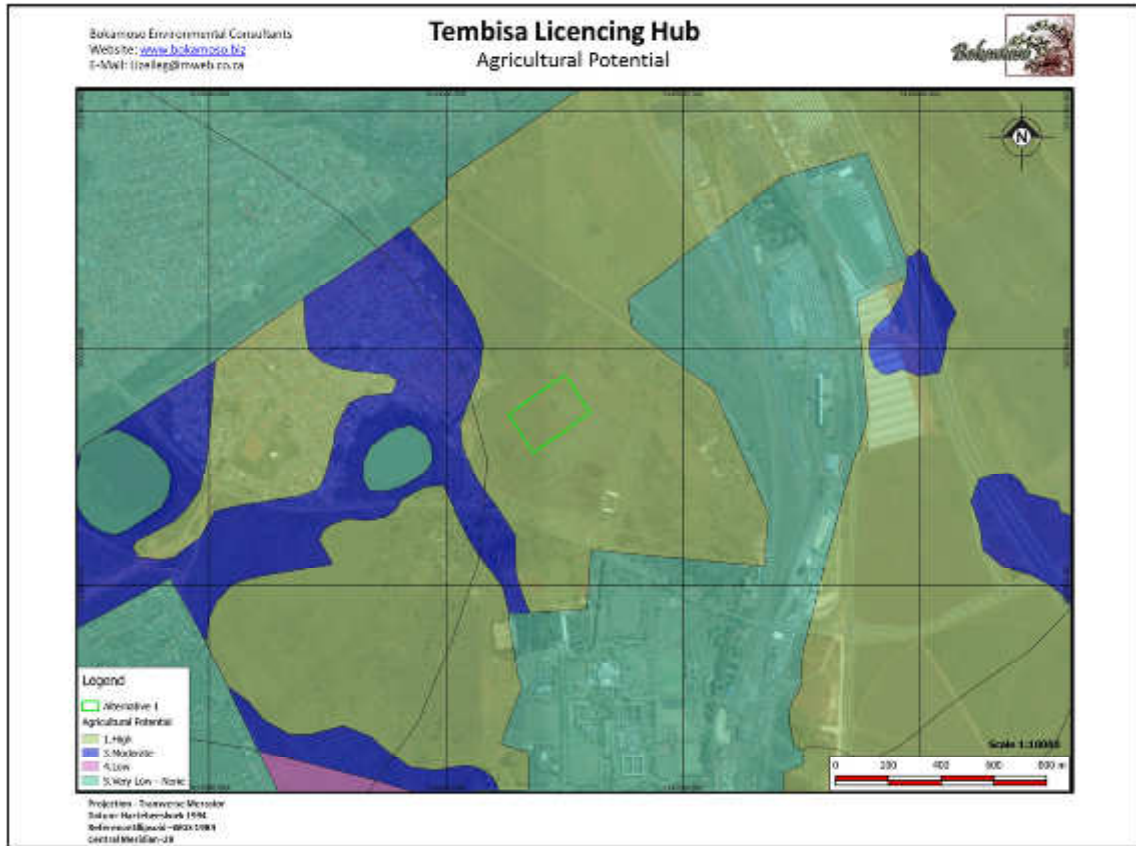


Figure 18 – Alternative 1: Agricultural Potential

17. GROUNDCOVER

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

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

Natural veld - good condition % =	Natural veld with scattered aliens % =	Natural veld with heavy alien infestation % =	Veld dominated by alien species % =	Landscaped (vegetation) % =
Sport field % =	Cultivated land % = 100	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
-----	---------

If YES, specify and explain:

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

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

If YES, specify and explain:

--

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

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

If YES, specify and explain: Even though the answer is NO, it was decided to present the findings of the specialist studies.

Enviro-Insight CC was commissioned by Bokamoso Landscape Architects and Environmental Consultants CC to perform a fauna and flora study for a basic assessment report of the proposed Tembisa Licencing Hub. This site falls within the Carletonville Dolomite Grassland regional vegetation unit.

The specialist went out to conduct a fauna and flora assessment for the proposed site and also investigated the two alternative sites. Attached to the Fauna and Flora Report in Annexure G3 is a letter from the specialist with his input on the various alternatives. The specialist regarded Alternative 1 and 2 more sensitive as it is in better condition and less alien and invasive plant species.

Was a specialist consulted to assist with completing this section

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

If yes complete specialist details

Name of the specialist:	Samuel Laurence		
Qualification(s) of the specialist:	(MSc) Wildlife Management Masters (cand)		
Postal address:			
Postal code:			
Telephone:	072 437 1742	Cell:	072 437 1742
E-mail:	sam@enviro-insight.co.za	Fax:	

Are any further specialist studies recommended by the specialist?

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

If YES, specify:

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

YES	NO N/A
-----	-------------------------

If YES list the specialist reports attached below

--

Signature of specialist:



Date:

July 2015

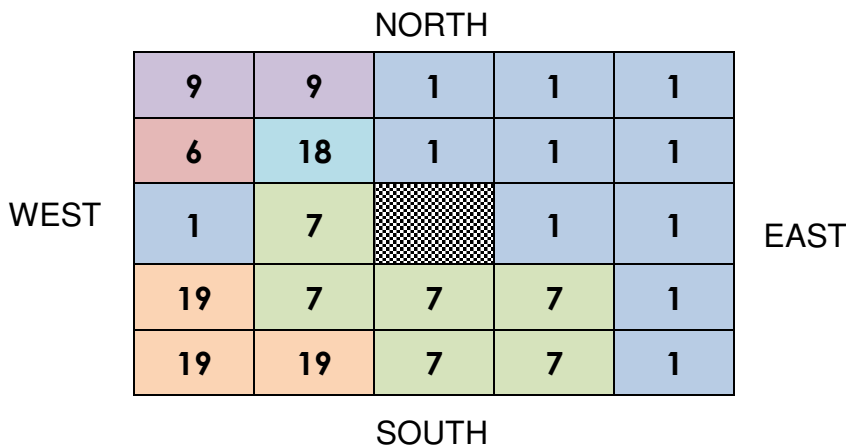
18. LAND USE CHARACTER OF SURROUNDING AREA

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. Archeological site
31. Open cast mine	32. Underground mine	33. Spoil heap or slimes dam ^A	34. Small Holdings	
Other land uses (describe):				

NOTE: Each block represents an area of 250m X 250m, if your proposed development is larger than this please use the appropriate number and orientation of hashed blocks



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 ^A and with an ^N respectively.

Have specialist reports been attached

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

If yes indicate the type of reports below

--

19. 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 site (proposal) has been proposed for a Licensing Hub to service the Tembisa Area. The proposed project is in line with the Integrated Development Plan and Ekurhuleni Metropolitan Municipality's objective of establishing Motor Vehicle Registration Authority (MVRA) and facilities and Drivers Licensing Testing Centre (DLTC) throughout the Ekurhuleni Metropolitan Municipality.

In terms of the Ekurhuleni Metropolitan Spatial Development Framework (MSDF) (2011), the proposed Licensing Hub, which will service Tembisa and the surrounds, will alleviate the pressure on surrounding Licensing Hubs. Also, the focused investment will ensure that the Critical Masses, spoken of within

the MSDF (2011), will be accommodated and receive efficient and effective licensing services. The proposed Tembisa Licencing Hub will provide a required government service near the Clayville/ Olifantsfontein Industrial Zone, where employment generation and subsequently population densities are high. The industrial areas of Ekurhuleni, generate the bulk of employment and economic activity in Ekurhuleni. These areas should, therefore, be protected from potential negative influences such as informal settlements established near the industrial zones. The available land should then be developed, ideally, as social services. The subject property is located in the vicinity of the Clayville Industrial Hub and the Tembisa Informal Township. Thus, the land could be at risk of further invasion from informal settlers. It can then be concluded, that it would be a matter of urgency and prove desirable that the land be divided for development. Based on the aforementioned, the provision of the Licensing Hub would be highly beneficial to this expanding and highly accessible node.

According to the Esselen Park Local Integrated Development Plan (IDP) the site is within Precinct B which has been earmarked for light industrial use. The proposed use will integrate into the light industrial proposition.

20. CULTURAL/HISTORICAL FEATURES

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

38. (1) Subject to the provisions of subsections (7), (8) and (9), any person who intends to undertake a development categorised as-

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

Are there any signs of culturally (aesthetic, social, spiritual, environmental) or historically significant elements, as defined in section 2 of the National Heritage Resources Act, 1999, (Act No. 25 of 1999), including archaeological or palaeontological 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:

A heritage specialist were appointed to conduct a study and investigate the site. This specialist report is attached to the Basic Assessment Report. Nothing of cultural or historical importance were identified on the site. If any historical 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.

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

21. PROPERTY DESCRIPTION

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

A part of Portion 64 of the farm Wiffontein 15 IR

Situated within Esselen Park Ext 1 north of Sam Molele Drive and west of the railway servitude (west of the Pretoria Road, M57), north-west of the proposed site.

22. 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):
	-26.025135°	28.247316°

In the case of linear activities:

Alternative:	Latitude (S):	Longitude (E):
• Starting point of the activity	°	°
• Middle point of the activity	°	°
• End point of the activity	°	°

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

Addendum of route alternatives attached

The 21 digit Surveyor General code of each cadastral land parcel

PROPOSAL	T	0	I	R	0	0	0	0	0	0	0	0	0	0	1	5	0	0	0	6	7
ALT. 1	T	0	I	R	0	0	0	0	0	0	0	0	0	0	1	5	0	0	0	6	4
ALT. 2	T	0	I	R	0	0	0	0	0	0	0	0	0	0	1	5	0	0	0	6	4

23. 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
------	-------------	-------------	-------------	--------------	-------------	------------------

24. 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
-----------	---------	--------------------------	--------	--------------	----------------------------	-------------

25. GROUNDWATER, SOIL AND GEOLOGICAL STABILITY OF THE SITE

As mentioned earlier in the report, separate specialist reports were not done for Alternative 1 and 2. The alternative sites are ± 500m from the proposed site for which

the specialist reports have been done. The specialist report for the proposed site (Portion 67 of the farm Witfontein 15 IR) was used to fill in this section. As discussed earlier in this report, the proposed site was elected (from a number of alternatives) prior to specialists being appointed.

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 X
YES X	NO
YES	NO X
YES	NO X
YES The rocks can dissolve in the presence of water combined with carbon dioxide	NO
YES X	NO
YES	NO X
YES	NO X

(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 X
-----	-----------------

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 X
-----	-----------------

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 X
-----	-----------------

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

26. AGRICULTURE

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

YES	NO
X	

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

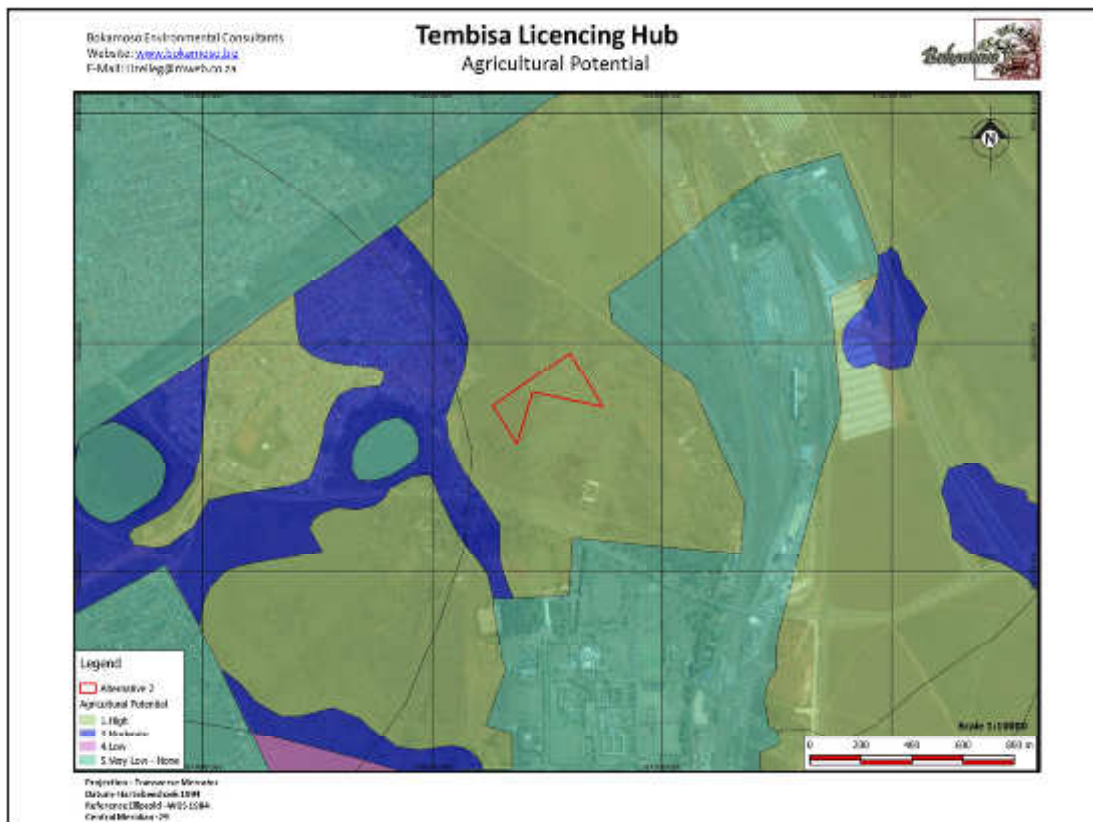


Figure 19 – Alternative 2: Agricultural Potential

27. GROUNDCOVER

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

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

Natural veld - good condition % =	Natural veld with scattered aliens % =	Natural veld with heavy alien infestation % =	Veld dominated by alien species % =	Landscaped (vegetation) % =
Sport field % =	Cultivated land % = 100	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

If YES, specify and explain:

--

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

YES	NO
	X

If YES, specify and explain:

--

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

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

If YES, specify and explain: Even though the answer is NO, it was decided to present the findings of the specialist studies.

Enviro-Insight CC was commissioned by Bokamoso Landscape Architects and Environmental Consultants CC to perform a fauna and flora study for a basic assessment report of the proposed Tembisa Licencing Hub. This site falls within the Carletonville Dolomite Grassland regional vegetation unit.

The Specialist went out to conduct a fauna and flora assessment for the proposed site and also investigated the two alternative sites. Attached to the Fauna and Flora Report in Annexure G3 is a letter from the specialist with his input on the various alternatives. The specialist regarded Alternative 1 and 2 more sensitive as it is in better condition and less alien and invasive plant species.

Was a specialist consulted to assist with completing this section

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

If yes complete specialist details

Name of the specialist:

Samuel Laurence

Qualification(s) of the specialist:

(MSc) Wildlife Management Masters (cand)

Postal address:

Postal code:

Telephone:

072 437 1742

Cell:

072 437 1742

E-mail:

sam@enviro-insight.co.za

Fax:

Are any further specialist studies recommended by the specialist?

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

If YES, specify:

--

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

YES	NO N/A
-----	-------------------------

If YES list the specialist reports attached below

--

Signature of specialist:



Date:

April 2015

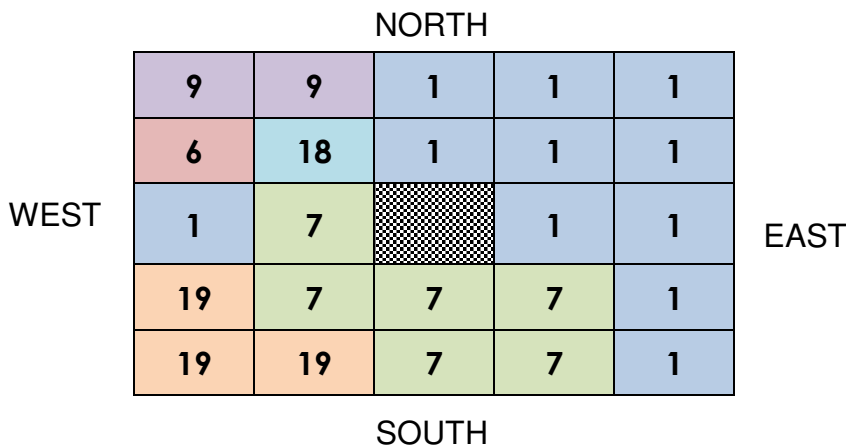
28. LAND USE CHARACTER OF SURROUNDING AREA

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. Archeological site
31. Open cast mine	32. Underground mine	33. Spoil heap or slimes dam ^A	34. Small Holdings	
Other land uses (describe):				

NOTE: Each block represents an area of 250m X 250m, if your proposed development is larger than this please use the appropriate number and orientation of hashed blocks



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 ^A and with an ^N respectively.

Have specialist reports been attached

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

If yes indicate the type of reports below

--

29. 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 site (proposal) has been proposed for a Licensing Hub to service the Tembisa Area. The proposed project is in line with the Integrated Development Plan and Ekurhuleni Metropolitan Municipality's objective of establishing Motor Vehicle Registration Authority (MVRA) and facilities and Drivers Licensing Testing Centre (DLTC) throughout the Ekurhuleni Metropolitan Municipality.

In terms of the Ekurhuleni Metropolitan Spatial Development Framework (MSDF) (2011), the proposed Licensing Hub, which will service Tembisa and the surrounds, will alleviate the pressure on surrounding Licensing Hubs. Also, the focused investment will ensure that the Critical Masses, spoken of within

the MSDF (2011), will be accommodated and receive efficient and effective licensing services. The proposed Tembisa Licencing Hub will provide a required government service near the Clayville/ Olifantsfontein Industrial Zone, where employment generation and subsequently population densities are high. The industrial areas of Ekurhuleni, generate the bulk of employment and economic activity in Ekurhuleni. These areas should, therefore, be protected from potential negative influences such as informal settlements established near the industrial zones. The available land should then be developed, ideally, as social services. The subject property is located in the vicinity of the Clayville Industrial Hub and the Tembisa Informal Township. Thus, the land could be at risk of further invasion from informal settlers. It can then be concluded, that it would be a matter of urgency and prove desirable that the land be divided for development. Based on the aforementioned, the provision of the Licensing Hub would be highly beneficial to this expanding and highly accessible node.

According to the Esselen Park Local Integrated Development Plan (IDP) the site is within Precinct B which has been earmarked for light industrial use. The proposed use will integrate into the light industrial proposition.

30. CULTURAL/HISTORICAL FEATURES

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

38. (1) Subject to the provisions of subsections (7), (8) and (9), any person who intends to undertake a development categorised as-

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

Are there any signs of culturally (aesthetic, social, spiritual, environmental) or historically significant elements, as defined in section 2 of the National Heritage Resources Act, 1999, (Act No. 25 of 1999), including archaeological or palaeontological 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:

A heritage specialist were appointed to conduct a study and investigate the site. This specialist report is attached to the Basic Assessment Report. Nothing of cultural or historical importance were identified on the site. If any historical 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.

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 (SECTION 41)

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

2. LOCAL AUTHORITY PARTICIPATION

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

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

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

If yes, has any comments 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):

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

The Draft Basic Assessment Report has been made available to the public, stakeholders and Departments for comments. No comments were received from the local authority (EMM), who is also the applicant in this regard.

3. CONSULTATION WITH OTHER STAKEHOLDERS

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

Has any comment been received from stakeholders?

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

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

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

The Draft Basic Assessment Report has been made available to the public, stakeholders and Departments for comments. All comments received from stakeholders and Department during this period have been addressed and is included in **Appendix 6**.

Comment from GDARD on Draft Basic Assessment Report

GDARD made the following comment regarding the Public Participation Process that was followed:

"It was noted that structures of chicken rearing facilities exist on the adjacent property towards the North-western direction of the site and that a significant area has been fenced-off around the facility which suggests possible future expansion of the agricultural activity. It could pose possible clash of land uses and the resultant unrest due to impacts such as noise and odour from the chicken facility to the licensing office and the possible noise impacts of the vehicle movements at the

licensing office on the animals at the agricultural facility. It is advisable that the owners and/ or the uses of the agricultural facility be consulted and that the details of the consultation and their comments to be recorded for future consultations on this matter. It was noted on Page 19 of the Agricultural Potential Study that the site of the proposed development has a low agricultural potential with no possibility of improving without significant cost incurred".

The Following actions were taken by Bokamoso Environmental CC to notify the landowner of the proposed Project and Basic Assessment Process:

- 1) The property was visited on **22 May 2015** in order to obtain the contact information of the landowner for the purposes of notifying him/her of the proposed project. The contact details of the supervisor were obtained (**Mr Siphon Jele - 073 914 5263**). Mr Jele informed the consultant that the manager of the facility is a gentleman named **Mohammed (contact details: 081 061 4071 lotlegang@yahoo.com)**.
- 2) A notification was sent via e-mail to the manager on 5 November 2015 (**See Appendix 4**). No response was received.
- 3) The site was visited on **19 November 2015** during which it was evident that no activities are currently taking place on site and that the facility is vacant. It was ascertained from the security guard on site that the facility has been vacant since September 2015 and that activities will commence once funding is made available. A. Photographic report is attached. (**See Appendix 4**).
- 4) Mr Thomas Chongo (the Applicant) from the Ekurhuleni Metropolitan Municipality (EMM) confirmed that the project on site has been initiated and is managed by the (EMM) under the Department of Economic Development. (**See Appendix 4**).

4. GENERAL PUBLIC PARTICIPATION REQUIREMENTS

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

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

5. APPENDICES FOR PUBLIC PARTICIPATION

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

Appendix 1 – Proof of site notice

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

Appendix 3 – Proof of newspaper advertisements

Appendix 4 – Communications to and from interested and affected parties

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

Appendix 6 - Comments and Responses Report

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

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

Appendix 9 – Copy of the register of I&APs

SECTION D: RESOURCE USE AND PROCESS DETAILS

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

Instructions for completion of Section D for alternatives

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

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

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 X	NO
Not yet available	

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

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.

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?

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

N/A

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

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

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.

N/A

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

YES	NO
-----	----

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.

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

It is recommended that all construction waste materials be sorted into recyclable materials and non-recyclable materials and the recyclable materials should be re-used 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 X
m ³	
YES	NO

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 liquid effluent to be generated by this activity(ies)?

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

Yes	NO X
m ³	

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

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:			
Postal code:			
Telephone:		Cell:	
E-mail:		Fax:	

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

Not applicable

Liquid effluent (domestic sewage)

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

The proposed sewer connection point is situated at the corner of Eighteenth Street and Fourteenth Street of Esselen Park Ext 1. This proposed connection point is approximately 6 metres above the site's lowest point. A pump station will be required on site to transfer the sewerage to the connection point. A dry well pump station was considered feasible for the proposed Licensing Hub development because of its ease of maintenance and operation. There will be an emergency tank to store sewerage during times when the pump is not operational due to power failure or maintenance. The capacity of the emergency tank was designed to take 48 hours of sewerage at the average flow rate when the pump is not operational. The size of the pipes as well as the length of the connection is too small to trigger a listed activity.

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

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

±1440m ³	
YES	NO
X	

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 on site?

YES	NO
	X

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

Not applicable

Emissions into the atmosphere

Will the activity release emissions into the atmosphere?

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

YES	NO
	X
YES	NO

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

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

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

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
-----------	---------------------------	-------------	----------------------------	-------	---------------------------------

The existing municipal water network for the site is available at the intersection of Nineteenth Street and Eighteenth Street. It is proposed that a new 110mm diameter pipe be constructed from the site's west boundary up to the connection point in Eighteenth Street. The size of the pipes as well as the length of the connection is too small to trigger a listed activity.

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:

liters

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?

YES	NO
	X

If yes, list the permits required

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

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

YES	NO
YES	NO

3. POWER SUPPLY

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

Ekurhuleni Metropolitan Municipality

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

Not applicable. It has been confirmed that there is capacity available.

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:

- Where possible energy saving light bulbs must be used in all the units as well as outside.
- Time switches may be used for outdoor lighting.
- 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. The developer would like to follow green standards for this development.

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

The following alternative energy sources can be considered:

Wind turbines

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

Biomass

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

Gas

This option was rejected because natural gas is not available and the Egoli Gas pipeline is remote and the energy spent in processing the gas and transporting it affects the viability of this process.

Coal fired generation

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

Nuclear

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

Solar

Solar power generation will be encouraged with each individual building.

SECTION E: IMPACT ASSESSMENT

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

1. ISSUES RAISED BY INTERESTED AND AFFECTED PARTIES

Summarise the issues raised by interested and affected parties.

The Public Participation for the proposed Licensing Hub was done in order to ensure that all Interested and Affected Parties register for this development.

The proposed project was advertised in the Beeld newspaper on Friday, 22 May 2015 (Refer to Appendix Ei – Proof of Newspaper advertisement). Site notices were also erected at prominent points adjacent to the application site on 22 May 2015. (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).

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 (including the manner in which the public comments are incorporated or why they were not included)

(A full response must be provided in the Comments and Response Report that must be attached to this report):

Only SAHRA registered as an Interested and Affected Party for this project and provided comments. They requested that a Heritage Impact Assessment (HIA) be done for the proposed development. A HIA has been done and is included in Annexure G6. It is furthermore requested that SAHRA provide final comments on this HIA letter/report that was conducted by the specialist. These comments should be included as part of the Final BAR.

Please refer to Appendix E (iv) for the Comments and Issues Register.

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

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

Significance Description Methodology

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

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

- | | | | |
|--------------------------|------------|---|--|
| <input type="checkbox"/> | Improbable | - | Low possibility of impact to occur either, because of design or historic experience. |
|--------------------------|------------|---|--|

Rating = 2

Probable - Distinct possibility that impact will occur.

Rating = 3

Highly probable - Most likely that impact will occur.

Rating = 4

Definite - Impact will occur, in the case of adverse impacts regardless of any prevention measures.

Rating = 5

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

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

Low intensity - natural and man-made functions not affected – Factor 1

Medium intensity - environment affected but natural and man-made functions and processes continue - Factor 2

High intensity - environment affected to the extent that natural or man-made functions are altered to the extent that it will temporarily or permanently cease or become dysfunctional - Factor 4

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

Short term - <1 to 5 years - Factor 2

Medium term - 5 to 15 years - Factor 3

Long term	-	impact will only cease after the operational life of the activity, either because of natural process or by human intervention - Factor 4.
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 - Factor 4.

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

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

A Severity factor of six (6) equals a Severity Rating of Medium severity (Rating 3) as per table 16 below:

Table 4: Severity Ratings

RATING	FACTOR
Low Severity (Rating 2)	Calculated values 2 to 4
Medium Severity (Rating 3)	Calculated values 5 to 8
High Severity (Rating 4)	Calculated values 9 to 12
Very High severity (Rating 5)	Calculated values 13 to 16
Severity factors below 3 indicate no impact	

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

The significance rating should influence the development project as described below:

Low significance (calculated Significance Rating 4 to 6)

- Positive impact and negative impacts of low significance should have no influence on the proposed development project.

Medium significance (calculated Significance Rating >6 to 15)

- Positive impact:
Should weigh towards a decision to continue
- Negative impact:
Should be mitigated to a level where the impact would be of low significance before project can be approved.

High significance (calculated Significance Rating 16 and more)

- Positive impact:
Should weigh towards a decision to continue, should be enhanced in final design.
- Negative impact:
Should weigh towards a decision to terminate proposal, or mitigation should be performed to reduce significance to at least low significance rating.

Significance Assessment

Refer to **the tables below** for the Calculation and Result of the Significance Assessment of Impacts identified to be associated with the Proposed Development.

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

Proposal

Potential impacts:	Significance rating of impacts (positive or negative):	Proposed mitigation:	Significance rating of impacts after mitigation:	Risk of the impact and mitigation not being implemented
CONSTRUCTION PHASE				
Beneficial Impacts (all impacts are positive)				
Institutional Environment				
The project is in line with the Integrated Development Plan and Ekurhuleni Metropolitan Municipality's objective of establishing Motor Vehicle Registration Authority (MVRA) facilities and Drivers Licensing Testing Centres (DLTC) throughout the municipal area.	High	Mitigation not required	High	No risk due to positive impact
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	No risk due to positive impact
Social & Economic Environment				
Creation of Job opportunities.	High	The proposed development would create job opportunities during and after 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.	High	No risk due to positive impact
Increasing security in the area.	High	In the long term the proposed development will improve the security of the area. The monitored access point will improve the security of the proposed site and surrounding areas. The development will also ensure that the current vacant land not becoming a security threat with illegal squatters, vendors etc.	High	No risk due to positive impact
Reduction of areas that have potential for informal settlements and illegal dumping.	High	The proposed Licensing Hub development will prevent informal settlements and illegal dumping on the proposed development areas.	High	No risk due to positive impact
Services				
Upgrading of existing services and the construction of new services by the Local Municipality.	High	Sewer and water services will need to be upgraded in order to reach the site.	High	No risk due to positive impact
Optimum utilization of services.	High	The proposed development will ensure optimum usage of services as it will be able to connect to some of the existing	High	No risk due to positive impact

		municipal services running next to the site i.e. water.		
Adverse Impacts (all impacts are negative)				
Flora & Fauna				
The clearing of the site and the construction of the development will result in the eradication of the existing vegetation.	Medium	The proposed development area is already impacted by anthropogenic disturbance and invaded by weeds. Landscaping and re-vegetation of the open spaces within the development will be done and be of a high standard.	Low	No more natural vegetation present
Due to the fact that some services (temporary/permanent) will have to be installed the excavations for the proposed services will cause some areas to be exposed due to the loss of some of the existing vegetation coverage.	Medium	Areas where services are installed must be leveled, re-vegetated and rehabilitated as soon as possible to prevent any soil loss.	Low	Alien Invasive plant infestation
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 sensitive areas. This leaves visible scars and destroys habitat. 	Low	Uncontrolled accesses which may lead to illegal dumping and litter and vehicles may drive to the wetland areas.
Snaring and hunting of fauna species during the construction phase and the destruction of habitats can have a detrimental effect on some species.	Medium	<ul style="list-style-type: none"> ▪ Strict measures to prevent the hunting/snaring/scaring of fauna species should be implemented; ▪ The gathering of wood should not be allowed on site or on any adjacent properties; ▪ Any person that is caught hunting, snaring or damaging existing vegetation (earmarked to be retained) should be fined. The responsible contractor will also be fined and will have to replace the fauna or flora species as specified by the ECO at the time; ▪ The involved authorities should be informed of the activity, the fine and the replacement specifications; ▪ Caught animals should be relocated to conservation areas in the vicinity; ▪ During the construction phase, noise should be kept to a minimum to reduce the impact of the development on the fauna and the development should be done in phases to allow faunal species to temporarily migrate; and ▪ Where possible, work should be restricted to one area at a time. This will give the smaller fauna species a 	Low	If not mitigated, then the site may risk losing important faunal species

		chance to move to an undisturbed zone close to their natural territories.		
Less area will be available to retain existing vegetation and plant more indigenous, endemic vegetation to attract wildlife to the gardens of the development.	Low	Retain as much existing indigenous, endemic vegetation as possible on site and plant new indigenous, endemic trees and vegetation to attract wildlife to the gardens of the development.	Low	Less habitat for fauna species leading to a decrease in biodiversity
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 proposed development area is already impacted by anthropogenic disturbance and invaded by weeds. Landscaping and re-vegetation of the open spaces within the development will be done and be of a high standard. ▪ 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 1.5m 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	Bare soil areas will lead to erosion and possibly the establishment of invasive alien plant species.
Uncontrolled fires may cause damage and loss to vegetation and fauna in the area.	Medium	<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. The fire area should be an exposed area (no natural veld grass should be in close proximity of the fire area). ▪ Construction workers should only be allowed to smoke in the fire area and fires should preferably be prevented while strong winds are blowing. 	None	If not mitigated, fauna & flora species could be destroyed
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	The area could negatively impact on other indigenous species

Geology & Soils				
Soil erosion, siltation and gully formation.	Medium	<p>In order to prevent erosion, siltation and water pollution the following must be done:</p> <ul style="list-style-type: none"> ▪ The involved Engineer should compile a Storm Water Management Plan; ▪ Mitigation measures to prevent erosion, siltation and water pollution at the storm water discharge points should be provided by the involved storm water Engineer; ▪ The Storm Water Management Plan should be designed inherent to the following principles: <ul style="list-style-type: none"> ○ Retain inherent drainage systems in natural areas; ○ Simulate natural run-off and convergence of storm water; ○ Minimise unnatural drainage diversions; ○ Promote sheet flow of storm water run-off on open areas; ○ Conserve the in situ soil mantle as far as possible by ensuring that accelerated erosion caused by human activities are addressed and attended to; ○ Make use of energy dissipation solutions to storm water systems where necessary; and ○ Protect and line open storm water drainage channels, as an aid and secondary assistance to storm water management. ▪ The Storm Water Management Plan should be designed and implemented in a way that aims to ensure that post development runoff does not exceed pre-development values in: <ul style="list-style-type: none"> ○ Peak discharge for any given storm; ○ Total volume of runoff for any given storm; ○ Frequency of runoff; and ○ Pollutant and debris concentrations reaching water courses. <p>Construction 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.</p> <ul style="list-style-type: none"> ▪ Only the identified areas 	None	Erosion and siltation will occur and as a result affect the sensitive areas.

		<p>should be cleared of vegetation. This should be done in stages as construction works progress;</p> <ul style="list-style-type: none"> ▪ 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 channeled; ▪ 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>Incorrect construction could increase the possibility of doline and sinkhole formation due to the underlying dolomitic conditions of the area.</p>	<p>Medium</p>	<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 	<p>Low</p>	<p>Establishment of sinkholes in the area</p>

		<p>foundation design should also be adhered to as indicated within the dolomite stability investigation.</p> <ul style="list-style-type: none"> • 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. 		
<p>If not planned and managed correctly topsoil will be lost.</p>	<p>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 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 susceptible to erosion. Soils should be stored adjacent to the excavated trenches that are excavated to install services, and this 	<p>Low</p>	<p>Topsoil will be lost and erosion will occur. The topsoil might mix with subsoil and therefore loses valuable purpose. If excavations are not kept to a minimum the site poses a safety risk factor.</p>

		<p>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. 		
Possible slope failure if steep cut faces are considered.	Medium	The involved geotechnical engineer and civil engineer must supply mitigation measures and construction guidelines to prevent problems. These mitigation measures and guidelines should also refer to applicable safety legislation and policies.	None	Problems with possible flooding as a result of slope not approved by the Engineer.
Water seepage at shallow depth could cause instability of soil or water pollution.	Medium	The involved geotechnical engineer and civil engineer must supply mitigation measures and construction guidelines to prevent problems.	Low	Problems includes instability of soil and water pollution
Excavation is not kept dry.	Medium	Construction works and bulk earth works which involve the construction of excavations must be proposed for the drier season.	Low	Problems with storm water runoff, erosion, siltation, and water pollution
Climate				
Construction during the rainy season can cause delays and damage to the environment.	Low	<ul style="list-style-type: none"> Should the construction phase be scheduled for the wetter months, frequent rain could cause very wet conditions, which makes it extremely difficult to do excavations and to do the necessary rehabilitation works of disturbed areas. Wet soils are also more vulnerable to compaction. Wet conditions often cause delays to construction projects and the drainage of water away from the construction 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; 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 	None	Problems with storm water runoff, erosion, siltation and water pollution

		<p>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;</p> <ul style="list-style-type: none"> 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 3 – 4 daily during working days. 	None	More dust pollution will accumulate and affect the atmosphere and the surrounding properties
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	If no sufficient drainage, problems with erosion and siltation may occur
Vehicle maintenance.	Medium	<ul style="list-style-type: none"> 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	Groundwater pollution
Surface water flows will be altered during the construction and operational phases.	Medium	<ul style="list-style-type: none"> Due to the excavations that will take place (there will be trenches, topsoil and subsoil mounds 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 resorted 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	Problems with water runoff will occur
The possibility of surface and 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: <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.; THESE AREAS SHALL BE PREDETERMINED AND LOCATED IN AREAS THAT ARE ALREADY DISTURBED; 	Low	If the temporary waste facility is not placed next to the entrance, the site poses a risk of being polluted especially on the sensitive areas. Solvents such as paints and thinners, leakages of oil/ grease will pollute the site if not contained properly.

		<ul style="list-style-type: none"> o Workers will only be allowed to use temporary chemical toilets on the site; o No french drain systems may be installed on site at any time; o 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. ▪ 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. 		
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 and groundwater quality and quantities.	Medium	<ul style="list-style-type: none"> ▪ Storm water throughout 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 of erosion; ▪ 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 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; and ▪ Permeable paving should also be used if possible. 	Low	Problems with water runoff, erosion, siltation etc.
Excavated materials that are stockpiled in wrong areas can interfere with the natural drainage.	Medium	An area must be allocated for stockpiling of topsoil before any construction takes place on the application site. The stockpiles	Low	If the soil stockpiles are wrongly positioned & not covered with

		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.		sediment fence, it will erode and siltation will occur
Cultural and Archaeology				
Occurrence of cultural historical assets on the proposed development site.	Medium	If archeological sites are exposed during construction work, it should immediately be reported to a museum, preferably an archaeologist is available so that an investigation and evaluation of the site can be made.	None	If historical artefacts are not reported, the sites' archeological importance will be lost
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	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	Noise pollution negatively impacting on the adjacent neighbours
Air pollution				
Nuisance to neighbours in terms of dust generation due to construction during the dry and windy season.	Medium	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	Dust pollution negatively impacting on surrounding properties
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	Traffic congestion and noise pollution.
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	Traffic congestion and noise pollution. If no warning signs it will lead to accident.
Damage to roads.	Medium	Specific roads must be allocated for the use by construction vehicles and photos must be taken prior to construction in order to determine if any damage has been done.	Low	Roads will be damaged by construction vehicles.
Safety and Security				
During the construction phase safety and security problems (especially for the surrounding	Medium	Construction must be completed in as short time as possible. No construction	Low	If not mitigated, workers might sleep on site and that will

residents) are likely to occur.		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 day's work. A security guard should be appointed on site to prevent any security problems.		pose a safety risk
Any proposed development offers the potential for unplanned informal settlement (squatting) before construction commences or after construction.	Medium	No construction worker, friend or relative may settle/ reside on site. Only security may be present on site after construction hours.	Low	If not mitigated, will encourage informal settlement
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 within 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	If there are no warning signs and barriers, then it might lead to people/ animals (faunal spp.) being harmed, even leading to death
Visual Impact				
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.	Low	It will visually have a negative impact
Stockpile areas for construction materials.	Medium	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	It will visually have a negative 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	Low	If not mitigated it destroy the flora and faunal species

		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.		
The construction vehicles, the site camp and other construction related facilities will have a negative visual impact during the construction phase.	Medium	Before any construction commence on site, an area on site must be demarcated for a site camp.	Low	It will visually have a negative impact & also litter will be blown to the adjacent properties
The proposed development will have some visual impact on the surrounding areas.	Medium	The proposed development will be seen from a distance and, therefore, the roofs should not reflect the sun or be covered with roofing materials that have bright colours; <ul style="list-style-type: none"> ▪ The colour scheme should be taken from the palette of colours in the natural surroundings; ▪ It is proposed that as many additional indigenous (preferably endemic) trees are planted in the early stages of the development to ensure a quick and established feeling; trees should be used in the landscaping around the structures to soften the hard structures. 	Low	This will lead to a development not visually the same as the surrounding areas
Impact on the Sense of Place.	Medium	The development of the proposed buildings could have a negative impact on the Sense of Place of the surrounding area if not managed and constructed according to high standards. It is important that mitigation measures be implemented to ensure that the proposed development does not contribute additionally to the existing noise impact in the area. Further, double storey buildings should be constructed that all the main views be directed away from the surrounding developments. The building should also be constructed to fit in with the surrounding area and materials. This will allow the building to be more easily being accepted visually. Landscaping should be of a high standard. To ensure the high standard, it is proposed that a Landscape Development Plan be submitted to the local authority prior to any construction activities for approval. The buildings could, if managed and constructed well, promote the "Sense of Place" of the surrounding area.	Low	This will lead to a development not visually the same as the surrounding areas

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	If not mitigated, waste will be uncontrollably all over the site and possibly blown to the streets and adjacent properties. It will further create bad odors. If waste is not regularly removed from site then it will accumulate and pollute the sensitive areas.
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	Negative visual impact due to rubble/ litter. Possible pollution into sensitive areas.
Light Pollution				
Light pollution during the night, caused by unsympathetic lighting design.	Low	Lights that direct light beams downwards with low glaring qualities should be used for landscaping and streetlights. The lights should not be directed to glare in ongoing traffic or into the properties of surrounding residents.	None	Lights shining towards oncoming traffic
Institutional				
Compatibility with surrounding land uses.	Low	The proposed development area is surrounded by	None	A development not in line with

		agricultural holdings. The proposed development can therefore be accommodated. The project is in line with the Integrated Development Plan and Ekurhuleni Metropolitan Municipality's objective of establishing Motor Vehicle Registration Authority (MVRA) facilities and Drivers Licensing Testing Centres (DLTC) throughout the municipal area.		surrounding land uses.
OPERATIONAL PHASE				
Beneficial Impacts (all impacts are positive)				
Social & Economic Environment				
Creation of temporary and permanent jobs.	High	During the operational phase numerous permanent jobs will be created on various levels (skilled, semi-skilled, officials, office staff, cashiers, maintenance, etc.).	High	No risk due to positive impact
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	No risk due to positive impact
Reduction of areas that have potential for informal settlements and illegal dumping.	High	The proposed licensing hub development will prevent informal settlements and illegal dumping on the proposed development area.	High	No risk due to positive impact
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	No risk due to positive impact
Adverse Impacts (all impacts are negative)				
Fauna & Flora				
Loss of fauna and flora species and decrease in biodiversity	Medium	The proposed layout is on a site with a number of bare soil patches and a large number alien and invasive plant species. It is recommended that the landscaping for the proposed development should only include indigenous vegetation in order to attract insects and birds to the site, leading to an increase in biodiversity.	Low	Loss of fauna and flora and decrease in biodiversity
Uncontrolled activities and access to sensitive areas in the vicinity.	Medium	No vehicles must be allowed to move in or across sensitive areas. Vehicles will only be allowed on the site and not surrounding areas. This leaves visible scars and destroys habitat.	Low	Litter will occur. Biodiversity in the sensitive areas will be severely affected.
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 	Low	Increase in storm water runoff as a result of poor surface levels. Siltation and erosion will occur.

		<p>sufficiently to address the problem or erosion; and</p> <ul style="list-style-type: none"> ▪ 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. 		
Leaking pipes could cause ground water pollution risks.	Low	Pipes should be inspected on a regular basis.	None	Groundwater pollution
Pollution				
<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>	Low	<p>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>	None	Obstruction the passerby and the motorists through glare
The generation of Air pollution -	Low	<p>The proposed development is located within an area that is characterized by 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>	Low	Insignificant
<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>	Low	<p>As mentioned previously, one has to note that the study area is wedged between roads and railways 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</p>	Low	Some increase in noise due to increased traffic

		located within an area that already exceed the acceptable noise levels.		
Roads & Traffic				
Additional vehicle traffic could have a detrimental impact on the existing roads with in the vicinity of proposed development.	Medium	If required, the road network which surrounds the proposed development will have to be correctly maintained/ upgraded in order to support additional traffic generated.	Low	Traffic will increase
Visual Impact				
The proposed development will have some visual impact on the surrounding areas.	Medium	<ul style="list-style-type: none"> ▪ Due to the development control measures and the fact that licensing buildings 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 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. 	Low	If not mitigated the buildings will be aesthetically unpleasant
Impact on the sense of place.	Low	<p>If not managed correctly, the proposed development will have a negative impact on the sense of place of the surrounding environment (the agricultural uses), 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>	None	If not mitigated, the buildings will fade in colour and be unsuccessful in achieving a sense of a place. Landscaped areas will be overgrown with weeds species if not maintained.

		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.		
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Alternative 1

(REPEAT THIS TABLE FOR EACH ALTERNATIVE)

Potential impacts:	Significance rating of impacts (positive or negative):	Proposed mitigation:	Significance rating of impacts after mitigation:	Risk of the impact and mitigation not being implemented
CONSTRUCTION PHASE				
Beneficial Impacts (all impacts are positive)				
Institutional Environment				
The project is in line with the Integrated Development Plan and Ekurhuleni Metropolitan Municipality's objective of establishing Motor Vehicle Registration Authority (MVRA) facilities and Drivers Licensing Testing Centres (DLTC) throughout the municipal area.	High	Mitigation not required	High	No risk due to positive impact
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	No risk due to positive impact
Social & Economic Environment				
Creation of Job opportunities.	High	The proposed development would create job opportunities during and after 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.	High	No risk due to positive impact
Increasing security in the area.	High	In the long term the proposed development will improve the security of the area. The monitored access point will improve the security of the proposed site and surrounding areas. The	High	No risk due to positive impact

		development will also ensure that the current vacant land not becoming a security threat with illegal squatters, vendors etc.		
Reduction of areas that have potential for informal settlements and illegal dumping.	High	The proposed Licensing Hub development will prevent informal settlements and illegal dumping on the proposed development areas.	High	No risk due to positive impact
Services				
Upgrading of existing services and the construction of new services by the Local Municipality.	High	Sewer and water services will need to be upgraded in order to reach the site.	High	No risk due to positive impact
Optimum utilization of services.	High	The proposed development will ensure optimum usage of services as it will be able to connect to some of the existing municipal services running next to the site i.e. water.	High	No risk due to positive impact
Adverse Impacts (all impacts are negative)				
Flora & Fauna				
The clearing of the site and the construction of the development will result in the eradication of the existing vegetation.	Medium	The proposed development area is already impacted by anthropogenic disturbance and invaded by weeds. Landscaping and re-vegetation of the open spaces within the development will be done and be of a high standard.	Low	Weeds can re-establish and valuable topsoil can be lost
Due to the fact that some services (temporary/permanent) will have to be installed the excavations for the proposed services will cause some areas to be exposed due to the loss of some of the existing vegetation coverage.	Medium	Areas where services are installed must be leveled, re-vegetated and rehabilitated as soon as possible to prevent any soil loss.	Low	If not mitigated, erosion will occur.
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 sensitive areas. This leaves visible scars and destroys habitat. 	Low	Uncontrolled accesses which may lead to illegal dumping and litter and vehicles may drive to the wetland areas.
Snaring and hunting of fauna species during the construction phase and the destruction of habitats can have a detrimental effect on some species.	Medium	<ul style="list-style-type: none"> ▪ Strict measures to prevent the hunting/snaring/scaring of fauna species should be implemented; ▪ The gathering of wood should not be allowed on site or on any adjacent properties; ▪ Any person that is caught hunting, snaring or damaging existing vegetation (earmarked 	Low	If not mitigated, then the wetland ecology and the area may risk losing important faunal species

		<p>to be retained) should be fined. The responsible contractor will also be fined and will have to replace the fauna or flora species as specified by the ECO at the time;</p> <ul style="list-style-type: none"> ▪ The involved authorities should be informed of the activity, the fine and the replacement specifications; ▪ Caught animals should be relocated to conservation areas in the vicinity; ▪ During the construction phase, noise should be kept to a minimum to reduce the impact of the development on the fauna and the development should be done in phases to allow faunal species to temporarily migrate; and ▪ Where possible, work should be restricted to one area at a time. This will give the smaller fauna species a chance to move to an undisturbed zone close to their natural territories. 		
Less area will be available to retain existing vegetation and plant more indigenous, endemic vegetation to attract wildlife to the gardens of the development.	Low	Retain as much existing indigenous, endemic vegetation as possible on site and plant new indigenous, endemic trees and vegetation to attract wildlife to the gardens of the development.	Low	Decrease in biodiversity
<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>	Medium	<ul style="list-style-type: none"> ▪ The proposed development area is already impacted by anthropogenic disturbance and invaded by weeds. Landscaping and re-vegetation of the open spaces within the development will be done and be of a high standard. ▪ 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. 	Low	Erosion and siltation can occur due to the bare soil areas

		<ul style="list-style-type: none"> Strip topsoil at start of works and store in stockpiles no more than 1.5m 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. 		
Uncontrolled fires may cause damage and loss to vegetation and fauna in the area.	Medium	<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. The fire area should be an exposed area (no natural veld grass should be in close proximity of the fire area). Construction workers should only be allowed to smoke in the fire area and fires should preferably be prevented while strong winds are blowing. 	None	If not mitigated, fauna & flora species could be destroyed
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	The area could negatively impact on other indigenous species
Geology & Soils				
Soil erosion, siltation and gully formation.	Medium	<p>In order to prevent erosion, siltation and water pollution the following must be done:</p> <ul style="list-style-type: none"> The involved engineer should compile a Storm Water Management Plan; Mitigation measures to prevent erosion, siltation and water pollution at the storm water discharge points should be provided by the involved storm water engineer; The Storm Water Management Plan should be designed inherent to the following principles: 	None	Erosion and siltation will occur and as a result affect the sensitive areas

		<ul style="list-style-type: none"> o Retain inherent drainage systems in natural areas; o Simulate natural run-off and convergence of storm water; o Minimise unnatural drainage diversions; o Promote sheet flow of storm water run-off on open areas; o Conserve the in situ soil mantle as far as possible by ensuring that accelerated erosion caused by human activities are addressed and attended to; o Make use of energy dissipation solutions to storm water systems where necessary; and o Protect and line open storm water drainage channels, as an aid and secondary assistance to storm water management. <ul style="list-style-type: none"> ▪ The Storm Water Management Plan should be designed and implemented in a way that aims to ensure that post development runoff does not exceed pre-development values in: <ul style="list-style-type: none"> o Peak discharge for any given storm; o Total volume of runoff for any given storm; o Frequency of runoff; and o Pollutant and debris concentrations reaching water courses. <p>Construction 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.</p> <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 		
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		<p>assist with the prevention of water pollution, erosion and siltation;</p> <ul style="list-style-type: none"> ▪ 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, geo-textiles and other means of erosion control should be implemented during the construction phase on large exposed areas and where storm water are temporarily channeled; ▪ 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>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 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 	<p>Low</p>	<p>Topsoil will be lost and erosion will occur. The topsoil might mix with subsoil and therefore loses valuable purpose. If excavations are not kept to a minimum the site poses a safety risk factor.</p>

		<p>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 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; ▪ 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. 		
<p>Incorrect construction could increase the possibility of doline and sinkhole formation due to the underlying dolomitic conditions of the area.</p>	<p>Medium</p>	<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; 	<p>Low</p>	<p>Establishment of sinkholes in the area</p>

		<p>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;</p> <ul style="list-style-type: none"> • 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. 		
Possible slope failure if steep cut faces are considered.	Medium	The involved geotechnical engineer and civil engineer must supply mitigation measures and construction guidelines to prevent problems. These mitigation measures and guidelines should also refer to applicable safety legislation and policies.	None	Problems with possible flooding as a result of slope not approved by the Engineer
Water seepage at shallow depth could cause instability of soil or water pollution.	Medium	The involved geotechnical engineer and civil engineer must supply mitigation measures and construction guidelines to prevent problems.	Low	Problems includes soil and ground water pollution
Excavation is not kept dry.	Medium	Construction works and bulk earth works which involve the construction of excavations must be proposed for the drier season.	Low	Problems with storm water runoff, erosion, siltation, and water pollution
Loss of vegetation due to the site being a distance from existing road.	Medium	Only a single road/ pathway should be used for all construction related vehicles to prevent the	Low	Natural vegetation will be lost

		unnecessary loss of vegetation and topsoil.		
Climate				
Construction during the rainy season can cause delays and damage to the environment.	Low	<ul style="list-style-type: none"> ▪ Should the construction phase be scheduled for the wetter months, frequent rain could cause very wet conditions, which makes it extremely difficult to do excavations and to do the necessary rehabilitation works of disturbed areas. Wet soils are also more vulnerable to compaction. Wet conditions often cause delays to construction projects and the drainage of water away from the construction 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; ▪ 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	Problems with storm water runoff, erosion, siltation, and water pollution
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 	None	More dust pollution will accumulate and affect the atmosphere and the surrounding properties

		damped down at least 3 – 4 daily during working days.		
Hydrology & groundwater				
The use of insufficient drainage systems.	Medium	A Storm Water Management Plan should be designed by an Engineer to ensure sufficient drainage on site.	None	If there is no sufficient drainage, problems with erosion and siltation may occur
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	Groundwater Pollution
Surface water flows will be altered during the construction and operational phases.	Medium	<ul style="list-style-type: none"> ▪ Due to the excavations that will take place (there will be trenches, topsoil and subsoil mounds 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 resorted 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	Problems with water runoff will occur
The possibility of surface and 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: <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.; ○ These areas shall be predetermined and located in areas that are already disturbed; ○ 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 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 	Low	If the temporary waste facility is not placed next to the entrance, the site poses a risk of being polluted especially on the sensitive areas. Solvents such as paints and thinners, leakages of oil/ grease will pollute the site if not contained properly.

		<p>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. 		
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 and groundwater quality and quantities.	Medium	<ul style="list-style-type: none"> Storm water throughout 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 of erosion; 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 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; and Permeable paving should also be used if possible. 	Low	Problems with water runoff, erosion, siltation etc.
Excavated materials that are stockpiled in wrong areas can interfere with the natural drainage.	Medium	An area must be allocated for stockpiling of topsoil before any construction takes place on the	Low	If the soil stockpiles are wrongly positioned & not covered with

		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.		sediment fence, it will erode and siltation will occur
Cultural and Archaeology				
Occurrence of cultural historical assets on the proposed development site.	Medium	If archeological sites are exposed during construction work, it should immediately be reported to a museum, preferably an archaeologist is available so that an investigation and evaluation of the site can be made.	None	If historical artefacts are not reported, the sites' archeological importance will be lost
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	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	Noise pollution negatively impacting on the adjacent neighbours
Air pollution				
Nuisance to neighbours in terms of dust generation due to construction during the dry and windy season.	Medium	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	Dust pollution negatively impacting on surrounding properties
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	Traffic congestion and noise pollution
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	Traffic congestion and noise pollution. If no warning signs it will lead to accident.

Damage to roads.	Medium	Specific roads must be allocated for the use by construction vehicles and photos must be taken prior to construction in order to determine if any damage has been done.	Low	Roads will be damaged by construction vehicles
Safety and Security				
During the construction phase safety and security problems (especially for the surrounding residents) are likely to occur.	Medium	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 day's work. A security guard should be appointed on site to prevent any security problems.	Low	If not mitigated, workers might sleep on site and that will pose a safety risk.
Any proposed development offers the potential for unplanned informal settlement (squatting) before construction commences or after construction.	Medium	No construction worker, friend or relative may settle/ reside on site. Only security may be present on site after construction hours.	Low	If not mitigated, will encourage informal settlement
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 within 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	If there are no warning signs and barriers, then it might lead to people/ animals (faunal spp.) being harmed, even leading to death

Visual Impact				
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.	Low	It will visually have a negative impact
Stockpile areas for construction materials.	Medium	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	It will visually have a negative 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 construction workers. This allocated area must be far from any structures and no fires may be lit except in the designated location.	Low	If not mitigated it might destroy the flora and faunal species
The construction vehicles, the site camp and other construction related facilities will have a negative visual impact during the construction phase.	Medium	Before any construction commence on site, an area on site must be demarcated for a site camp.	Low	It will visually have a negative impact & also litter will be blown to the adjacent properties
The proposed development will have some visual impact on the surrounding areas.	Medium	The proposed development will be seen from a distance and, therefore, the roofs should not reflect the sun or be covered with roofing materials that have bright colours; <ul style="list-style-type: none"> ▪ The colour scheme should be taken from the palette of colours in the natural surroundings; ▪ It is proposed that as many additional indigenous (preferably endemic) trees are planted in the early stages of the development to ensure a quick and established feeling; trees should be used in the landscaping around the structures to soften the hard structures. 	Low	A development that will not be the same as surrounding areas.
Impact on the Sense of Place.	Medium	The development of licensing hub buildings could have a negative impact on the Sense of Place of the surrounding area if not managed and	Medium	A development that will not be the same as surrounding areas.

		constructed according to high standards. It is important that mitigation measures be implemented to ensure that the proposed development does not contribute additionally to the existing noise impact in the area. The building should also be constructed to fit in with the surrounding area and materials. This will allow the building to be more easily being accepted visually. Landscaping should be of a high standard. To ensure the high standard, it is proposed that a Landscape Development Plan be submitted to the local authority prior to any construction activities for approval. The buildings could, if managed and constructed well, promote the "Sense of Place" of the surrounding area.		
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	If not mitigated, waste will be uncontrollably all over site and possibly blown to the streets and adjacent properties. It will further create bad odors. If waste is not regularly removed from site then it will accumulate and pollute the sensitive areas.
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; 	Low	Negative visual impact due to rubble/ litter. Possible pollution into sensitive areas.

		<ul style="list-style-type: none"> 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. 		
Light Pollution				
Light pollution during the night, caused by unsympathetic lighting design.	Low	Lights that direct light beams downwards with low glaring qualities should be used for landscaping and streetlights. The lights should not be directed to glare in ongoing traffic or into the properties of surrounding residents.	None	Lights shining in oncoming traffic and lightening the surrounding area.
Institutional				
Compatibility with surrounding land uses.	Low	The proposed development area is surrounded by agricultural holdings. The proposed development can therefore be accommodated. The project is in line with the Integrated Development Plan and Ekurhuleni Metropolitan Municipality's objective of establishing Motor Vehicle Registration Authority (MVRA) facilities and Drivers Licensing Testing Centres (DLTC) throughout the municipal area.	None	The development not being compatible with surrounding land uses.
OPERATIONAL PHASE				
Beneficial Impacts (all impacts are positive)				
Social & Economic Environment				
Creation of temporary and permanent jobs.	High	During the operational phase numerous permanent jobs will be created on various levels (skilled, semi-skilled, officials, office staff, cashiers, maintenance, etc.).	High	No risk due to positive impact
Increasing security in the area.	High	In the long term the	High	No risk due to

		proposed development will improve the security of the area. The monitored access points will improve the security of the proposed site and surrounding areas.		positive impact
Reduction of areas that have potential for informal settlements and illegal dumping.	Medium	The proposed Licensing Hub development will prevent informal settlements and illegal dumping on the proposed development area.	Medium	No risk due to positive impact
Visibility and accessibility of study area.	Low	The visibility and accessibility of the study area contributes to the study area's ideal suitability for the proposed land use.	Low	No risk due to positive impact
Adverse Impacts (all impacts are negative)				
Fauna & Flora				
Loss of fauna and flora species and decrease in biodiversity	Medium	The alternative layout is on a site where previous agricultural activities took place. It is recommended that the landscaping for the proposed development should only include indigenous vegetation in order to attract insects and birds to the site, leading to an increase in biodiversity.	Low	Loss of fauna and flora and decrease in biodiversity
Uncontrolled activities and access to sensitive areas in the vicinity.	Medium	No vehicles must be allowed to move in or across sensitive areas. Vehicles will only be allowed on the site and not surrounding areas. This leaves visible scars and destroys habitat.	Low	Litter will occur. Biodiversity in the sensitive areas will be severely affected.
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 stormwater in a natural manner. This will further provide an opportunity for water to infiltrate the soil, break the energy of stormwater and keep 	Low	Increase in storm water runoff as a result of poor surface levels. Siltation and erosion will occur.

		the water on site for longer.		
Leaking pipes could cause ground water pollution risks.	Low	Pipes should be inspected on a regular basis.	None	Groundwater pollution
Pollution				
Light pollution The proposed development could cause a significant level of light pollution as the light industrial development will need some security lighting.	Low	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.	None	Obstruction the passerby and the motorists through glare
The generation of Air pollution -	Low	The proposed development is located within an area that is characterized by 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.	Low	Insignificant
The generation of noise pollution - Additional traffic generated by the proposed development will have some impact on the ambient noise levels within the area.	Low	As mentioned previously, one has to note that the study area is wedged between roads and railways 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.	Low	Increase in noise pollution
Roads & Traffic				
Additional vehicle traffic could	Medium	If required, the road	Medium	Traffic will increase

have a detrimental impact on the existing roads with in the vicinity of proposed development.		network which surrounds the proposed development will have to be correctly maintained/ upgraded in order to support additional traffic generated.		
Visual Impact				
The proposed development will have some visual impact on the surrounding areas.	Medium	<ul style="list-style-type: none"> ▪ Due to the development control measures and the fact that licensing buildings 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 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. 	Low	If not mitigated the buildings will be aesthetically unpleasant
Impact on the sense of place.	Medium	<p>If not managed correctly, the proposed development will have a negative impact on the sense of place of the surrounding environment (the agricultural uses), 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</p>	Low	If not mitigated, the buildings will fade in colour and be unsuccessful in achieving a sense of place. Landscaped areas will be overgrown with weeds species if not maintained.

		<p>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>		
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Alternative 2

Potential impacts:	Significance rating of impacts (positive or negative):	Proposed mitigation:	Significance rating of impacts after mitigation:	Risk of the impact and mitigation not being implemented
CONSTRUCTION PHASE				
Beneficial Impacts (all impacts are positive)				
Institutional Environment				
The project is in line with the Integrated Development Plan and Ekurhuleni Metropolitan Municipality's objective of establishing Motor Vehicle Registration Authority (MVRA) facilities and Drivers Licensing Testing Centres (DLTC) throughout the municipal area.	High	Mitigation not required	High	No risk due to positive impact
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	No risk due to positive impact
Social & Economic Environment				
Creation of Job opportunities.	High	The proposed development would create job opportunities during and after the construction phase. Should the local community not benefit from these opportunities, it could lead to an influx of people from other areas.	High	No risk due to positive impact

		Only employing people from the local community could mitigate the potential adverse impact.		
Increasing security in the area.	High	In the long term the proposed development will improve the security of the area. The monitored access point will improve the security of the proposed site and surrounding areas. The development will also ensure that the current vacant land not becoming a security threat with illegal squatters, vendors etc.	High	No risk due to positive impact
Reduction of areas that have potential for informal settlements and illegal dumping.	High	The proposed Licensing Hub development will prevent informal settlements and illegal dumping on the proposed development areas.	High	No risk due to positive impact
Services				
Upgrading of existing services and the construction of new services by the Local Municipality.	High	Sewer and water services will need to be upgraded in order to reach the site.	High	No risk due to positive impact
Optimum utilization of services.	High	The proposed development will ensure optimum usage of services as it will be able to connect to some of the existing municipal services running next to the site i.e. water.	High	No risk due to positive impact
Adverse Impacts (all impacts are negative)				
Flora & Fauna				
The clearing of the site and the construction of the development will result in the eradication of the existing vegetation.	Medium	The proposed development area is already impacted by anthropogenic disturbance and invaded by weeds. Landscaping and re-vegetation of the open spaces within the development will be done and be of a high standard.	Low	Weeds can re-establish and valuable topsoil can be lost
Due to the fact that some services (temporary/permanent) will have to be installed the excavations for the proposed services will cause some areas to be exposed due to the loss of some of the existing vegetation coverage.	Medium	Areas where services are installed must be leveled, re-vegetated and rehabilitated as soon as possible to prevent any soil loss.	Low	If not mitigated, erosion will occur
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 sensitive areas. This leaves visible scars and destroys habitat. 	Low	Uncontrolled accesses which may lead to illegal dumping and litter and vehicles may drive to the wetland areas
Snaring and hunting of fauna	Medium	<ul style="list-style-type: none"> ▪ Strict measures to 	Low	If not mitigated,

<p>species during the construction phase and the destruction of habitats can have a detrimental effect on some species.</p>		<p>prevent the hunting/snaring/scaring of fauna species should be implemented;</p> <ul style="list-style-type: none"> ▪ The gathering of wood should not be allowed on site or on any adjacent properties; ▪ Any person that is caught hunting, snaring or damaging existing vegetation (earmarked to be retained) should be fined. The responsible contractor will also be fined and will have to replace the fauna or flora species as specified by the ECO at the time; ▪ The involved authorities should be informed of the activity, the fine and the replacement specifications; ▪ Caught animals should be relocated to conservation areas in the vicinity; ▪ During the construction phase, noise should be kept to a minimum to reduce the impact of the development on the fauna and the development should be done in phases to allow faunal species to temporarily migrate; and ▪ Where possible, work should be restricted to one area at a time. This will give the smaller fauna species a chance to move to an undisturbed zone close to their natural territories. 		<p>then the wetland ecology and the area may risk losing important faunal species</p>
<p>Less area will be available to retain existing vegetation and plant more indigenous, endemic vegetation to attract wildlife to the gardens of the development.</p>	Low	<p>Retain as much existing indigenous, endemic vegetation as possible on site and plant new indigenous, endemic trees and vegetation to attract wildlife to the gardens of the development.</p>	Low	<p>Decrease in biodiversity</p>
<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</p>	Medium	<ul style="list-style-type: none"> ▪ The proposed development area is already impacted by anthropogenic disturbance and invaded by weeds. Landscaping and re-vegetation of the open spaces within the development will be done and be of a high standard. ▪ The project should be 	Low	<p>Erosion and siltation can occur in areas with bare soil</p>

opportunity for extensive erosion on site.		<p>planned to ensure that only specific areas are cleared as the project progress to ensure that large areas are not exposed over long periods.</p> <ul style="list-style-type: none"> ▪ 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 1.5m 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. 		
Uncontrolled fires may cause damage and loss to vegetation and fauna in the area.	Medium	<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. The fire area should be an exposed area (no natural veld grass should be in close proximity of the fire area). ▪ Construction workers should only be allowed to smoke in the fire area and fires should preferably be prevented while strong winds are blowing. 	None	If not mitigated, fauna & flora species could be destroyed
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	The area could negatively impact on other indigenous species
Geology & Soils				
Soil erosion, siltation and gully formation.	Medium	<p>In order to prevent erosion, siltation and water pollution the following must be done:</p> <ul style="list-style-type: none"> ▪ The involved engineer should compile a storm water management plan; ▪ Mitigation measures to 	None	Erosion and siltation will occur and as a result affect the sensitive areas

		<p>prevent erosion, siltation and water pollution at the storm water discharge points should be provided by the involved storm water engineer;</p> <ul style="list-style-type: none"> ▪ The Storm Water Management Plan should be designed inherent to the following principles: <ul style="list-style-type: none"> ○ Retain inherent drainage systems in natural areas; ○ Simulate natural run-off and convergence of storm water; ○ Minimise unnatural drainage diversions; ○ Promote sheet flow of storm water run-off on open areas; ○ Conserve the in situ soil mantle as far as possible by ensuring that accelerated erosion caused by human activities are addressed and attended to; ○ Make use of energy dissipation solutions to storm water systems where necessary; and ○ Protect and line open storm water drainage channels, as an aid and secondary assistance to storm water management. ▪ The Storm Water Management Plan should be designed and implemented in a way that aims to ensure that post development runoff does not exceed pre-development values in: <ul style="list-style-type: none"> ○ Peak discharge for any given storm; ○ Total volume of runoff for any given storm; ○ Frequency of runoff; and ○ Pollutant and debris concentrations reaching water courses. <p>Construction 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.</p>		
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<p>If not planned and managed correctly topsoil will be lost.</p>	<p>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 activities take place. The areas where soil will be 	<p>Low</p>	<p>Topsoil will be lost and erosion will occur. The topsoil might mix with subsoil and therefore loses valuable purpose. If excavations are not kept to a minimum the site poses a safety risk factor.</p>

		<p>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;</p> <ul style="list-style-type: none"> ▪ 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 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; ▪ 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. 		
<p>Incorrect construction could increase the possibility of doline and sinkhole formation due to the underlying dolomitic conditions of the area.</p>	<p>Medium</p>	<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 	<p>Low</p>	<p>Establishment of sinkholes in the area</p>

		<p>away from buildings. Damming and ponding of water should be prevented;</p> <ul style="list-style-type: none"> • 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. 		
Possible slope failure if steep cut faces are considered.	Medium	The involved geotechnical engineer and civil engineer must supply mitigation measures and construction guidelines to prevent problems. These mitigation measures and guidelines should also refer to applicable safety legislation and policies.	None	Problems with possible flooding as a result of slope not approved by the Engineer
Water seepage at shallow depth could cause instability of soil or water pollution.	Medium	The involved geotechnical engineer and civil engineer must supply mitigation measures and	Low	Problems includes soil and ground water pollution

		construction guidelines to prevent problems.		
Excavation is not kept dry.	Medium	Construction works and bulk earth works which involve the construction of excavations must be proposed for the drier season.	Low	Problems with storm water runoff, erosion, siltation, and water pollution
Loss of vegetation due to the site being a distance from existing road.	Medium	Only a single road/pathway should be used for all construction related vehicles to prevent the unnecessary loss of vegetation and topsoil.	Low	Loss of some natural vegetation
Climate				
Construction during the rainy season can cause delays and damage to the environment.	Low	<ul style="list-style-type: none"> ▪ Should the construction phase be scheduled for the wetter months, frequent rain could cause very wet conditions, which makes it extremely difficult to do excavations and to do the necessary rehabilitation works of disturbed areas. Wet soils are also more vulnerable to compaction. Wet conditions often cause delays to construction projects and the drainage of water away from the construction 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; ▪ 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	Problems with storm water runoff, erosion, siltation, and water pollution

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 3 – 4 daily during working days. 	None	More dust pollution will accumulate and affect the atmosphere and the surrounding properties
Hydrology & groundwater				
The use of insufficient drainage systems.	Medium	A Storm Water Management Plan should be designed by an engineer to ensure sufficient drainage on site.	None	If there is no sufficient drainage, problems with erosion and siltation may occur
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	Groundwater pollution
Surface water flows will be altered during the construction and operational phases.	Medium	<ul style="list-style-type: none"> Due to the excavations that will take place (there will be trenches, topsoil and subsoil mounds 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 resorted 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	Problems with water runoff will occur
The possibility of surface and 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: <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.; These areas shall be predetermined and located in areas that are already disturbed; Workers will only be allowed to use temporary chemical toilets on the site; 	Low	If the temporary waste facility is not placed next to the entrance, the site poses a risk of being polluted especially on the sensitive areas. Solvents such as paints and thinners, leakages of oil/ grease will pollute the site if not contained properly.

		<ul style="list-style-type: none"> o No french drain systems may be installed on site at any time; o 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. ▪ 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. 		
<p>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 and groundwater quality and quantities.</p>	<p>Medium</p>	<ul style="list-style-type: none"> ▪ Storm water throughout 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 of erosion; ▪ 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 in storm water in a natural manner. This will further provide an opportunity for water to 	<p>Low</p>	<p>Problems with water runoff, erosion, siltation etc.</p>

		infiltrate the soil, break the energy of storm water and keep the water on site for longer; and <ul style="list-style-type: none"> Permeable paving should also be used if possible. 		
Excavated materials that are stockpiled in wrong areas can interfere with the natural drainage.	Medium	An area must be allocated for stockpiling of topsoil before any construction takes 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	If the soil stockpiles are wrongly positioned & not covered with sediment fence, it will erode and siltation will occur
Cultural and Archaeology				
Occurrence of cultural historical assets on the proposed development site.	Medium	If archeological sites are exposed during construction work, it should immediately be reported to a museum, preferably an archaeologist is available so that an investigation and evaluation of the site can be made.	None	If historical artefacts are not reported, the sites' archeological importance will be lost
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	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	Noise pollution negatively impacting on the adjacent neighbours
Air pollution				
Nuisance to neighbours in terms of dust generation due to construction during the dry and windy season.	Medium	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	Dust pollution negatively impacting on surrounding properties
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	Traffic congestion and noise pollution
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 	Low	Traffic congestion and noise pollution. If no warning signs it will lead to accident.

		<p>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	Specific roads must be allocated for the use by construction vehicles and photos must be taken prior to construction in order to determine if any damage has been done.	Low	Roads will be damaged by construction vehicles
Safety and Security				
During the construction phase safety and security problems (especially for the surrounding residents) are likely to occur.	Medium	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 day's work. A security guard should be appointed on site to prevent any security problems.	Low	If not mitigated, workers might sleep on site and that will pose a safety risk.
Any proposed development offers the potential for unplanned informal settlement (squatting) before construction commences or after construction.	Medium	No construction worker, friend or relative may settle/ reside on site. Only security may be present on site after construction hours.	Low	If not mitigated, will encourage informal settlement
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 within 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 	None	If there are no warning signs and barriers, then it might lead to people/ animals (faunal spp.) being harmed, even leading to death.

		<p>will be allowed to sleep on the construction site (weekends included), in the public open space or on adjacent properties; and</p> <ul style="list-style-type: none"> No worker should be allowed to enter adjacent private properties without written consent of the legal owners to the contractor. 		
Visual Impact				
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.	Low	It will visually have a negative impact
Stockpile areas for construction materials.	Medium	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	It will visually have a negative 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 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	If not mitigated it might destroy the flora and faunal species
The construction vehicles, the site camp and other construction related facilities will have a negative visual impact during the construction phase.	Medium	Before any construction commence on site, an area on site must be demarcated for a site camp.	Low	It will visually have a negative impact & also litter will be blown to the adjacent properties
The proposed development will have some visual impact on the surrounding areas.	Medium	<p>The proposed development will be seen from a distance and, therefore, the roofs should not reflect the sun or be covered with roofing materials that have bright colours;</p> <ul style="list-style-type: none"> The colour scheme should be taken from the palette of colours in the natural surroundings; It is proposed that as many additional indigenous (preferably endemic) trees are planted in the early stages of the 	Low	A development that is not the same as the surrounding developments

		development to ensure a quick and established feeling; trees should be used in the landscaping around the structures to soften the hard structures.		
Impact on the Sense of Place.	Medium	The development of licensing hub buildings could have a negative impact on the Sense of Place of the surrounding area if not managed and constructed according to high standards. It is important that mitigation measures be implemented to ensure that the proposed development does not contribute additionally to the existing noise impact in the area. The building should also be constructed to fit in with the surrounding area and materials. This will allow the building to be more easily being accepted visually. Landscaping should be of a high standard. To ensure the high standard, it is proposed that a Landscape Development Plan be submitted to the local authority prior to any construction activities for approval. The buildings could, if managed and constructed well, promote the "Sense of Place" of the surrounding area.	Medium	A development that is not the same as the surrounding developments
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 	Low	If not mitigated, waste will be uncontrollably all over site and possibly blown to the streets and adjacent properties. It will further create bad odors. If waste is not regularly removed from site then it will accumulate and pollute the sensitive areas.

		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.		
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	Negative visual impact due to rubble/ litter. Possible pollution into sensitive areas.
Light Pollution				
Light pollution during the night, caused by unsympathetic lighting design.	Low	Lights that direct light beams downwards with low glaring qualities should be used for landscaping and streetlights. The lights should not be directed to glare in ongoing traffic or into the properties of surrounding residents.	None	Light that shines onto the oncoming traffic and it might lighten the surrounding area
Institutional				
Compatibility with surrounding land uses.	Low	The proposed development area is surrounded by agricultural holdings. The proposed development can therefore be accommodated. The project is in line with the Integrated Development Plan and Ekurhuleni Metropolitan Municipality's objective of establishing Motor Vehicle Registration Authority (MVRA) facilities and Drivers Licensing Testing Centres (DLTC) throughout	None	Not compatible with the surrounding land uses

		the municipal area.		
OPERATIONAL PHASE				
Beneficial Impacts (All impacts are positive)				
Social & Economic Environment				
Creation of temporary and permanent jobs.	High	During the operational phase numerous permanent jobs will be created on various levels (skilled, semi-skilled, officials, office staff, cashiers, maintenance, etc.).	High	No risk due to positive impact
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	No risk due to positive impact
Reduction of areas that have potential for informal settlements and illegal dumping.	Medium	The proposed licensing hub development will prevent informal settlements and illegal dumping on the proposed development area.	Medium	No risk due to positive impact
Visibility and accessibility of study area.	Low	The visibility and accessibility of the study area contributes to the study area's ideal suitability for the proposed land use.	Low	No risk due to positive impact
Adverse Impacts (All impacts are negative)				
Fauna & Flora				
Loss of fauna and flora species and decrease in biodiversity	Medium	The alternative layout is on a site where previous agricultural activities took place. It is recommended that the landscaping for the proposed development should only include indigenous vegetation in order to attract insects and birds to the site, leading to an increase in biodiversity.	Low	Loss of fauna and flora and decrease in biodiversity
Uncontrolled activities and access to sensitive areas in the vicinity.	Medium	No vehicles must be allowed to move in or across sensitive areas. Vehicles will only be allowed on the site and not surrounding areas. This leaves visible scars and destroys habitat.	Low	Litter will occur. Biodiversity in the sensitive areas will be severely affected.
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 	Low	Increase in storm water runoff as a result of poor surface levels. Siltation and erosion will occur.

		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.		
Leaking pipes could cause ground water pollution risks.	Low	Pipes should be inspected on a regular basis.	None	Groundwater pollution
Pollution				
Light pollution The proposed development could cause a significant level of light pollution as the light industrial development will need some security lighting.	Low	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.	None	Obstruction the passerby and the motorists through glare
The generation of Air pollution -	Low	The proposed development is located within an area that is characterized by 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.	Low	Insignificant
The generation of noise pollution - Additional traffic generated by the proposed development will have some impact on the ambient noise levels within the area.	Low	As mentioned previously, one has to note that the study area is wedged between roads and railways which already generate ambient noise levels that exceed the acceptable levels for	Low	Increase in noise pollution

		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.		
Roads & Traffic				
Additional vehicle traffic could have a detrimental impact on the existing roads with in the vicinity of proposed development.	Medium	If required, the road network which surrounds the proposed development will have to be correctly maintained/ upgraded in order to support additional traffic generated.	Medium	Traffic will increase
Visual Impact				
The proposed development will have some visual impact on the surrounding areas.	Medium	<ul style="list-style-type: none"> ▪ Due to the development control measures and the fact that licensing buildings 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 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. 	Low	If not mitigated the buildings will be aesthetically unpleasant.

Impact on the sense of place.	Medium	<p>If not managed correctly, the proposed development will have a negative impact on the sense of place of the surrounding environment (the agricultural uses), 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>	Low	If not mitigated, the buildings will fade in colour and be unsuccessful in achieving a sense of place. Landscaped areas will be overgrown with weeds species if not maintained.
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No Go

Potential impacts:	Significance rating of impacts (positive or negative):	Proposed mitigation:	Significance rating of impacts after mitigation:	Risk of the impact and mitigation not being implemented
Geology and Soils				
If no development takes place it will not have a significant impact on the geology of the study area, especially in the short term. Indirect impacts created by the edge effects of the provincial road and future K-route and surrounding developments could however, in the long term, lead to a decrease in vegetative coverage and even to exposed areas. Erosion and siltation problems could then be caused. This will lead to disturbance of	Negative - Medium	No mitigation as there will be no development.	N/A	N/A Risk will be the same as the potential impact.

the soil and possible loss of topsoil.				
Hydrology				
If no development takes place it will not have a significant impact on the hydrology of the study area in the short term. However, indirect impacts created by the edge effects of provincial road and future K-route and surrounding developments could however, in the long term, lead to a decrease in vegetative coverage and even to exposed areas. Erosion, siltation and water pollution problems could then be caused. This will lead to disturbance of the soil and possible loss of topsoil. Changes in the surface drainage patterns could also occur.	Negative - Medium	No mitigation as there will be no development.	N/A	N/A Risk will be the same as the potential impact.
Fauna and Flora				
If no development takes place, the impacts on the fauna and flora and biodiversity will not be significant in the short term. Indirect impacts created by edge effects of the provincial road, future K-route and surrounding developments and associated activities could, in the long term, have an impact on the ecological potential and bio-diversity of the vegetation of the study area. It will lead to a decrease of vegetative cover due to agricultural activities on surrounding areas. This will lead to the decrease of habitat available for faunal species and therefore their presence will decline. The current illegal dumping on the site will also impact on the existing fauna and flora on the site. Currently the site is dominated by alien and invasive plant species which will spread and decrease the biodiversity if not managed and eradicated.	Negative - High	No mitigation as there will be no development.	N/A	N/A Risk will be the same as the potential impact.
Social				
If no development takes place the social impact in the short term remains neutral however it could turn negative in the long term due to safety issues that can develop. Currently there is illegal dumping on the site and this will only magnify. Such an issue will have a safety and security impact as well as visual and air	Negative - High	No mitigation as there will be no development.	N/A	N/A Risk will be the same as the potential impact.

pollution, not to mention the impact on the biophysical environment. A vacant land such as this will have the risk for informal settlements.				
Economic				
If no development takes place the economical impact will remain unchanged for the long and short term in terms of the rates and taxes payable to the Ekurhuleni Metropolitan Municipality. However the absence of a licensing hub (as proposed) will have a negative impact on the economy as this project is in line with the Integrated Development Plan and Ekurhuleni Metropolitan Municipality's objective of establishing Motor Vehicle Registration Authority (MVRA) facilities and Drivers Licensing Testing Centres (DLTC) throughout the municipal area.	Negative - Medium	No mitigation as there will be no development.	N/A	N/A Risk will be the same as the potential impact.

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

- Agricultural Potential Survey
- Dolomite Investigation
- Fauna and Flora Report
- Wetland Study
- Geotechnical Investigation
- Heritage Impact Assessment
- Services Report
- Storm water Management Report
- Traffic Impact Assessment

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

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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.

Proposal

Potential impacts:	Significance rating of impacts(positive or negative):	Proposed mitigation:	Significance rating of impacts after mitigation:	Risk of the impact and mitigation not being implemented
Geology & Soils				
Soil erosion, siltation and gully formation.	Low	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	Low	Erosion and siltation will occur and as a result affect the sensitive areas.

		to soil erosion, siltation and excessive compaction.		
If not planned and managed correctly, topsoil will be lost.	Low	<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	Valuable topsoil will be lost. Siltation and erosion will occur.
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, 	Low	Sinkholes might form

		<ul style="list-style-type: none"> ▪ No irrigation system should be implemented as part of the Formal Landscaping, as this could increase the risk of doline and sinkhole formation. ▪ 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. 		
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	Problems include water pollution
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	The wetland will be polluted with hazardous material such as oil
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	If not mitigated, erosion and siltation will occur resulting in pollution
Surface water flows will be altered during the decommissioning phase.	Low	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	Problems with water runoff will occur
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: 	Low	If the temporary waste facility is not placed next to the entrance, the site poses a risk of being

		<ul style="list-style-type: none"> o Skips for the containment and disposal of all waste that could cause soil and water pollution, i.e. paint, lubricants, etc.; o Workers will only be allowed to use temporary chemical toilets on the site; o 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 of appropriately (not dumped on site). This area may not be washed with soaps and dissolvent and allowed to enter the drainage system. 		<p>polluted especially on the sensitive areas. Solvents such as paints and thinners, leakages of oil/ grease will pollute the site if not contained properly.</p>
Climate				
<p>Demolition works during the rainy season can cause unnecessary delays and damage to the environment, especially damage to existing roads in the area.</p>	Low	<p>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</p>	Low	<p>Delays on the construction progress and problems with storm water runoff, erosion, siltation and water pollution</p>

		correctly) have an impact on the water quality of these water bodies.		
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	More dust pollution
Fauna & Flora				
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	Risk in Loss of vegetation and fauna
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	Uncontrolled access to sensitive areas. Pollution to sensitive areas
Visual Impact				
Remnants of building structures.	High	All building structures must be taken down and dispatched accordingly.	High	Water pollution
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.	Low	Negative visual impact and possibly water pollution
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	Negative visual impact and pollution
Localised Vibrations				
Noise pollution.	Medium	The activities related with the decommissioning phase will generate noise. Therefore, it must be restricted during working	Low	Continuous noise pollution

		hours.		
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	Increase in traffic during peak hours
Restrictions of access to surrounding properties.	Low	<ul style="list-style-type: none"> ▪ To minimize these impacts or risks, heavy vehicles (trucks, bull dowsers, 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. 	None	Increase in traffic during peak hours. Car accidents as a result of speed or reckless driving. If no warning signs, the motorists might be affected as result of accidents etc.
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	Damage of roads (potholes, kerb damage etc.)
Safety & Security				
During the decommissioning phase safety and security problems (especially for the surrounding residents) are likely to occur.	Low	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 day's work. A security guard should be appointed on site to prevent any security problems.	Low	Risk in injuries to workers as a result of workers residing on site
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 	Low	If no warning signs and barriers, there are risks in injuries and possibly death to people on site.

		<p>excavations;</p> <ul style="list-style-type: none"> ▪ 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				
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 land-owners/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	Visual and water pollution. Litter on site. Waste driving uncontrollably all over if waste points are not designated along existing routes on site.
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 	Low	If not dumped on a designated area, there is a risk of pollution to sensitive areas. Litter will negatively impact the wetlands and surrounding areas.

		<p>removed to a recognized waste disposal site on a weekly basis. No waste materials may be disposed of on or adjacent to the site;</p> <ul style="list-style-type: none"> ▪ 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. 		
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Alternative 1

Potential impacts:	Significance rating of impacts(positive or negative):	Proposed mitigation:	Significance rating of impacts after mitigation:	Risk of the impact and mitigation not being implemented
Geology & Soils				
Soil erosion, siltation and gully formation.	Low	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	Erosion and siltation will occur and as a result affect the sensitive areas.
If not planned and managed correctly, topsoil will be lost.	Low	<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 	Low	Valuable topsoil will be lost. Siltation and erosion will occur.

		<p>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 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. 		
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. ▪ 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. 	Low	Possibility of sinkhole formation
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	Problems include water pollution
Hydrology & Groundwater				
Vehicle maintenance.	Medium	Vehicle maintenance may	None	The wetland will

		not be done on the application site. Whenever a vehicle needs maintenance it must be taken to a certified workshop for the maintenance.		be polluted with hazardous material such as oil
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	If not mitigated, erosion and siltation will occur resulting in pollution
Surface water flows will be altered during the decommissioning phase.	Low	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	Problems with water runoff will occur
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 	Low	If the temporary waste facility is not placed next to the entrance, the site poses a risk of being polluted especially on the sensitive areas. Solvents such as paints and thinners, leakages of oil/ grease will pollute the site if not contained properly.

		<p>proof; and</p> <ul style="list-style-type: none"> 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. 		
Climate				
Demolition works during the rainy season can cause unnecessary delays and damage to the environment, especially damage to existing roads in the area.	Low	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	Delays on the construction progress and problems with storm water runoff, erosion, siltation and water pollution
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	More dust pollution
Fauna & Flora				
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	Risk in Loss of vegetation and fauna
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 	Low	Uncontrolled access to sensitive areas.

		<p>prohibited; and</p> <ul style="list-style-type: none"> No vehicles must be allowed to move in or across the sensitive areas. This leaves visible scars and destroys habitat. 		Pollution to sensitive areas
Visual Impact				
Remnants of building structures.	High	All building structures must be taken down and dispatched accordingly.	High	Water pollution
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.	Low	Negative visual impact and possibly water pollution
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	Negative visual impact and pollution
Localised Vibrations				
Noise pollution.	Medium	The activities related with the decommissioning phase will generate noise. Therefore, it must be restricted during working hours.	Low	Continuous noise pollution
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	Increase in traffic during peak hours
Restrictions of access to surrounding properties.	Low	<ul style="list-style-type: none"> To minimize these 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. 	None	Increase in traffic during peak hours. Car accidents as a result of speed or reckless driving. If no warning signs, the motorists might be affected as result of accidents etc.
Damage to roads.	Medium	Specific roads must be allocated for the use by	None	Damage of roads (potholes,

		heavy vehicles and photos must be taken prior to decommissioning in order to determine if any damage has been done.		kerb damage etc.)
Safety & Security				
During the decommissioning phase safety and security problems (especially for the surrounding residents) are likely to occur.	Low	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 day's work. A security guard should be appointed on site to prevent any security problems.	Low	Risk in injuries to workers as a result of workers residing on site
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	If no warning signs and barriers, there are risks in injuries and possibly death to people on site.
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 land-owners/tenants/in 	Low	Visual and water pollution. Litter on site. Waste driving uncontrollably all over if waste points are not designated along existing routes on site.

		<p>areas where the wind direction will carry bad odours across the properties of adjacent tenants or landowners;</p> <ul style="list-style-type: none"> ▪ 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. 		
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	If not dumped on a designated area, there is a risk of pollution to sensitive areas. Litter will negatively impact the wetlands and surrounding areas.

Alternative 2

Potential impacts:	Significance rating of impacts(positive or negative):	Proposed mitigation:	Significance rating of impacts after mitigation:	Risk of the impact and mitigation not being implemented
Geology & Soils				
Soil erosion, siltation and gully formation.	Low	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	Low	Erosion and siltation will occur and as a result affect the sensitive areas.

<p>If not planned and managed correctly, topsoil will be lost.</p>	<p>Low</p>	<p>excessive compaction.</p> <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. 	<p>Low</p>	<p>Valuable topsoil will be lost. Siltation and erosion will occur.</p>
<p>Incorrect construction could increase the possibility of doline and sinkhole formation due to the underlying dolomitic conditions in the area.</p>	<p>High</p>	<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 	<p>Low</p>	<p>Possibility of sinkhole formation</p>

		<p>should be 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. 		
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	Problems include water pollution
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	The wetland will be polluted with hazardous material such as oil
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	If not mitigated, erosion and siltation will occur resulting in pollution
Surface water flows will be altered during the decommissioning phase.	Low	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	Problems with water runoff will occur
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: 	Low	If the temporary waste facility is not placed next to the entrance, the site poses a risk of being polluted

		<ul style="list-style-type: none"> o Skips for the containment and disposal of all waste that could cause soil and water pollution, i.e. paint, lubricants, etc.; o Workers will only be allowed to use temporary chemical toilets on the site; o 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 of appropriately (not dumped on site). This area may not be washed with soaps and dissolvent and allowed to enter the drainage system. 		<p>especially on the sensitive areas. Solvents such as paints and thinners, leakages of oil/ grease will pollute the site if not contained properly.</p>
Climate				
<p>Demolition works during the rainy season can cause unnecessary delays and damage to the environment, especially damage to existing roads in the area.</p>	Low	<p>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</p>	Low	<p>Delays on the construction progress and problems with storm water runoff, erosion, siltation and water pollution</p>

		correctly) have an impact on the water quality of these water bodies.		
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	More dust pollution
Fauna & Flora				
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	Risk in Loss of vegetation and fauna
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	Uncontrolled access to sensitive areas. Pollution to sensitive areas
Visual Impact				
Remnants of building structures.	High	All building structures must be taken down and dispatched accordingly.	High	Water pollution
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.	Low	Negative visual impact and possibly water pollution
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	Negative visual impact and pollution
Localised Vibrations				
Noise pollution.	Medium	The activities related with the decommissioning phase will generate noise. Therefore, it must be restricted during working	Low	Continuous noise pollution

		hours.		
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	Increase in traffic during peak hours
Restrictions of access to surrounding properties.	Low	<ul style="list-style-type: none"> ▪ To minimize these 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. 	None	Increase in traffic during peak hours. Car accidents as a result of speed or reckless driving. If no warning signs, the motorists might be affected as result of accidents etc.
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	Damage of roads (potholes, kerb damage etc.)
Safety & Security				
During the decommissioning phase safety and security problems (especially for the surrounding residents) are likely to occur.	Low	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 day's work. A security guard should be appointed on site to prevent any security problems.	Low	Risk in injuries to workers as a result of workers residing on site
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 	Low	If no warning signs and barriers, there are risks in injuries and possibly death to people on site.

		<p>excavations;</p> <ul style="list-style-type: none"> ▪ 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				
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 land-owners/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	Visual and water pollution. Litter on site. Waste driving uncontrollably all over if waste points are not designated along existing routes on site.
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 	Low	If not dumped on a designated area, there is a risk of pollution to sensitive areas. Litter will negatively impact the wetlands and surrounding areas.

		<p>removed to a recognized waste disposal site on a weekly basis. No waste materials may be disposed of on or adjacent to the site;</p> <ul style="list-style-type: none"> ▪ 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. 		
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List any specialist reports that were used to fill in the above tables. Such reports are to be attached in the appropriate Appendix.

- Agricultural Potential Survey
- Dolomite Investigation
- Fauna and Flora Report
- Wetland Study
- Geotechnical Investigation
- Heritage Impact Assessment
- Services Report
- Storm water Management Report
- Traffic Impact Assessment

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

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 residents 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;
 - 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.

Proposal

After great consideration regarding the alternatives it was decided that the other sites are not as suitable for the proposed development and the proposed site and Licensing Hub will be more appropriate with the surrounding areas as well as future developments.

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

Natural Environment and Biodiversity

The Natural environment will be temporarily affected by the moving of large construction vehicles and the construction of a licensing hub.

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.

Available information indicates that the application site is underlain by dolomite. According to the Dolomite stability evaluation, there is a risk for Sinkhole and Doline formation on the application site. It is therefore very important that the precautionary measures for the development on dolomite should be adhered to.

With regards to the ecology of the site, the site is greatly disturbed and degraded with alien and invasive species common on the site resulting on a poor ecological condition. Indigenous floristic species richness is low on the

site and none of the vegetation is considered sensitive.

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 licensing hub 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. This will however form part of a separate application (only for services).

Economic Environment

The proposed development will create a significant number of employment opportunities for skilled and un-skilled workers;

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. No construction should be allowed on Sundays and public holidays.

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 1

The impacts relating to this alternative is similar to that of the proposed alternative. However the alternative site (Alternative 1) which is more than 250m from an access road is less feasible than the proposed site that is bordering Sam Molele Drive due to the distance from the access road.

It is also important to note that the proposed site is owned by the Ekurhuleni Metropolitan Municipality who is also the applicant for the proposed Licensing

Hub but the alternative sites are not owned by the applicant.

In light of the above mentioned it is clear that the proposed site will be more acceptable and feasible in the Tembisa area than the alternative sites.

Alternative 2

The impacts relating to this alternative is similar to that of the proposed alternative and the reasoning is the same as for Alternative 1. The alternative site (Alternative 2) is more than 250m from an access road and is less feasible than the proposed site that is bordering Sam Molele Drive due to the distance from the access road.

According to the Fauna and Flora specialist the proposed site is preferred to the alternative sites because of their position as well as existing vegetation.

In terms of a social viewpoint the proposed site makes more sense than the alternative sites as the proposed site is vacant and there are already illegal/informal activities taking place where as the alternative sites are on a site that is currently being used for agricultural purposes.

It is also important to note that the proposed site is owned by the Ekurhuleni Metropolitan Municipality who is also the applicant for the proposed licensing hub but the alternative sites are not owned by the applicant.

In light of the above mentioned it is clear that the proposed site will be more acceptable and feasible in the Tembisa area than the alternative sites.

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 and these species are already present on the site.

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. 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 of a licensing hub 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 in line with the Integrated Development Plan and Ekurhuleni Metropolitan Municipality's objective of establishing Motor Vehicle Registration Authority (MVRA) facilities and Drivers Licensing Testing Centres (DLTC) throughout the municipal area. Based on the aforementioned, from a socio-economic point of view, no-go development will have a negative economic impact.

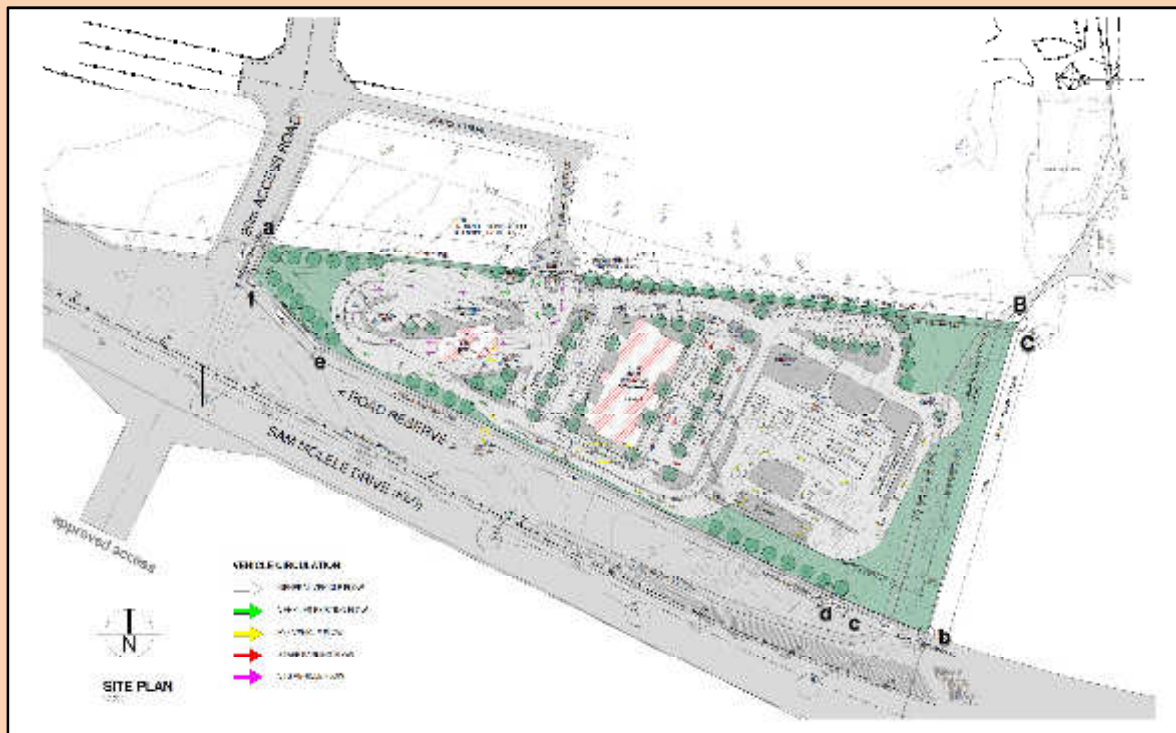
6. IMPACT SUMMARY OF THE PROPOSAL OR PREFERRED ALTERNATIVE

For proposal:

For the proposed Tembisa Licencing Hub for the following:

- Motor vehicle registration and licensing;
- Driver's license testing centre;
- Motor vehicle testing centre; and
- Grounds Area.

The proposed development, as described above, will be on Portion 67 of the farm Witfontein 15 IR that is situated within Esselen Park Ext 1 north of Sam Molele Drive and west of the railway servitude (west of the Pretoria Road, M57). Please see proposed development layout below.



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

Natural Environment and Biodiversity

- The Natural environment will be temporarily affected by the moving of large construction vehicles and the construction of a licencing hub.

- Valuable topsoil may also be lost during the construction process.
- There is a risk for Sinkhole and Doline formation on the application site. It is therefore very important that the precautionary measures for the development on dolomite should be adhered to.
- The site is greatly disturbed and degraded with alien and invasive species common on the site resulting on a poor ecological condition. Indigenous floristic species richness is low on the site and none of the vegetation is considered sensitive.

The Social Environment

- 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 Licensing Hub 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. This will however form part of a separate application (only for services).

Economic Environment

- The proposed development will create a significant number of employment opportunities for skilled and un-skilled workers;

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. No construction should be allowed on Sundays and public holidays.

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.

For alternative:

Not applicable as the proposal remains the preferred development and not the alternatives. Impacts of alternative have been discussed under No. 5, the Environmental Impact Statement.

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

It is evident that based on the biophysical and sociological characteristics, the site

is suitable for the proposed development of Tembisa Licencing Hub (only if the project is planned and managed in accordance with an approved Environmental Management Plan). The development will fit in with the Integrated Development Plan and Ekurhuleni Metropolitan Municipality's objective and the proposed development will create job opportunities during the construction and operational phase.

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 activities of the proposed development can lead to an improvement of the ecological conditions on the site as alien and invasive plant species will be eradicated and monitored.

The proposed development will create several job opportunities during the construction and operational phase. If managed correctly, the proposed project could have a significant positive impact on the social and economic environments. The proposed development could also have a positive impact on the ecological environment (especially through the removal of exotic invaders and weeds from this area).

In the long term the impact of the proposed development will be more positive than negative for the bio-physical, social and economic environments.

The mitigations and adaptive monitoring outlined in this Basic Assessment Report 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. No "fatal flaws" or adverse impacts that cannot be mitigated are anticipated to be associated with the proposed 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.

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 (Appendix H) are implemented, so as to achieve maximum advantage from beneficial impacts, and sufficient mitigation of adverse impacts.

7. SPATIAL DEVELOPMENT TOOLS

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

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

8. RECOMMENDATION OF THE PRACTITIONER

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

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

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

--

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

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

- All mitigation measures and recommendations as part of the attached Fauna and Flora Habitat Assessment must be adhered to.
- Adhere to all the specialist reports' recommendations.
- Adhere to all the recommendations made in the Geotechnical Report and Dolomite Report.
- The EMP attached must be adhered to at all times and the appointed ECO must ensure the developer comply with the EMP.

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

The site (proposal) has been proposed for a Licensing Hub to service the Tembisa Area. The proposed project is in line with the Integrated Development Plan and Ekurhuleni Metropolitan Municipality's objective of establishing Motor Vehicle Registration Authority (MVRA) and facilities and Drivers Licensing Testing Centre (DLTC) throughout the Ekurhuleni Metropolitan Municipality.

In terms of the Ekurhuleni Metropolitan Spatial Development Framework (MSDF) (2011), the proposed Licensing Hub, which will service Tembisa and the surrounds, will alleviate the pressure on surrounding Licensing Hubs. Also, the focused investment will ensure that the Critical Masses, spoken of within the MSDF (2011), will be accommodated and receive efficient and effective licensing services. The proposed Tembisa Licencing Hub will provide a required government service near the Clayville/ Olifantsfontein Industrial Zone, where employment generation and subsequently population densities are high. The industrial areas of Ekurhuleni, generate the bulk of employment and economic activity in Ekurhuleni. These areas should, therefore, be protected from potential negative influences such as informal settlements established near the industrial zones. The available land should then be developed, ideally, as social services. The subject property is located in the vicinity of the Clayville Industrial Hub and the Tembisa Informal Township. Thus, the land could be at risk of further invasion from informal settlers. It can then be concluded, that it would be a matter of urgency and prove desirable that the land be divided for development. Based on the aforementioned, the provision of the Licensing Hub would be highly beneficial to this expanding and highly accessible node.

According to the Esselen Park Local Integrated Development Plan (IDP) the proposed site is within Precinct B which has been earmarked for light industrial use. The proposed use will integrate into the light industrial proposition. In addition to this, the Local Spatial Development Framework (LSDF) outlines that Sam Molele Drive should accommodate a strip of business, social facilities and light industrial uses. The proposed facility is not in contradiction with the LSDF for Esselen Park and will further advance the objectives of the Plan, to ensure the needs of local residents are met within the Local Area.

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

10 year period

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

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

EMPr attached

Yes
X

SECTION F: APPENDIXES

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

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

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

Appendix B: Photographs

Appendix C: Facility illustration(s)

Appendix D: Route position information

Appendix E: Public participation information

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

Appendix G: Specialist reports

Appendix H: EMPr

Appendix I: Other information

CHECKLIST

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

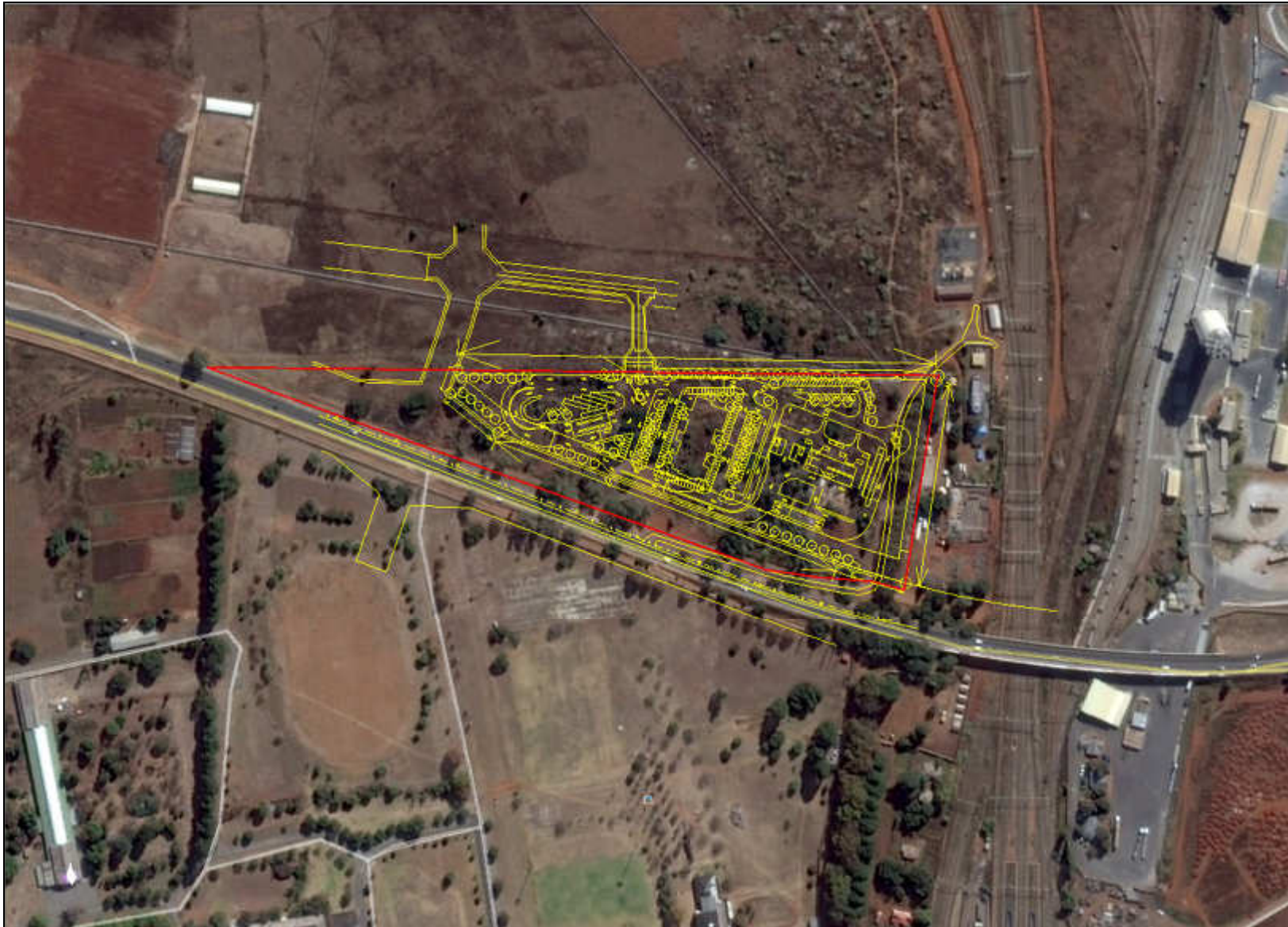
- Where requested, supporting documentation has been attached;
- All relevant sections of the form have been completed.

Site Plan



Tembisa Licencing Hub

Site Plan



Photographs





29.10.2015 15:39



29.10.2015 15:39



29.10.2015 15:39



29.10.2015 15:39



NVB37G-EP

29.10.2015 15:39



29.10.2015 15:39



29.10.2015 15:39



29.10.2015 15:38



29.10.2015 15:39





















Facility Illustration(s)





STREET VIEW 1



STREET VIEW 2



STREET VIEW 3



STREET VIEW 4



GOOGLE SATELLITE IMAGE (NOT TO SCALE)

SCHEDULE OF RIGHTS		
PROPERTY DESCRIPTION		
STAND No. PORTION 67 OF THE FARM WITFONTEIN NO. 15 LR	SITE AREA	36377 m ² (TBC)
TOWNSHIP WITFONTEIN	TITLE DEED No. (TBC)	
ZONING INFORMATION		
TOWNPLAN SCHEME	TEMBISA	AMENDMENTS (TBC)
USE ZONE	SOCIAL SERVICES (TBC)	ANNEXURE /SCHEME No. (TBC)
DEVELOPMENT CONTROL MEASURES		
PERMISSIBLE	CONTROL	ACTUAL
2 STOREYS	BUILDING HEIGHT	2 STOREYS
20% (7275m ²)	COVERAGE	5.3% (1960m ²)
1.0 = 3637m ²	F.A.R	0.06 = 2280m ²
3637m ²	HABITABLE AREA	2280m ²
3637m ²	BULK AREA	2280m ²
PARKING		
PARKING RATIO / BUILDING OCCUPANCY	AREA USED	REQUIRED PARKING BAYS
G1 (OFFICE) 4 bays per 100m ²	1520(GF)+320(MEZ), 1840m ²	74 bays
D2 (MOD RISK INDUSTRIAL) 2 bays per 100m ²	440m ²	8 bays
TOTAL	2280m ²	82 bays
REQUIRED BAYS		82 bays
PROVIDED BAYS		192 (126 public, 66 staff)

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CONTRACTOR TO VERIFY ALL LEVELS, HEIGHTS AND DIMENSIONS ON SITE AND TO CHECK SAME AGAINST THE DRAWING BEFORE PUTTING ANY WORK IN HAND.

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ANY ERROR DISCREPANCIES OR OMISSIONS TO BE REPORTED TO THE ARCHITECT IMMEDIATELY.

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CONTRACTOR TO BUILD IN BRICK FORCE EVERY 5TH COURSE IN BRICK WALLS AND EVERY 2ND COURSE ABOVE WINDOWS, DOORS AND ALL OTHER OPENINGS.

ALL GLAZING IN COMPLIANCE WITH SSS SANS 10400 PART 1 LATEST EDITION.

ANY QUERIES ARISING FROM ALL THE ABOVE MUST BE REPORTED TO THE ARCHITECT FOR CLARIFICATION BEFORE ANY WORK IS PUT ON HAND.

QUALITY OF ALL MATERIALS AND WORKMANSHIP TO COMPLY WITH THE RELEVANT S.A.B.S. AND B.S.S. SPECIFICATIONS.

DRAINAGE NOTES:

ALL PLUMBING AND DRAINAGE WORK AND INSTALLATION WORK SANITARY FITTINGS TO COMPLY WITH THE RELEVANT LOCAL AUTHORITY BY LAWS, REGULATIONS AND REQUIREMENTS.

ALL DRAIN PIPES: MINIMUM FALL 1:60, MAXIMUM FALL 1:10.

ALL WASTE PIPES AND SOIL PIPES TO BE FULLY ACCESSIBLE ALONG ENTIRE LENGTH OF THE PIPE.

I.E. TO BE PROVIDED AT EVERY BEND, JUNCTION AND CHANGE IN DIRECTION AND EVERY 24 METERS WITH MARKED COVERS AT REGULAR LEVELS.

ALL WASTE PIPE FITTINGS TO HAVE APPROVED RESEAL TRAPS.

VENT PIPE OUTLET TO BE MIN. 2m ABOVE ANY OPENING.

ALL BATH ENCLOSURES TO HAVE ACCESS PANELS.

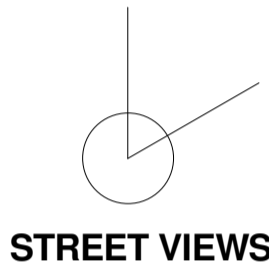
GULLIES TO BE TRAPPED AND WITH SUITABLE GULLY GRATING AND TO BE 150mm ABOVE SURROUNDING LEVELS.

ALL DRAINS UNDER BUILDINGS OR FOOTINGS TO BE ENCASED IN 150mm CONCRETE ALL ROUND THE PIPE.

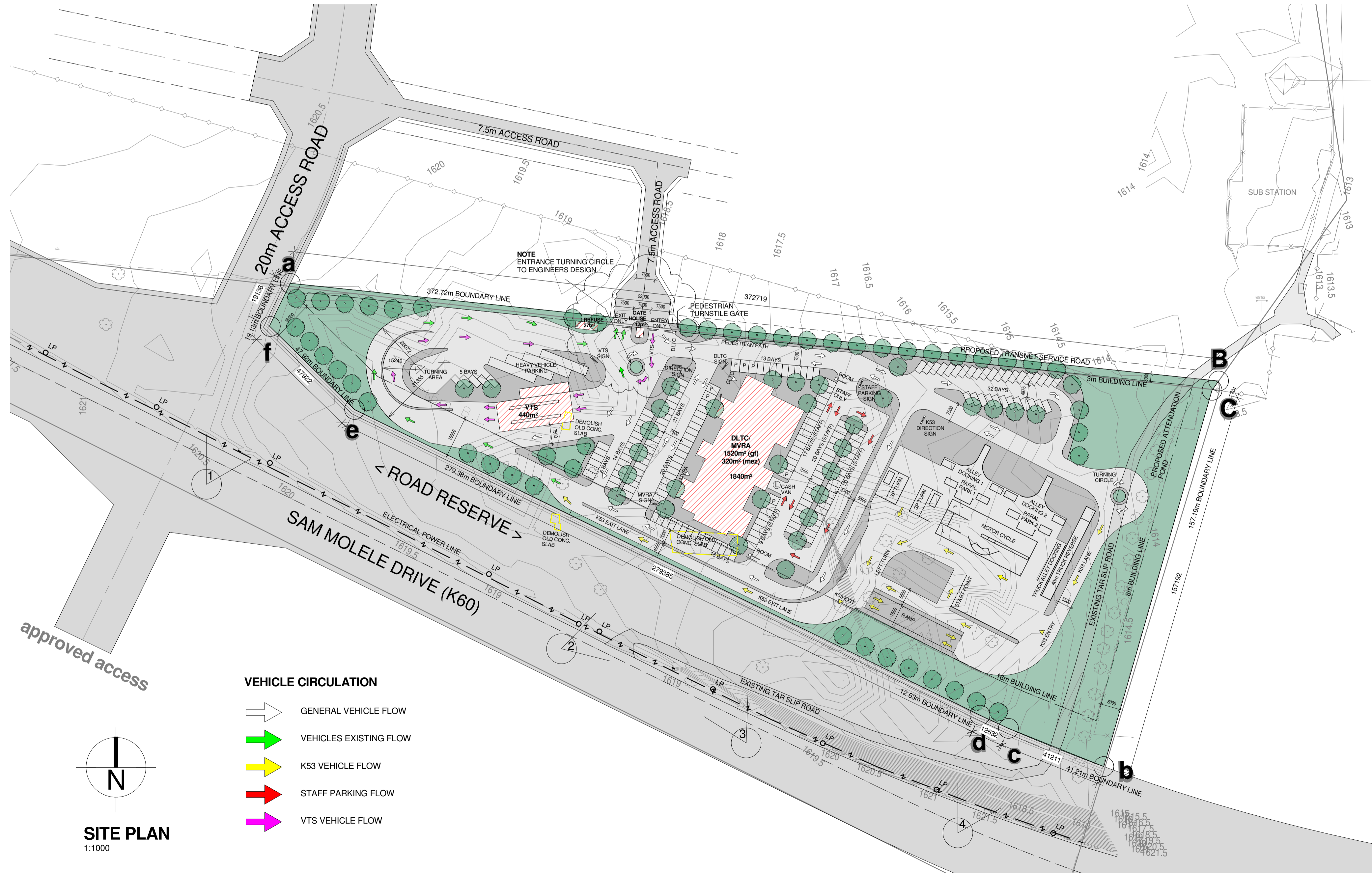
WASTE PIPES IN FLOORS TO BE SLEEVED AND FITTED WITH EASILY ACCESSIBLE C.E. ABOVE FLOOR LEVEL AND EACH END OF SLEEVE.

NO DRAIN BENDS OR JUNCTIONS IN OR UNDER FLOOR SLAB.

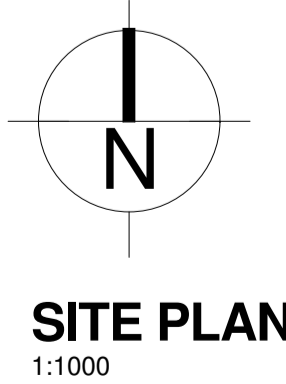
KEEP ALL DRAINS 900mm FROM CONCRETE FOUNDATIONS.



STREET VIEWS



- VEHICLE CIRCULATION**
- GENERAL VEHICLE FLOW
 - VEHICLES EXISTING FLOW
 - K53 VEHICLE FLOW
 - STAFF PARKING FLOW
 - VTS VEHICLE FLOW



SITE PLAN
1:1000

ALL STRUCTURAL CONCRETE WORK TO ENGINEER'S DESIGN AND SPECIFICATION

NO	REVISION	DATE
A	Issued for information (to civil eng for comment)	2015.06.19
B	Issued for information (to civil eng for comment)	2015.06.19
C	Issued for information (to transport eng for comment)	2015.06.24
D	Issued for information	2015.07.07



PROJECT
EMM TEMBISA LICENSING HUB

DRAWING
PRELIMINARY SITE PLAN

SCALE	DATE	DRAWN	CHECKED
As indicated	Issue Date	PD	Checker
PROJECT NUMBER		4961	
DRAWING NUMBER	100		REVISION

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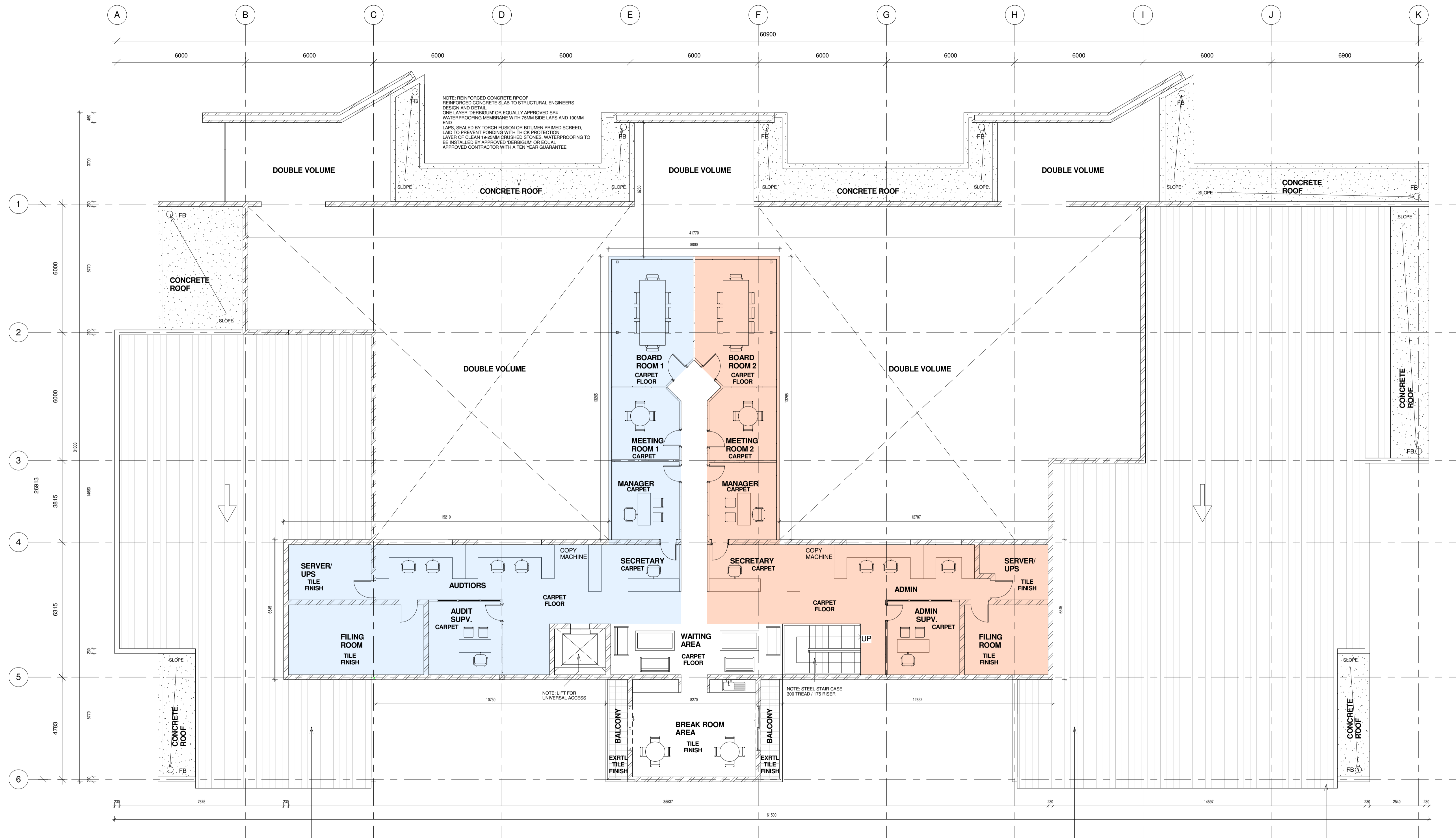
NO	REVISION	DATE
A	Issued for information (to civil eng for comment)	2015.07.06



PROJECT
EMM TEMBISA LICENSING HUB

DRAWING
DLTC MVRA MEZZANINE

SCALE 1 : 100	DATE Issue Date	DRAWN Author	CHECKED Checker
PROJECT NUMBER 4961		REVISION	
DRAWING NUMBER 202		REVISION A	



- MVRA AREA = 145m²
- DLTC AREA = 130m²
- COMMON AREA = 80m²
- TOTAL G/FLOOR AREA = 355m²**

DLTC MVRA MEZZANINE FLOOR PLAN
1:100

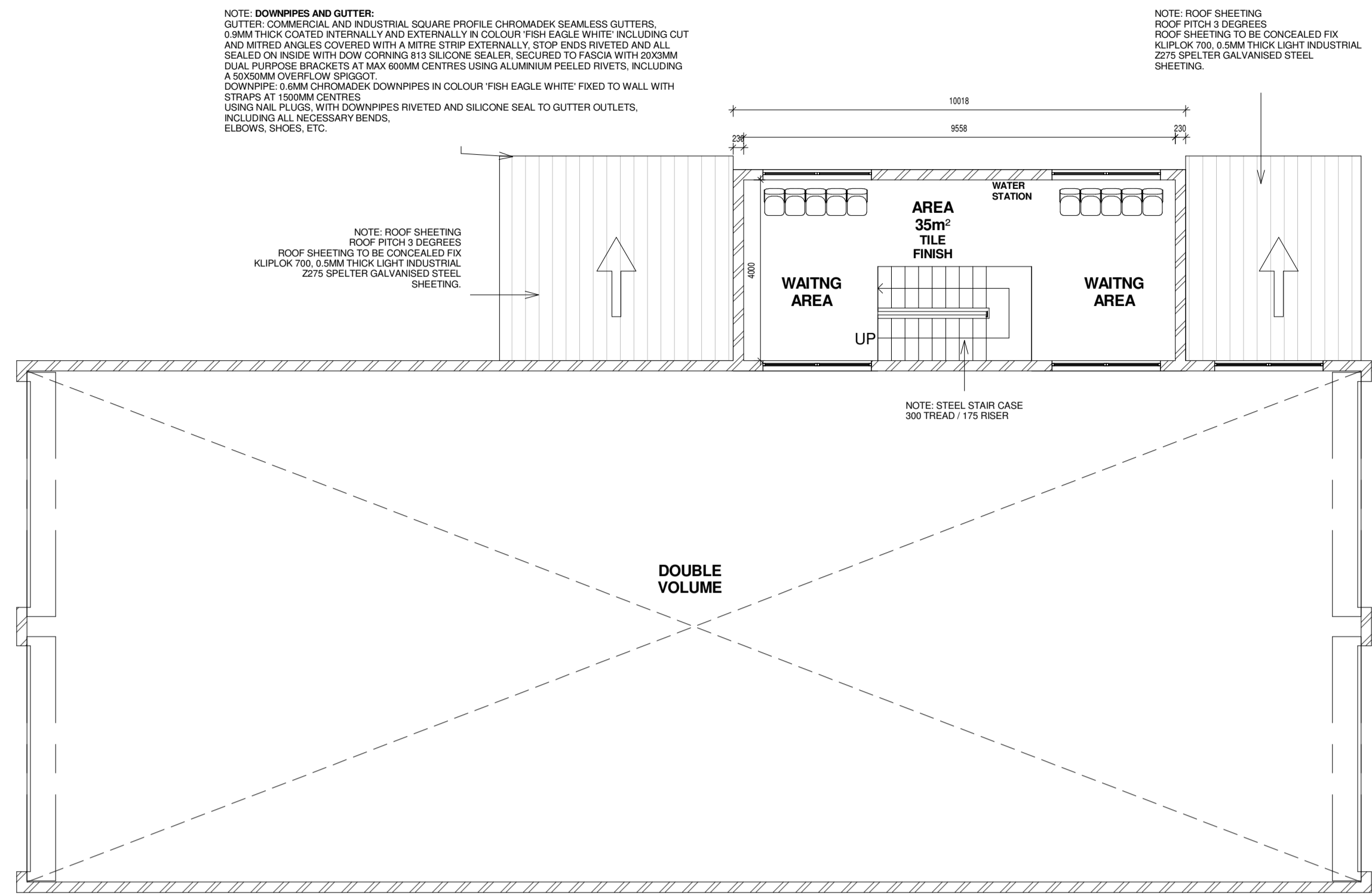
NOTE: ROOF SHEETING
ROOF PITCH 3 DEGREES
ROOF SHEETING TO BE CONCEALED FIX
KULPDK 700, 0.5MM THICK LIGHT INDUSTRIAL
Z275 SPLETER GALVANISED STEEL SHEETING

NOTE: ROOF SHEETING
ROOF PITCH 3 DEGREES
ROOF SHEETING TO BE CONCEALED FIX
KULPDK 700, 0.5MM THICK LIGHT INDUSTRIAL
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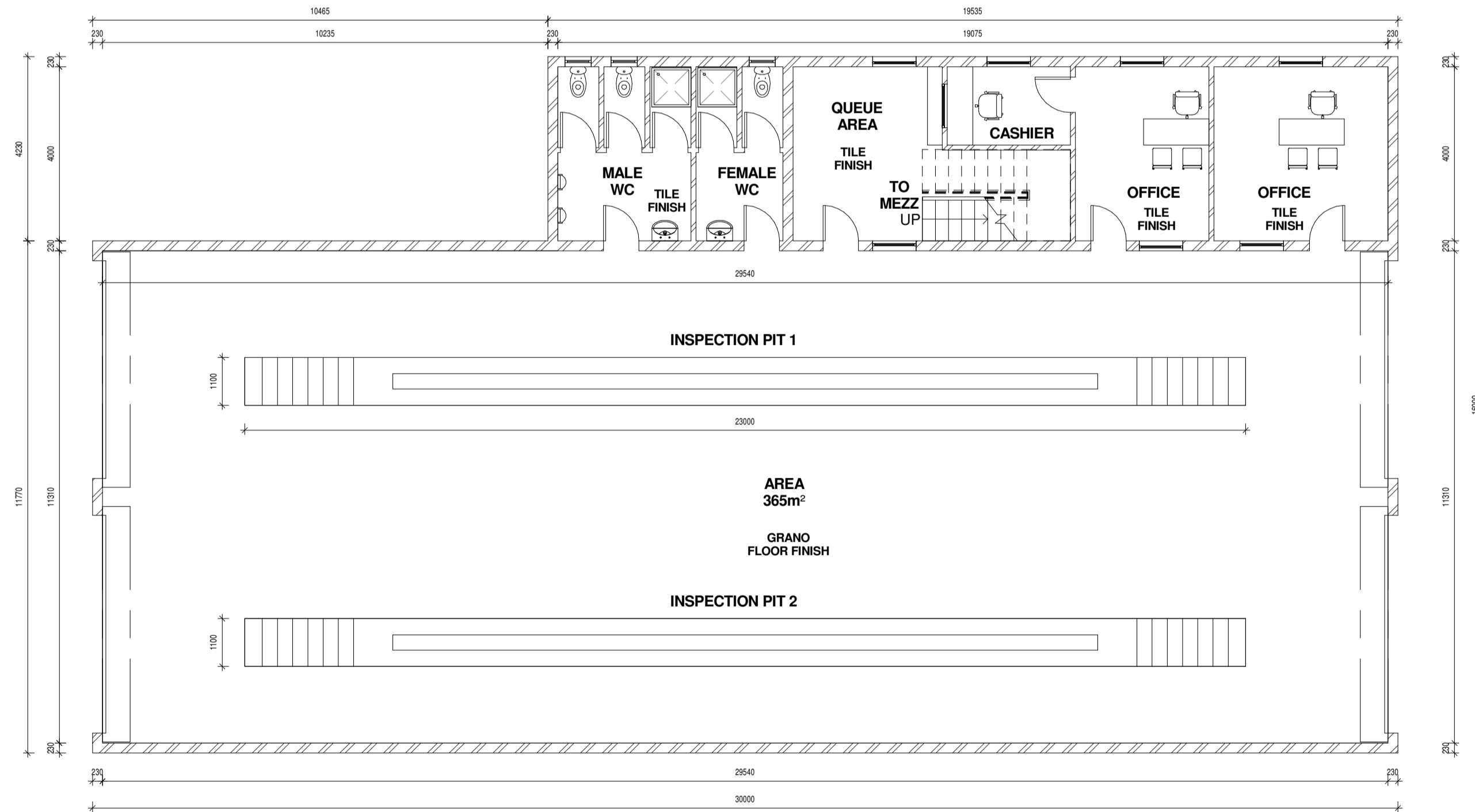
NOTE: DOWNPIPES AND GUTTER:
GUTTER: COMMERCIAL AND INDUSTRIAL SQUARE PROFILE CHROMADEX SEAMLESS GUTTERS
0.8MM THICK COATED INTERNALLY AND EXTERNALLY IN COLOUR FISH EAGLE WHITE INCLUDING CUT
AND MITRED ANGLES COVERED WITH A METRE STRIP EXTERNALLY, STOP ENDS RIVETED AND ALL
SEALED ON INSIDE WITH DOWN CORNING 813 SILICONE SEALER, SECURED TO FASCIA WITH 200MM
DUAL PURPOSE BRACKETS AT MAX 600MM CENTRES USING ALUMINIUM PEELED RIVETS, INCLUDING
A 500x50mm OVERFLOW SPOUT.
DOWNPIPE: 0.8MM CHROMADEX DOWNPIPES IN COLOUR FISH EAGLE WHITE: FIXED TO WALL WITH
STRIPS AT 1500MM CENTRES.
USING NAIL PLUGS, WITH DOWNPIPES RIVETED AND SILICONE SEAL TO GUTTER OUTLETS,
INCLUDING ALL NECESSARY BENDS,
ELBOWS, SNICES, ETC.

NOTE: LIFT FOR UNIVERSAL ACCESS

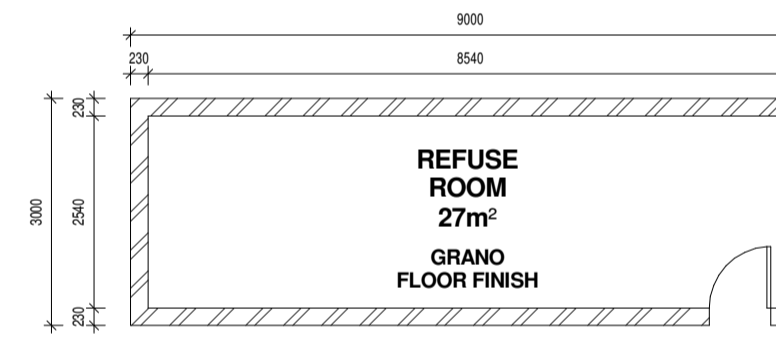
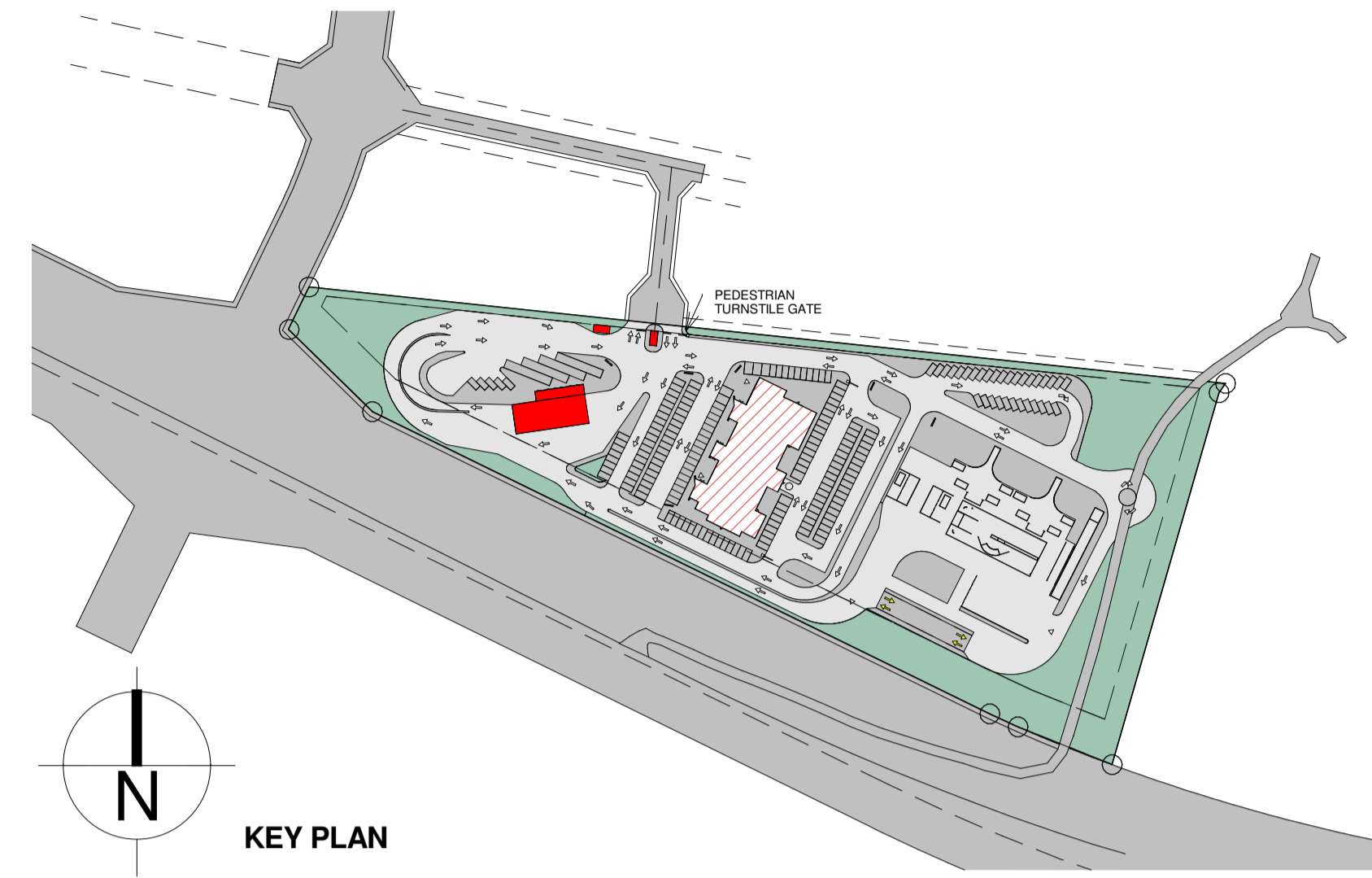
NOTE: STEEL STAIR CASE
300 TREAD / 175 RISER



VTS MEZZANINE PLAN
1:100

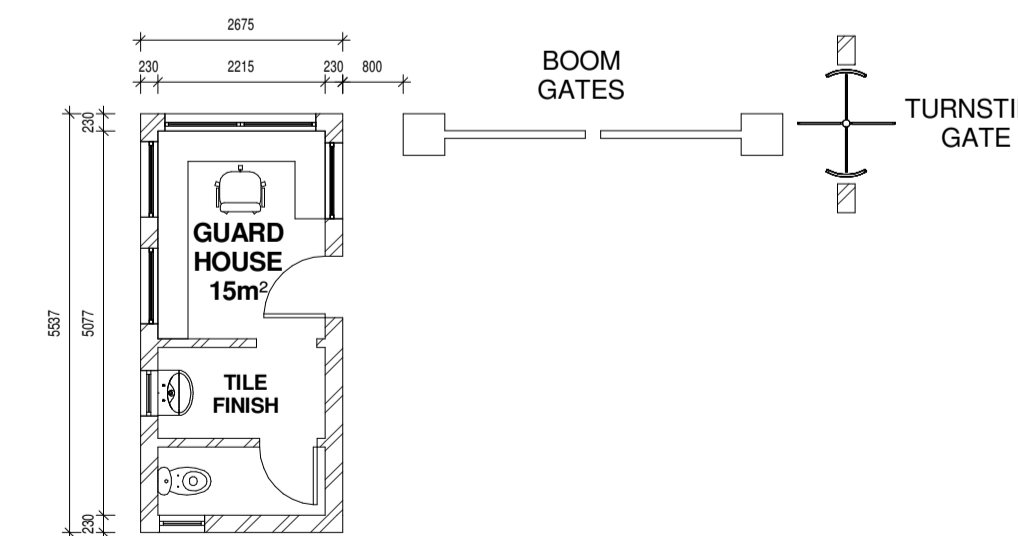


VTS GROUND FLOOR PLAN
1:100



REFUSE AREA CALCULATION
OFFICE:
 $0.2258 \times 1840 / 100 = 4.155$
 $4.155 \times 4 \text{ bins} = 16.6 \sim 17$
WAREHOUSE
 $0.379058 \times 440 / 100 = 1.667$
 $1.667 \times 4 \text{ bins} = 6.6 \sim 7$
TOTAL REQUIRED 17 + 7 = 24
TOTAL PROVIDED = 27

REFUSE AREA
1:100



GUARD HOUSE
1:100

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ALL DRAIN PIPES: MINIMUM FALL 1:60, MAXIMUM FALL 1:10.
ALL WASTE PIPES AND SOIL PIPES TO BE FULLY ACCESSIBLE ALONG ENTIRE LENGTH OF THE PIPE. I.E. TO BE PROVIDED AT EVERY BEND, JUNCTION AND CHANGE IN DIRECTION AND EVERY 24 METERS WITH MARKED COVERS AT GROUND LEVEL.
ALL WASTE PIPE FITTINGS TO HAVE APPROVED RESEAL TRAPS.
VENT PIPE OUTLET TO BE MIN. 2m ABOVE ANY OPENING.
ALL BATH ENCLOSURES TO HAVE ACCESS PANELS.
GULLIES TO BE TRAPPED AND WITH SUITABLE GULLY GRATING AND TO BE 150 mm ABOVE SURROUNDING LEVELS.
ALL DRAINS UNDER BUILDINGS OR FOOTINGS TO BE ENCASED IN 150mm CONCRETE ALL ROUND THE PIPE.
WASTE PIPES IN FLOORS TO BE SLEEVED AND BE FITTED WITH EASILY ACCESSIBLE C.E. ABOVE FLOOR LEVEL AND EACH END OF SLEEVE.
NO DRAIN BENDS OR JUNCTIONS IN OR UNDER FLOOR SLAB.
KEEP ALL DRAINS 900mm FROM CONCRETE FOUNDATIONS.

ALL STRUCTURAL CONCRETE WORK TO ENGINEER'S DESIGN AND SPECIFICATION

NO	REVISION	DATE
A	Issued for information (to civil eng for comment)	2015.07.06



PROJECT
EMM TEMBISA LICENSING HUB

DRAWING
VTS FLOOR PLANS

SCALE	DATE	DRAWN	CHECKED
As indicated	Issue Date	Author	Checker
PROJECT NUMBER		4961	
DRAWING NUMBER	203		REVISION

Route Position Information



Tembisa Licencing Hub Street Map



Legend
□ Portion 67 of Portion 15

Projection – Transverse Mercator
Datum - Hartebeeshoek 1994
Reference Ellipsoid – WGS 1984
Central Meridian -29

Public Participation Information



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. R982 published in the Government Notice No. 38282 of 4 December 2014 of the National Environment Management Act, 1998 (Act No. 107 of 1998) governing **Basic Assessment Procedures (Listing Notice: 1 – Government Notice R983)** for the following activity:

Project Name: Ekurhuleni Licensing Hub

Project Description: The proposed Licensing Hub is providing transport infrastructure and services to the people of Ekurhuleni. The Licensing hub has been identified as an infrastructure that will provide all Licensing Services under one roof. The following three sections will form part of the proposed development: a motor vehicle registration and licensing division; a driver's license testing center and a motor vehicle testing center.

Property Description: On Portion 67 of Portion 15 of the Farm Witkoppies 15IR, Kempton Park.

Listing Activities Applied for:

GNR 983 (Listing Notice 1), 4 December 2014	Activity 9
GNR 983 (Listing Notice 1), 4 December 2014	Activity 10
GNR 983 (Listing Notice 1), 4 December 2014	Activity 11
GNR 983 (Listing Notice 1), 4 December 2014	Activity 27
GNR 983 (Listing Notice 1), 4 December 2014	Activity 28

(Listed Activities triggered will be confirmed during the application process)

Proponent Name: Ekurhuleni Metropolitan Municipality

Location: The proposed development will be located in the Tembisa Esselen Park area, north from Link Road about 600m from the R25 crossing.

Date of Notice: 22 May 2015 – 21 June 2015

Queries regarding this matter should be referred to:

Bokamoso Landscape Architects and Environmental Consultants CC

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

Project Enquiries: **Bianca Reyneke/Anè Agenebacht**

P.O. Box 11375

Maroelana 0161

www.bokamoso.biz

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 30 days of this Notice**.











Written Notices Issued



Appendix E2

Ekurhuleni Licensing Hub

NOTICE OF BASIC ASSESSMENT PROCESS

Notice is given of an application for an **Basic Assessment Process** that was submitted to the Gauteng Department of Agriculture and Rural Development, in terms of Regulation No. R982 published in the Government Notice No. 38282 of 4 December 2014 of the National Environment Management Act, 1998 (Act No. 107 of 1998) governing **Basic Assessment Procedures (Notice 1 – Government Notice R983)** for the following activity:

Project Name: Ekurhuleni Licensing Hub

Project Description: The proposed Licensing Hub is providing transport infrastructure and services to the people of Ekurhuleni. The Licensing hub has been identified as an infrastructure that will provide all Licensing Services under one roof. The following three sections will form part of the proposed development: a motor vehicle registration and licensing division; a driver's license testing center and a motor vehicle testing center.

Property Description: On Portion 67 of Portion 15 of the Farm Witkoppies 15 IR, Kempton Park.

Proponent Name: Ekurhuleni Metropolitan Municipality

Listing Activities Applied: GNR 983 (Listing Notice 1), 4 December 2014 – Activity 9, 10, 11, 27 & 28. **(Listed Activities triggered will be confirmed during the Application process)**

Location: The proposed development will be located in the Tembisa Esselen Park area, north from Link Road about 600m from the R25 crossing.

Date of Notice: 22 May 2015 – 21 June 2015

Queries regarding this matter should be referred to:

Bokamoso Landscape Architects and Environmental Consultants CC

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

Project Enquiries: **Bianca Reyneke/Anè Agenbacht**

Tel: (012) 346 3810

P.O. Box 11375

Maroelana 0161

www.bokamoso.biz

Fax: (086) 570 5659

E-mail: lizelle@mweb.co.za






Locality Map

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 30 days of this Notice.**

Ekurhuleni Licensing Hub Landowner Notification

Acknowledgement of Receipt of land owner notification concerning the proposed Ekurhuleni Licensing Hub project.

	Name	Address	Contact Details	Signature
1	T.G. Staples	PRASA MetroRail	Email: Fax: Tel: 080 258 4660	
2	H. Swanepoel	TRANSNET FREIGHT RAIL ESSELTON PARK	Email: henry.swanepoel@transnet.net Fax: 011 929-1263 Tel: 0834683778	
3	G. Van Niekerk	Transnet Freight Rail. Johannesburg	Email: gideon.van Niekerk@transnet.net Fax: Tel: (011) 584-0711	
4			Email: Fax: Tel:	
5			Email: Fax: Tel:	
6			Email: Fax: Tel:	
7			Email: Fax: Tel:	
8			Email: Fax: Tel:	
9			Email: Fax: Tel:	
10			Email: Fax: Tel:	
11			Email: Fax: Tel:	
12			Email: Fax: Tel:	
13			Email: Fax: Tel:	
14			Email: Fax: Tel:	
15			Email: Fax: Tel:	

LEBOMBO GARDEN BUILDING
36 LEBOMBO ROAD
ASHLEA GARDENS
0081

P.O. BOX 11375
MAROELANA
0161

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



Background Information Document for a BASIC ASSESSMENT PROCESS

For the proposed residential development that is situated on **Portion 67 and Portion 137, Farm Witkoppies 151R, Kempton Park in the Tembisa Customer Care Centre.**

July 2015

PROJECT BACKGROUND

Notice is given, in terms of the Amended 2010 EIA Regulations published in Government Notice No. R982, R983, and R984 of the National Environmental Management Act (Act No. 107 of 1998), of intent to carry out a **Basic Assessment Process (i.t.o. Listing Notice 1 – G.N. R982).**

Take note that the 2010 NEMA EIA Regulations were replaced by the Amended 2014 NEMA EIA Regulations on 4 December 2014.

Bokamoso Landscape Architects and Environmental Consultants CC were appointed by **Ekurhuleni Metropolitan Municipality** to undertake a **Basic Assessment Process** for the proposed development.

THE PROPOSED PROJECT

The proposed project is for the establishment of the residential township; this development will be situated on Portion 67 and Portion 137, Farm Witkoppies 151R, Kempton Park in the Tembisa Customer Care Centre. The proposed development is 3.42 hectares and will consist of the following uses:

- Motor vehicle registration and licensing;
- Driver's license testing centre;
- Motor vehicle testing centre; and

- Grounds Area.

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

THE PROPOSED SITE

Portion 67 and Portion 137 of the Farm Witkoppies 15 IR, Kempton Park in the Tembisa Customer Care Centre.

LOCATION

The study area is situated in Esselen Park Ext 1 north of Sam Molele Drive and west of the railway servitude (west of the Pretoria Road, M57).

LEGAL ASPECT OF PROJECT

In terms of Regulation No. R982 published in the Government Notice No. 38282 of 04 December 2014 of the National Environment Management Act (Act No. 107 of 1998) a specific list of activities was identified which could have a detrimental impact on the receiving environment. These listed activities require Environmental Authorization from the Competent Authority, i.e. the Gauteng Province, Gauteng Department of Agricultural and Rural Development (GDARD).

The application was submitted for the following activities in terms of the Government Listing Notice 1 (R983), 04 December 2014:

Indicate the number and date of the relevant notice:	Activity No (s) (in terms of the relevant notice) :	Describe each listed activity as per project description!:
R. 983 December 2014	Listing Notice 1 Activity 9	The development of infrastructure exceeding 1000 metres in length for the bulk transportation of water or storm water- (i) with an internal diameter of 0,36 metres or more; or (ii) ...- (a) ...; or (b) ...
R. 983 December	Listing Notice 1	The development and related operation of infrastructure exceeding 1000 metres in length for the bulk

2014	Activity 10	transportation of sewage, effluent, process water, waste water, return water, industrial discharge or slimes (i) with an internal diameter of 0,36 metres or more; or (ii) ...- (a) ...; or (b) ...
R. 983 December 2014	Listing Notice 1 Activity 11	The development of facilities or infrastructure for the transmission and distribution of electricity- (i) outside urban areas or industrial complexes with a capacity of more than 33 but less than 275 kilovolts; or (ii) inside urban areas or industrial complexes with a capacity of 275 kilovolts or more.
R. 983 December 2014	Listing Notice 1 Activity 27	The clearance of an area of 1 hectares or more, but less than 20 hectares of indigenous vegetation, ...
R. 983 December 2014	Listing Notice 1 Activity 28	Residential, mixed, retail, commercial, industrial or institutional developments where such land was used for agriculture or afforestation on or after 01 April 1998 and where such development: (i) will occur inside an urban area, where the total land to be developed is bigger than 5 hectares; or (ii) will occur outside an urban area, where the total land to be developed is bigger than 1 hectare; excluding where such land has already been developed for residential, mixed, retail, commercial, industrial or institutional purposes.

Accordingly, the proposed project requires authorisation from GDARD via the Basic Assessment process outlined in Regulation 982 published in the Government Notice No. 38282 of 04 December 2014 of NEMA.

After GDARD have issued the decision, Interested and Affected Parties (I&AP's) will be notified of the decision and of the opportunity to appeal to the MEC of GDARD.

THE PUBLIC PARTICIPATION PROCESS

A Public Participation Process was conducted in terms of Chapter 6 in Regulation 982, published in the Government Gazette No. 38282 of 04 December 2014, of the National Environmental Management Act, 1998 (Act No 107 of 1998). The Public Participation

Guideline in the Integrated Environmental Management Guideline Series (Guideline 7) is also used, as published in Government Gazette No. 35769 on 10 October 2012.

1. Site notices were erected (22 May 2015) at prominent points on and around the study area.
2. Flyers were distributed (22 May 2015) to the neighboring properties and estates/developments that may be affected by the proposed development.
3. Registered mail was sent to all surrounding land owners within a 100m radius of the study area.
4. Notices regarding the project was e-mailed or faxed to the councilors in the area and possible stakeholders (including authorities, SANRAL, Eskom, etc.) in the area.
5. An advertisement was placed in "Beeld" newspapers on the 22 May 2015.

THE ENVIRONMENT

Topography

The site has a relatively flat slope of less than 1 degree with the highest (1-2% gradient) elevation in the north eastern portion.

Vegetation

The current site vegetation is thick veld grass with some dense shrubs and invasive trees (wattle and blue gum trees).

Wetlands

There is no wetland present on the site.

Soil conditions

The site is underlain by dolomite.

ISSUES AND CONCERNS RAISED BY THE PUBLIC

Possible concerns to be addressed:

- Visibility
- Noise
- Dust
- Safety and Security
- Maintenance of road

- Increase in traffic
- Socio-economic
- Ecological Surroundings
- "Sense of place"

PURPOSE OF THIS DOCUMENT

The purpose of this document is to provide information regarding the proposed residential development and to provide possible Interested and Affected Parties (I&APs) and Stakeholders with an opportunity to register and to add their comments and issues to our final reports that will be submitted to the Gauteng Department of Agricultural and Rural Development (GDARD).

In order to ensure that you are identified as an Interested and/or Affected Party (I&AP) please submit your name, contact information and concerns regarding the proposed development by means of one of the following methods: Email, Post, or hand delivery.

Please refer queries regarding the proposed development to:

Bokamoso Landscape Architects and Environmental Consultants CC.

Project Consultant: **Ané Agenbacht**

Public Participation: **Juanita De Beer**

P.O. Box 11375

Maroelana 0161

www.bokamoso.biz

Tel: (012) 346 3810

Fax: (086) 570 5659

E-mail: lizelleg@mweb.co.za

Figure 1: Locality Map

Figure 2: Aerial Map

Figure 1: Locality Map

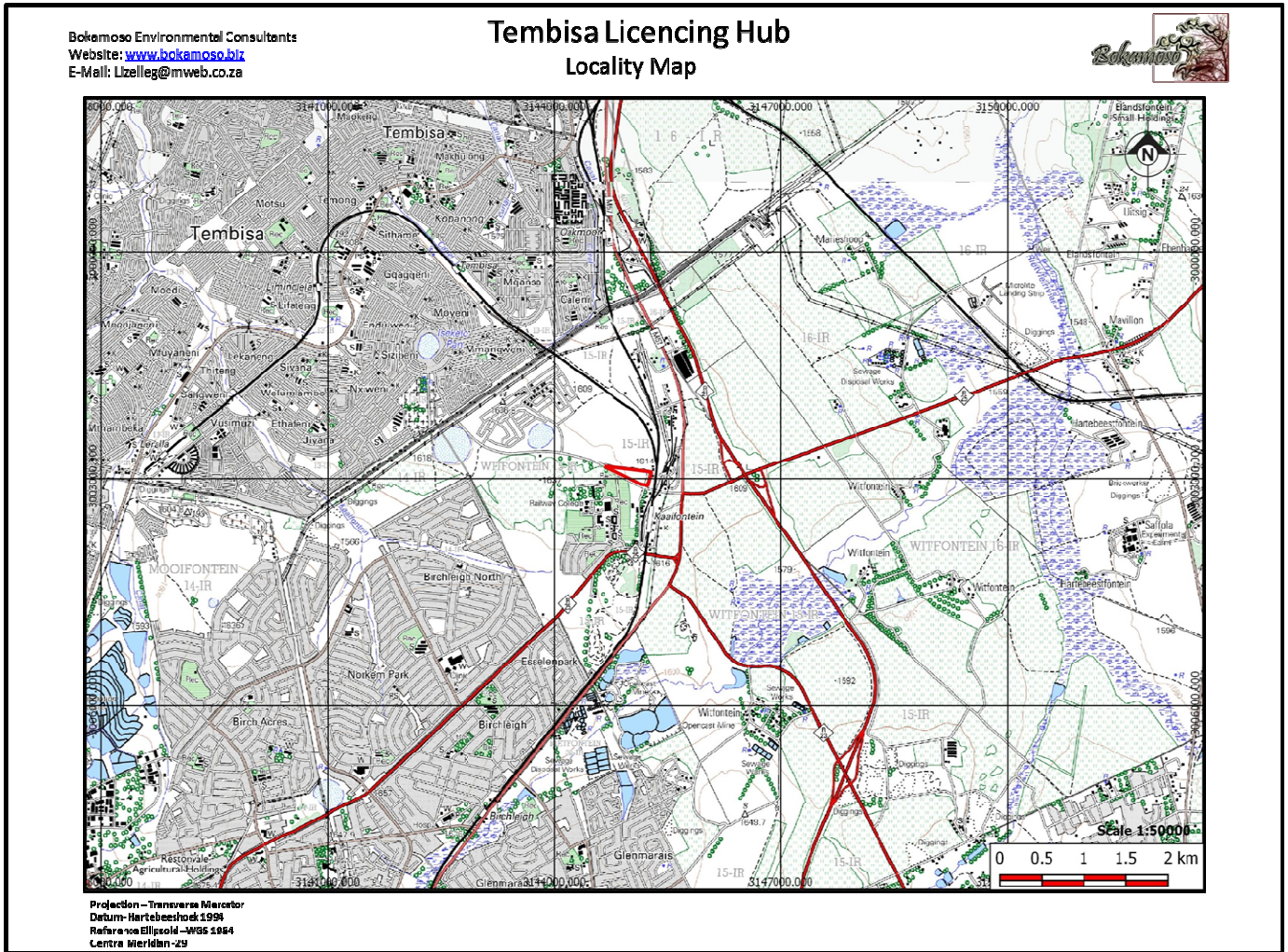
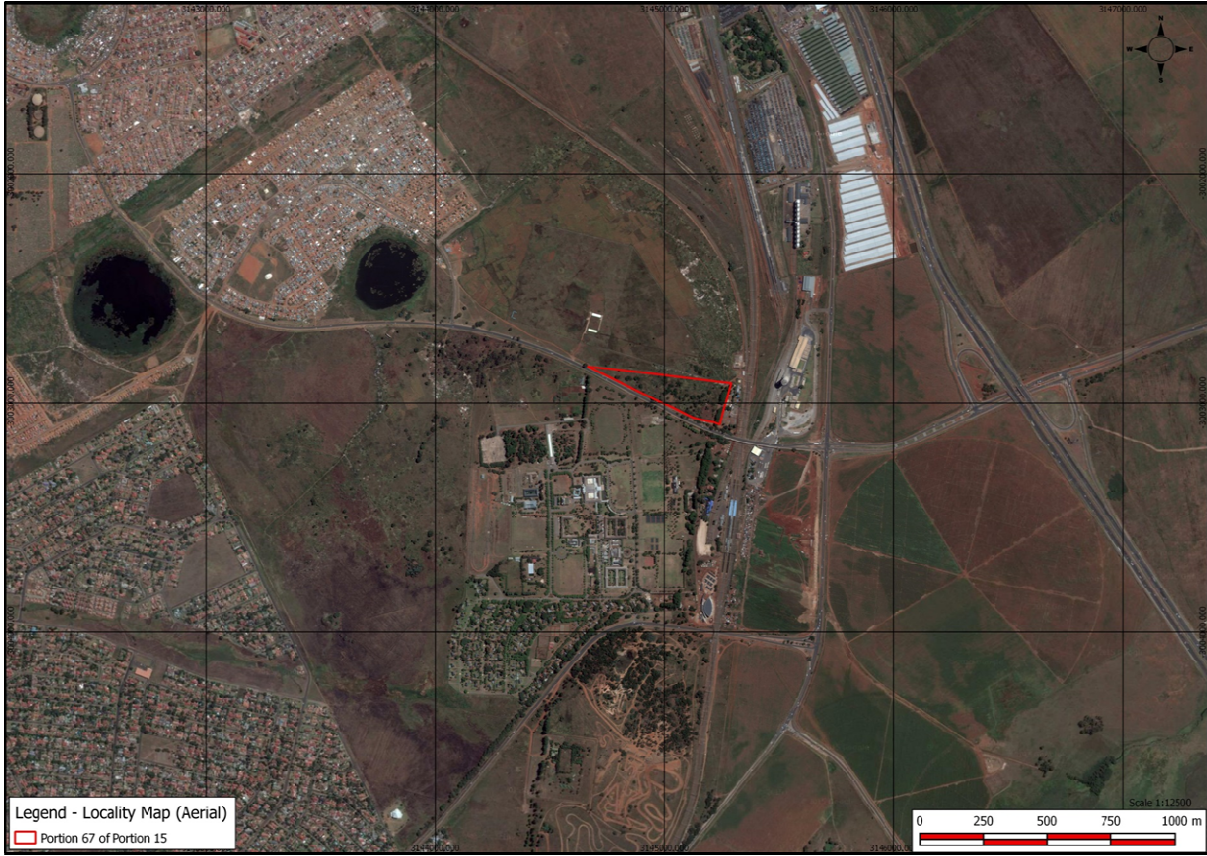


Figure 2: Aerial Map

Bokamoso Environmental Consultants
Website: www.bokamoso.biz
E-Mail: Lizelleg@mmweb.co.za

Tembisa Licencing Hub Aerial Map



Legend - Locality Map (Aerial)
□ Portion 67 of Portion 15

Projection - Transverse Mercator
Datum - Hartbeespoort 1994
Reference Ellipsoid - WGS 1984
Central Meridian - 25

LEBOMBO GARDEN BUILDING
36 LEBOMBO ROAD
ASHLEA GARDENS
0081

P.O. BOX 11375
MAROELANA
0161

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



Dear Landowner/Tenant

22 May 2015

You are hereby informed that Bokamoso Environmental Consultants were appointed (as EAP) by Ekurhuleni Metropolitan Municipality to conduct the Basic Assessment Process in terms of the amended 2014 NEMA EIA Regulations for the proposed Ekurhuleni Licensing Hub on Portion 67 of Portion 15 of the Farm Witkoppies 15 IR, Kempton Park.

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

The proposed Licensing Hub is providing transport infrastructure and services to the people of Ekurhuleni. The Licensing hub has been identified as an infrastructure that will provide all Licensing Services under one roof. The following three sections will form part of the proposed development: a motor vehicle registration and licensing division; a driver's license testing center and a motor vehicle testing center.

In terms of Regulation No. R982 published in the Government Notice No. 38282 of 4 December 2014 of the National Environment Management Act, 1998 (Act No. 107 of 1998) governing Basic Assessment Procedures (Notice 1 – Governing Notice R983) of the 2014 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 (landowner/tenant) of the property within 100m 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 the 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 the tenants, landowners, workers etc. Another option is to act as representative on behalf of these parties.

Please confirm (via email/fax) that you received the landowners/tenant 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

.....
Lizelle Gregory/Juanita De Beer

Deeds Office Property

WITFONTEIN, 15, 15 (PRETORIA)



GENERAL INFORMATION

Deeds Office PRETORIA
 Date Requested 2015/05/11 14:39
 Information Source DEEDS OFFICE
 Reference -



PROPERTY INFORMATION

Property Type FARM
 Farm Name WITFONTEIN
 Farm Number 15
 Portion Number 15
 Local Authority GREATER EAST RAND METRO
 Registration Division IR
 Province GAUTENG
 Diagram Deed T22290/941
 Extent 17.9219H
 Previous Description PTN4-LG1262/963
 LPI Code TOIR00000000001500015

OWNER INFORMATION

Owner 1 of 1

Person Type COMPANY
 Name TRANSNET LTD
 Registration Number
 Title Deed T22290/1941
 Registration Date 1941/12/10
 Purchase Price (R) END
 Purchase Date -
 Share
 Microfilm Reference 2000 0158 4310
 Multiple Properties NO
 Multiple Owners NO

ENDORSEMENTS (3)

#	Document	Institution	Amount (R)	Microfilm
1	K2443/1975RM	STEELE FREDERIK ANDRIES STRYDOM	UNKNOWN	-
2	K614/1941RM	-	UNKNOWN	-
3	IR,15,15	-	UNKNOWN	1986 0396 0203

HISTORIC DOCUMENTS (1)

#	Document	Owner	Amount (R)	Microfilm
1	T22290/1941	REPUBLIEK VAN SUID-AFRIKA	UNKNOWN	2000 0158 4310

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Deeds Office Property



WITFONTEIN, 15, 64 (PRETORIA)

GENERAL INFORMATION

Deeds Office PRETORIA
 Date Requested 2015/07/13 10:32
 Information Source DEEDS OFFICE
 Reference -



PROPERTY INFORMATION

Property Type FARM
 Farm Name WITFONTEIN
 Farm Number 15
 Portion Number 64
 Local Authority GREATER EAST RAND METRO
 Registration Division IR
 Province GAUTENG
 Diagram Deed T61635/995
 Extent 84.9373H
 Previous Description -
 LPI Code T0IR0000000001500064

OWNER INFORMATION

Owner 1 of 2

Person Type LOCAL AUTHORITY
 Name EKURHULENI METROPOLITAN MUNICIPALITY
 Registration Number
 Title Deed T33564/2001
 Registration Date 2001/04/10
 Purchase Price (R) SECT 14 *
 Purchase Date -
 Share
 Microfilm Reference 2008 0546 2872
 Multiple Properties YES
 Multiple Owners NO

Owner 2 of 2

Person Type LOCAL AUTHORITY
 Name EKURHULENI METROPOLITAN MUNICIPALITY
 Registration Number
 Title Deed T27406/2006
 Registration Date -
 Purchase Price (R) TRANSFER BY ENDO
 Purchase Date -
 Share
 Microfilm Reference 2007 0530 2187
 Multiple Properties NO
 Multiple Owners NO

ENDORSEMENTS (2)

#	Document	Institution	Amount (R)	Microfilm
1	VA2223/2001	ESSELEN PARK DEVELOPMENTS PTY LTD	UNKNOWN	2001 0419 1150
2	VA2498/2015	EKURHULENI METROPOLITAN MUNICIPALITY	UNKNOWN	

HISTORIC DOCUMENTS (2)

#	Document	Owner	Amount (R)	Microfilm
1	T61635/1995	ESSELEN PARK DEVELOPMENTS PTY	7,239,000	2001 0419 1139

Deeds Office Property

WITFONTEIN, 15, 67 (PRETORIA)



GENERAL INFORMATION

Deeds Office PRETORIA
 Date Requested 2015/05/11 14:37
 Information Source DEEDS OFFICE
 Reference -



PROPERTY INFORMATION

Property Type FARM
 Farm Name WITFONTEIN
 Farm Number 15
 Portion Number 67
 Local Authority GREATER EAST RAND METRO
 Registration Division IR
 Province GAUTENG
 Diagram Deed T61635/995
 Extent 7.0938H
 Previous Description -
 LPI Code TOIR00000000001500067

OWNER INFORMATION

Owner 1 of 2

Person Type LOCAL AUTHORITY
 Name EKURHULENI METROPOLITAN MUNICIPALITY
 Registration Number
 Title Deed T33564/2001
 Registration Date 2001/04/10
 Purchase Price (R) SECT 14 *
 Purchase Date -
 Share
 Microfilm Reference 2008 0546 2872
 Multiple Properties YES
 Multiple Owners NO

Owner 2 of 2

Person Type LOCAL AUTHORITY
 Name EKURHULENI METROPOLITAN MUNICIPALITY
 Registration Number
 Title Deed T27406/2006
 Registration Date -
 Purchase Price (R) TRANSFER BY ENDO
 Purchase Date -
 Share
 Microfilm Reference 2007 0530 2187
 Multiple Properties NO
 Multiple Owners NO

ENDORSEMENTS (2)

#	Document	Institution	Amount (R)	Microfilm
1	VA2223/2001	ESSELEN PARK DEVELOPMENTS PTY LTD	UNKNOWN	2001 0419 1150
2	VA2498/2015	EKURHULENI METROPOLITAN MUNICIPALITY	UNKNOWN	-

HISTORIC DOCUMENTS (2)

#	Document	Owner	Amount (R)	Microfilm
1	T61635/1995	ESSELEN PARK DEVELOPMENTS PTY LTD	7,239,000	2001 0419 1139

2	T33564/2001	KHAYALAMI METROPOLITAN COUNCIL	1,500,001	2008 0546 2872
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Proof of Newspaper Advertisement



Appendix E3

Communications to and from I& AP's



Mary-Lee

From: Juanita <user3@bokamoso.net>
Sent: 28 May 2015 10:29 AM
To: jgrobler@geoscience.org.za; asalomon@sahra.org.za;
maphata.ramphele@gauteng.gov.za; keetm@dwaf.gov.za; siwelanel@dwa.gov.za;
tshifaror@dwa.gov.za; MathebeT@dwa.gov.za; 'central@eskom.co.za';
'paia@eskom.co.za'; 'schmidk@nra.co.za'; kumen.govender@gauteng.gov.za;
mmpshe@randwater.co.za; 'nkoneigh@randwater.co.za';
'cecilia.rakgoale@ekurhuleni.gov.za'; loveous.tampane@transnet.net;
CLCC@ruraldevelopment.gov.za; 'refiloentsekhe@hotmail.com'
Subject: Ekurhuleni Licensing Hub - Public Participation Process
Attachments: Public Notice BA.pdf

Dear Interested and/or Affected Party Members,

Please refer to the attached Public Notice regarding the proposed Ekurhuleni Licensing Hub Project.

Kind Regards/Vriendelike Groete

Juanita De Beer

Public Participation Consultant



**Landscape Architects &
Environmental Consultants**

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

From: nico@bokamoso.net
Sent: 05 November 2015 02:09 PM
To: 'lotlegang@yahoo.com'
Subject: Ekurhuleni Licencing Hub
Attachments: Public Notice BA.pdf

Dear Mohammed

Please confirm that you are in fact the owner of the property on Witkoppies 15 IR in Kempton Park adjacent to the Proposed site for the Development of the Ekurhuleni Licencing Hub. Should this not be relevant to you, kindly provide me with the required contact details.

Please find attached the Notice for the abovementioned Development. Would you please comment on this, as it might be reasoned that the land uses of the licencing hub and your farm respectively might inconvenience the other in future.

We eagerly await your comment in this matter

Kind Regards/Vriendelike Groete

Nico Wevell

Junior Public Participation Consultant

**Landscape Architects &
Environmental Consultants**

T: (+27)12 346 3810 | F: (+27) 86 570 5659 | E: lizelleg@mweb.co.za | www.bokamoso.biz

bianca@bokamoso.net

From: Thomas Chongo <Thomas.Chongo@ekurhuleni.gov.za>
Sent: 11 November 2015 04:34 PM
To: nadine@bokamoso.net
Cc: info@bokamoso.net; pieter@gant.co.za; oupa@gant.co.za; leigh@gant.co.za;
Boitumelo Matsie
Subject: RE: Ekurhuleni Licencing Hub - Comments from GDARD and Application form to be signed

Good day

I do confirm that the chicken farm was EMM project under the department of Economic Development.

I have signed 4 copies of page 11, but there is no commissioner of oath's signature and you can get the copies from Boitumelo during business hour on Friday 13 November 2015.

Regards

Thomas

From: nadine@bokamoso.net [<mailto:nadine@bokamoso.net>]
Sent: 11 November 2015 04:03 PM
To: Thomas Chongo
Cc: info@bokamoso.net; pieter@gant.co.za; oupa@gant.co.za; leigh@gant.co.za
Subject: FW: Ekurhuleni Licencing Hub - Comments from GDARD and Application form to be signed

Dear Mr Chongo

As per the correspondence in e-mails below: Would you be able to assist us in identifying the relevant land owner/person in charge of the property currently occupying the land adjacent to the proposed Ekurhuleni Licencing Hub. To our knowledge the property is being utilized as a chicken farm and according to Mr Cloete the chicken farm was one of EMMs projects. Could you please confirm this?

Furthermore GDARD requested some amendments to the application form. We therefore require you, the Applicant, to sign the application forms that will accompany the final submission. Please find attached the Application form to be signed on page 11. We require 4x original hard copies.

Please advise when the hard copies (only page 11 x4) will be available for collection.

Many Thanks!

Nadine Duncan (on behalf of Anè Agenbacht)

Senior Environmental Assessment Practitioner

Tel: 012-346 3810

Cell: 072 231 4439

Email: nadine@bokamoso.net



From: Pieter Cloete [<mailto:pieter@gant.co.za>]
Sent: Monday, November 9, 2015 4:53 PM
To: nadine@bokamoso.net
Cc: info@bokamoso.net; oupa@gant.co.za; leigh@gant.co.za
Subject: RE: Ekurhuleni Licencing Hub - Comments from GDARD and Application form to be signed

Nadine

The chicken farm was a EMM project and I am not sure who you have been in contact with in regards, please confirm , perhaps Mr. Chongo will be able to assist

Please contact Mr. Chongo in this regards directly but please keep me copied in

Regards

Pieter Cloete Director
Pr. Eng. Pr. CPM.

C: 082 575 1741
E: pieter@gant.co.za

www.gantprojects.co.za



JHB Office
Bush Hill Office Park, Unit 2, Ostrich Street, Bromhof, 2154
P.O. Box 81317, Parkhurst, 2120
T: 011 792 2359 **F:** 086 552 6086

CPT Office
Unit 10, The Village Place, 3 Erica Road, Kommetjie, 7975
P.O. Box 48425, Kommetjie, 7976
T: 021 783 5720

E-Mail Disclaimer

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From: nadine@bokamoso.net [<mailto:nadine@bokamoso.net>]
Sent: 09 November 2015 01:40 PM
To: pieter@gant.co.za
Cc: info@bokamoso.net
Subject: Ekurhuleni Licencing Hub - Comments from GDARD and Application form to be signed

Dear Pieter

The Gauteng Department of Agriculture and Rural Development (GDARD) provided us with their comments on the Draft Basic Assessment Report which have to be addressed in the Final Basic Assessment Report before final submission.

One of their comments pertain to further consultation with the adjacent land owner who is currently running a chicken farm on the property. Numerous attempts to contact the relevant contact person via phone calls, e-mails as well as a site visit have been unsuccessful. Unfortunately this has delayed the submission of the final report. If further attempts to make contact with the aforementioned contact person is unsuccessful, we will simply have to submit proof of all correspondence from Bokamoso to the landowner/occupier to GDARD without any consultation taking place. Do you have any resources to your disposal that could possibly assist us in contacting the land owner?

Furthermore GDARD requested some amendments to the application form. We therefore require that the Applicant sign the application forms that will accompany the final submission. Please advise if we can e-mail these forms to you or should we contact Mr. Thomas Chongo directly?

Many thanks!

Nadine Duncan (on behalf of Anè Agenbacht)

Senior Environmental Assessment Practitioner

Tel: 012-346 3810

Cell: 072 231 4439

Email: nadine@bokamoso.net



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ESSELEN PARK FARM

VEGETABLES · POULTRY · FARM STALL

CONDITIONS OF ENTRY

ESSELEN PARK FARM IS A COMMUNITY-OWNED AND MANAGED FARM. VISITORS MUST BE REGISTERED AND MUST WEAR A MASK AND GLOVES AT ALL TIMES. VISITORS MUST WEAR A MASK AND GLOVES AT ALL TIMES.



Ekurhuleni
Municipality

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Ekurhuleni
METROPOLITAN MUNICIPALITY

**EKURHULENI METROPOLITAN MUNICIPALITY
ECONOMIC DEVELOPMENT DEPARTMENT**

**CHICKEN BROILER HOUSES
ESSELEN PARK FARM - TEMBISA**

EPWP CONTRACTOR LEARNERSHIP PROJECT



EXPANDED PUBLIC WORKS PROGRAMME
CONTRIBUTING TO A NATION AT WORK



**PROJECTS MANAGERS: KRIEL & BISMILLA
EPWP CO-ORDINATORS:**



**LEARNERSHIP CONTRACTORS:
HUNADI MATUBA TRADING ENTERPRISE
TSE DI TLHANGA SUPPLY AND PROJECTS
PH NKOSI TRADING**



















Minutes of Meeting



Appendix E5

Not Available

Comments and Responses Report



Appendix E6

**COMMENT AND RESPONSE REPORT-
FOR THE PROPOSED EKURHULENI LICENSING HUB PROJECT**

Commentator	Comment	Response
<p>Nokukhanya Khumalo Sahra nkhumalo@sahra.org.za</p>	<p>Ekurhuleni Metropolitan Municipality is proposing to construct a Traffic licensing hub which will include the license testing grounds and the offices. The proposed development will be located on Portion 67 of the farm Witkoppies 15 IR, Ekurhuleni Metropolitan Municipality, Gauteng Province.</p> <p>In terms of the National Heritage Resources Act (NHRA), no 25 of 1999, heritage resources, including archaeological or palaeontological sites over 100 years old, graves older than 60 years, structures older than 60 years are protected. They may not be disturbed without a permit from the relevant heritage resources authority. This means that before such sites are disturbed by development it is incumbent on the developer (or mine) to ensure that a Heritage Impact Assessment is done. This must include the archaeological component (Phase 1) and any other applicable heritage components. Appropriate (Phase 2) mitigation, which involves recording, sampling and dating sites that are to be destroyed, must be done as required.</p> <p>No Heritage Impact Assessment was uploaded to this case. Nor</p>	<p>The Heritage Impact Assessment was uploaded to the site. Awaiting a response from SAHRA.</p>

	<p>a Palaeontological Impact Assessment was uploaded to the case on SAHRIS.</p> <p>SAHRA Notification of Development comment</p> <p>SAHRA APM Unit requires a Heritage Impact Assessment study conducted by a suitably qualified professional archaeologist for the proposed development. The assessment should look at the built environment, graves, and archaeology of the proposed development.</p> <p>The proposed development lies in a VERY HIGH to moderate palaeontological sensitive zone (http://www.sahra.org.za/sahris/map/palaeo), thus SAHRA APM Unit will require a Palaeontological Impact Assessment Survey for this proposed development also conducted by a suitably qualified professional palaeontologist.</p> <p>SAHRA will comment further on this proposed development once the above requested studies are submitted to the case.</p>	
<p>Gauteng Department of Agriculture and Rural Development Tel: 011 240 2500 Tendani.rambuda@gauteng</p>	<p>A. Property Description</p> <p>The Application form indicates that the activity will be undertaken on Portion 67 and 137 of the farm Witkoppies 15 IR but the Draft BAR states the property as Portion 67 of the farm Witfontein 15 IR. This</p>	<p>The reference to Portion 67 and 137 of the Fram Witkoppies 15 IR in the application vorm is incorrect. An</p>

<p>.gov.za</p>	<p>must be corrected in the final BAR as this will have significant implications should the EA make reference to incorrect property description for the proposed activity.</p> <p>B. Site Plan, Facility Illustrations and Photographs</p> <p>The Site Layout and Faculty Illustrations must be printed on A3 size to ensure that the information is readable. The Site Layout must be at an appropriate scale.</p> <p>The photographs attached in Appendix B only indicate images of the site notices which are also duplicated in Appendix E. Please attach photographs of the site and/ or images taken at significant sections of the property such as vegetated areas.</p> <p>C. Geotechnical Investigation</p> <p>Page 27 of the report makes reference to a Geotechnical Investigation description of soils for a proposed residential dwelling which is contrary to the proposed development of a licensing hub on site.</p> <p>A copy of the Geotechnical Investigation report must be attached in Appendix G of the BAR. Appendix 2 G of the report is titled Dolomite Report however this Appendix only contains a letter from Ekurhuleni Metropolitan Municipality which discusses proposed properties for Religious community facilities of Erf 235 of Igqagqa Extension 1,</p>	<p>amended application vorm will be submitted with the Final Basic Assessment Report.</p> <p>Noted. A3 Maps attached in Appendix A</p> <p>See Appendix B for photographs of the site.</p> <p>This has been corrected. See page 27 of the Final BAR.</p> <p>Refer to Appendix G5 : Geotechnical Report attached to the Final BAR.</p>
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	<p>please attach the correct information in this regard.</p> <p>The Dolomite Report must be forwarded to the Council for Geosciences for their perusal and comments on the proposed development.</p> <p>D. Alignment to surrounding Land uses</p> <p>It was noted that structures of chicken rearing facilities exist on the adjacent property towards the North-western direction of the site and that a significant area has been fenced-off around the facility which suggests possible future expansion of the agricultural activity. It could pose possible clash of land uses and the resultant unrest due to impacts such as noise and odour from the chicken facility to the licensing office and the possible noise impacts of the vehicle movements at the licensing office on the animals at the agricultural facility. It is advisable that the owners and/ or the uses of the agricultural facility be consulted and that the details of the consultation and their comments to be recorded for future consultations on this matter. It was noted on Page 19 of the Agricultural Potential Study that the site of the proposed development has a low agricultural potential with no possibility of improving without significant cost incurred.</p> <p>E. Alignment of the activity with applicable legislations and policies</p>	<p>Refer to Appendix 7: Comments received from the Council for Geosciences.</p> <p>The Following actions were taken by Bokamoso Environmental CC to notify the landowner of the proposed Project and Basic Assessment Process:</p> <ol style="list-style-type: none"> 1) The property was visited on 22 May 2015 in order to obtain the contact information of the landowner for the purposes of notifying him/her of the proposed project. The contact details of the supervisor were obtained (Mr Sipho Jele - 073 914 5263). Mr Jele informed the consultant that the manager of the facility is a gentleman named Mohammed (contact details: 081 061 4071 lotlegang@yahoo.com). 2) A notification was sent via e-mail to the manager on 5 November 2015 (See Appendix 4). No response was received. 3) The site was visited on 19 November 2015 during which it was evident that no activities are currently taking place on site and that the facility is vacant. It was
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	<p>The report has made provision to accommodate all applicable legislation, policies and guidelines. The site of the proposed activity falls within an area identified as “Zone 1” in terms of the “Gauteng Environmental Management Framework, 2015 (GEMF, 2015) – the proposed activity is included in the list of compactible land uses in this management zone.</p> <p>F. GDARD Guidelines:</p> <p>The Gauteng Conservation Plan (C-Plan) indicates that the site does not fall within sensitive environmental areas and there is no river or wetland occurring on the site.</p> <p>G. Impact Significance rating</p> <p>The impact significance rating criteria is not well defined in terms of how the various aspects identified in Section E2 collaborate in defining or determining the significance rating of an impact. Kindly provide a credible methodology that should be followed in order to make sense of the findings or conclusion that an impact is in fact of none, low, medium and high significant.</p>	<p>ascertained from the security guard on site that the facility has been vacant since September 2015 and that activities will commence once funding is made available. A. Photographic report is attached. (See Appendix 4).</p> <p>4) Mr Thomas Chongo (the Applicant) from the Ekurhuleni Metropolitan Municipality (EMM) confirmed that the project on site has been initiated and is managed by the (EMM) under the Department of Economic Development. (See Appendix 4).</p> <p>Noted</p> <p>The Methodology used to determine the impact significance rating has been included on page 57 to 60 of the Final BAR</p>
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	<p>H. Public participation process</p> <p>The Public participation process was undertaken in accordance with the minimum requirements of EIA Regulations 2014 and no comments or objections were noted at this state. It is kindly requested that the copy of the newspaper advertisement also reflect the date and the name of the publication, this could be accomplished by folding the page of the newspaper such that the advert and date appear on the same A4 size when being photocopied. The further consultation stated in Section D above is advisable.</p>	<p>The newspaper advertisement showing the date of publication is included in Appendix E3: Proof of newspaper advertisement.</p>
<p>Council for Geoscience T Oosthuizen Tel:0128411160 Fax: 086 615 6682 Email: toosthuizen@geoscience.org.za</p>	<p>This office would like to indicate the following regarding the hazard assessment of the site:</p> <ul style="list-style-type: none"> • It should be noted that it is no longer being referred to as the Risk Class (as indicated in various sections of the report). SANS 1936 (2012) made reference to Inherent Hazard Class (IHC) or the hazard assessment of a site. • BR indicates that the residual chert has a low mobilisation potential. Historically, chert has always been believed to have a medium mobilisation potential due to the loose nature of the material, usually being present as a chert rubble. Sinkholes have also very regularly formed through chert, and this office is not in 	<p>It is noted that the Council of Geosciences supports the project in principle. It is recommended that the matters raised by them be addressed by the Geotechnical Specialist prior to construction commencing.</p>

	<p>agreement that chert generally has a low mobilisation potential.</p> <ul style="list-style-type: none">• This office is uncertain about the presence of 'granite' in two of the boreholes. What is the origin of this material, and how is it possible that it is present in only two boreholes on the site and not in any other boreholes on or in close proximity of the site. Clarity regarding the origin and interpretation of this material is required. This site is situated quite some distance away from the nearest granite formations, at least about 500 m east of the granite based on available borehole logs at the CGS Database. The two boreholes which intersected granite are both situated on the eastern portion of the site, which is the furthestmost away from the granitic formations.• This office is not entirely in agreement that the site represents IHC 1/3/4 conditions. In our opinion, the boreholes drilled all revealed medium hazard conditions, i.e. IHC 3/4. Since groundwater is expected to be present at depth, within dolomite bedrock, we are of the opinion that the site represents a low hazard in terms of dewatering, i.e. IHC 1. In our opinion, the site therefore represents a composite classification of IHC 3/4/1.	
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- BR indicates that the proposed land use is considered as C1, as per Table 2, SANS 1936-1:2012. In our opinion, the development type can either be viewed as C1 or C3. On IHC 3/4 land, a dolomite area designation 03 is required as well as footprint investigations.
 - ✓ BR did assign a dolomite area designation 03 to the site, and it is therefore supported.
 - ✓ BR indicated that their investigation was not to fulfil the footprint drilling requirement, but only to investigate the general dolomite stability conditions of the site. Footprint drilling therefore still needs to be conducted.

- BR made foundation recommendations in Section 9.3 in their report, as summarised in (6) above. This office would like to comments as follows:
 - ✓ We are in agreement that the two-storey office building as well as any other heavily loaded structures should be placed on a foundation designed to span a 5 m loss of support.
 - We are not in agreement that other lightly loaded structures can be founded on normal

	<p>shallow strip foundations. SANS 10400 Part H also indicates in Section A.7.3.2.1 that: "The design of a building in areas underlain by dolomites with a dolomite area designation of 03 shall be such that a sinkhole that has a nominal diameter of 2, 0 m on inherent hazard class 5 sites and 5, 0 m on inherent hazard class 3 and 4 sites, occurring anywhere on, beneath or adjacent to the building (see figure A 1), will not envelop the building, or result in the toppling or sliding failure of the building or a portion thereof into such a hole." Overall compliance with all relevant SANS documents are therefore required.</p> <ul style="list-style-type: none">• It should further be noted that final design recommendations can only be made once footprint investigations have been undertaken. The foundation recommendations by BR should therefore be viewed as provisional. This office would like to indicate that based on the existing information, <u>all structures on this site should provisionally be designed to span a 5 m loss of support.</u>• SANS 1936-2:2012 indicates that as a minimum for a feasibility level investigation, 1 borehole should be	
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	<p>drilled per hectare. A total of 7 boreholes have been drilled on this 7, 2 hectare site.</p> <ul style="list-style-type: none">• The investigation by BR almost meets the minimum requirement, but it should be noted that 8 boreholes should have been drilled on this stand. <p>Based on the results from the report by BR, this office is therefore in principle support of the proposed subdivision of Portion 67 Witfontein 15-IR, as indicated in the Urban Dynamics Divisional Plan, Plan No. 156 564 G, dated 20 May 2015. Our support for the proposed subdivision is conditional to the following:</p> <ul style="list-style-type: none">• Footprint investigations will have to be conducted prior to any development on this site. All results of footprint investigations will have to be submitted to this office for our review and comments. Only once this office is in agreement with the results and recommendations for the proposed Licensing Hub development, this office would be in a position to offer final comment on the development itself.• The precautionary measures as set out in SANS 1936	
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	<p>Part 3: Design and construction of buildings, structures and infrastructure, must be studied and implemented for a D3 site.</p> <ul style="list-style-type: none">• A site specific Dolomite Risk Management Plan must be compiled in accordance with the requirements of SANS 1936-4:2012 and implemented on the site.• The professional team involved, including BR, shall carefully consider the appropriate water precautionary measures and then ensure and finally certify that these have been implemented.• The Local Authority must implement a risk management system. Commenting on the suitability of sites within its jurisdiction is based on the premise that this system will be implemented. <p>This letter reflects the Council for Geoscience's view and approach to development on dolomite at this time, as reflected by the above date. These comments may not be viewed as open-ended. If a property changes ownership or land-use changes are made, the comment may in part or wholly no longer apply. This Office should be informed of such changes and the Competent Person responsible for the dolomite stability investigation should be given the opportunity to indicate the influence such changes could have on the overall</p>	
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	stability.	
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Comments from I&AP's on Basic Assessment Report



Appendix E7

From: Danie van der Merwe <danie@urbandynamics.co.za>
Sent: 18 September 2015 01:15 PM
To: pieter@gant.co.za
Cc: oupa@gant.co.za; leigh@gant.co.za
Subject: Ptn 67 Witfontein No 15 IR - geoscience comments
Attachments: image001.jpg; img-918123336-0001.pdf

Hi Pieter

Herewith the comments from Geoscience.

Regards
Danie van der Merwe
Pr. Pln A/085/2008

Urban Dynamics Gauteng Inc.

37 Empire Road, Parktown West, 2193
Tel: +27 (11) 482-4131 | Fax: +27(11) 482-9959 | Cell: +27(83) 419-5755
E-mail: danie@urbandynamics.co.za | URL: www.urbandynamics.co.za

The UD Quality Management System is ISO 9001 Accredited

Any customer comments and complaints should be forwarded to the Managing Director, Hannes Potgieter, either telephonically on (011) 482-4131 or email hannes@urbandynamics.co.za

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From: Judith Grobler [<mailto:jgrobler@geoscience.org.za>]
Sent: Friday, September 18, 2015 12:37 PM
To: Danie van der Merwe
Subject: comments from CGS

Hi Danie
Dankie vir die payment
Sien kommentaar vir jou aandag

JUDITH GROBLER
Databank Administrator
Data Management Services
Tel: +27 (0)12 841 1152
Email: jgrobler@geoscience.org.za
Website: <http://www.geoscience.org.za>
280 Pretoria Street, Silverton, Pretoria, 0001



Council for Geoscience

From: Danie van der Merwe [<mailto:danie@urbandynamics.co.za>]
Sent: 18 September 2015 12:25 PM
To: Judith Grobler
Cc: pieter@gant.co.za
Subject: RE: faktuur

Hi Judith

Herewith the proof of payment of the R2500.00 as per your invoice.

Kind Regards
Danie van der Merwe
Pr. Pln A/085/2008

Urban Dynamics Gauteng Inc.

37 Empire Road, Parktown West, 2193

Tel: +27 (11) 482-4131 | Fax: +27(11) 482-9959 | Cell: +27(83) 419-5755

E-mail: danie@urbandynamics.co.za | URL: www.urbandynamics.co.za

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From: Judith Grobler [<mailto:jgrobler@geoscience.org.za>]

Sent: Tuesday, September 15, 2015 9:29 AM

To: Danie van der Merwe

Subject: faktuur

Hi Danie

Stuur vir my die bewys van betaling , sodra ek dit ontvang het stuur ek die kommentaar vir jou aandag

Dankie

280 Pretoria Street, Silverton, Pretoria
Private Bag X112, Pretoria 0001, South Africa
Tel: +27 (0)12 841 1911
Fax: +27 (0)12 841 1221
email: info@geoscience.org.za
website: www.geoscience.org.za



Council for Geoscience



Our Reference: F4684.1
Proposed Licensing Hub –
Portion 67 of Witfontein Ext 78
Your Reference: WO 830
Enquiries: T Oosthuizen
Tel: 012 841 1160
Fax: 086 615 6682
Email: toosthuizen@geoscience.org.za
No. of Pages: 4

15 September 2015

Ekurhuleni Metropolitan Municipality
P O Box 13
Kempton Park
1620

ATTENTION: Pilusa Mashamaite

By Email: Pilusa.Mashamaite@ekurhuleni.gov.za

Dear Sir,

PROPOSED NEW LICENSING HUB

The firm, Urban Dynamics submitted the report by Blue Rain Consultants (BR): "Dolomite stability and soils investigation for the proposed Licensing Hub at Portion 67 Witfontein 15-IR, Esslen Park, Ekurhuleni Metropolitan Municipality – Phase 1", dated August 2014 to this office for comment on 7 September 2015. This office acts as an agent to state authorities in reviewing dolomite stability investigations on their behalf.

Urban Dynamics submitted the report as part of their application for division of Portion 67 (a portion of Portion 15) of the farm Witfontein 15-IR into two portions, namely:

- Portion RE/67 and
- Proposed Portion 137 of the farm Witfontein 15-IR.

The division is required to create a separate portion (Portion 137) for the proposed Tembisa Licencing Hub and simultaneously to incorporate the zoning of the Licencing Hub ("Social Services") into the Ekurhuleni Town Planning Scheme, 2014. The Remaining Extent of Portion 67 of the farm Witfontein 15-IR is the road reserve for the K60 Provincial Road.

BR was appointed by the Ekurhuleni Metropolitan Municipality (EMM) to conduct a dolomite stability and soils investigation for the proposed Licencing Hub in Esslen Park at Portion 67, Witfontein-IR.

The following is noted from the BR report:

- 1) The site is currently vacant and covers an approximate area of 7,2 hectares. The site is situated adjacent to a railway line station at the intersection of Pretoria Road and Sam Molela Street in Esslen Park.

- 2) This project is in line with the integrated Development Plan as well as the objective of the Department of establishing Motor Vehicle Registration Authority (MVRA) facilities and Drivers Licensing Testing Centres (DLTC) throughout the EMM. The proposed development consists of a two storey office building, testing bays, access roads and the associated infrastructure.

BR indicates that detailed layout plans were not available and their study only focused on a general dolomite stability assessment for the site. No footprint drilling has been conducted on the site.

According to BR the proposed development classifies as a C1 type development in SANS 1936-1:2012.

- 3) According to the published geological map (2528 CC Pretoria), the site is underlain by chert-rich dolomite of the Monte Christo Formation of the Malmani Sub-group, Chuniespoort Group, Transvaal Supergroup.

BR indicates that only limited groundwater information is available. The site is located in the Sterkfontein West Groundwater Compartment. Groundwater levels are expected in the order of 60 m below surface and the original groundwater level for this compartment is between 1490 and 1500 mamsl. BR states that no groundwater was encountered during the investigation.

- 4) Seven percussion boreholes were drilled on the site as well as the excavation of seven test pits. The following is noted from Section 7 of the BR report:

- The site is characterised by relatively shallow dolomite bedrock.
- The blanketing layer comprises colluvium, residual chert and weathered dolomite, including wad-rich material.
- Granite was encountered in boreholes EMM1485 and EMM1487.
- Sample and air losses were encountered in a number of boreholes drilled on the site.

- 5) In Section 8.2, the following is noted:

- The site is blanketed by a thin layer (6 m on average) of competent overburden, considered to have a low mobilisation potential, consisting of residual chert.
- This layer is underlain by a layer consisting of highly compressible wad (on average 6 m thick). The top portion of the wad often contains stringers of chert, which was encountered in all seven of the boreholes.
- Pinkish, slightly weathered granite gneiss was intersected below the weathered chert in boreholes EMM1487 and EMM1485.
- The entire site generally constitutes Risk Class 1/3/4 for both a non-dewatering and dewatering scenario due to the thick layer of wad present above the dolomite bedrock.
- A dolomite area designation D3 was assigned to the site.

- 6) Foundation recommendations are made in Section 9.3 of the report. The following is noted:

- The two storey building and other heavily loaded structures should be founded on a reinforced concrete raft design to span a 5 m loss of support.
- Other lightly loaded structures can be founded on Normal shallow strip foundations considering the prevailing geological conditions on site.

This office would like to comment as follows:

- a) This office would like to indicate the following regarding the hazard assessment of the site:
- * It should be noted that it is no longer being referred to as the Risk Class (as indicated in various sections of the report). SANS 1936 (2012) made reference to Inherent Hazard Class (IHC) or the hazard assessment of a site.
 - * BR indicates that the residual chert has a low mobilisation potential. Historically, chert has always been believed to have a medium mobilisation potential due to the loose nature of the material, usually being present as a chert rubble. Sinkholes have also very regularly formed through chert, and this office is not in agreement that chert generally has a low mobilisation potential.
 - * This office is uncertain about the presence of 'granite' in two of the boreholes. What is the origin of this material, and how is it possible that it is present in only two boreholes on the site and not in any other boreholes on or in close proximity of the site. Clarity regarding the origin and interpretation of this material is required. This site is situated quite some distance away from the nearest granite formations, at least about 500 m east of the granite based on available borehole logs at the CGS Database. The two boreholes which intersected granite are both situated on the eastern portion of the site, which is the furthest away from the granitic formations.
 - * This office is not entirely in agreement that the site represents IHC 1/3/4 conditions. In our opinion, the boreholes drilled all revealed medium hazard conditions, i.e. IHC 3/4. Since groundwater is expected to be present at depth, within dolomite bedrock, we are of the opinion that the site represents a low hazard in terms of dewatering, i.e. IHC 1. In our opinion, the site therefore represents a composite classification of IHC 3/4/1.
- b) BR indicates that the proposed land use is considered as C1, as per Table 2, SANS 1936-1:2012. In our opinion, the development type can either be viewed as C1 or C3. On IHC 3/4 land, a dolomite area designation D3 is required as well as footprint investigations.
- ✓ BR did assign a dolomite area designation D3 to the site, and it is therefore supported.
 - ✓ BR indicated that their investigation was not to fulfil the footprint drilling requirement, but only to investigate the general dolomite stability conditions of the site. Footprint drilling therefore still needs to be conducted.
- c) BR made foundation recommendations in Section 9.3 in their report, as summarised in (6) above. This office would like to comment as follows:
- ✓ We are in agreement that the two-storey office building as well as any other heavily loaded structures should be placed on a foundation designed to span a 5 m loss of support.
 - * We are not in agreement that other lightly loaded structures can be founded on normal shallow strip foundations. SANS 10400 Part H also indicates in Section A.7.3.2.1 that: "*The design of a building in areas underlain by dolomites with a dolomite area designation of D3 shall be such that a sinkhole that has a nominal diameter of 2,0 m on inherent hazard class 5 sites and 5,0 m on inherent hazard class 3 and 4 sites, occurring anywhere on, beneath or adjacent to the building (see figure A.1), will not envelop the building, or result in the toppling or sliding failure of the building or a portion thereof into such a hole.*" Overall compliance with all relevant SANS documents are therefore required.
 - * It should further be noted that final design recommendations can only be made once footprint investigations have been undertaken. The foundation recommendations by BR should therefore be viewed as provisional. This office would like to indicate that based on the existing information, all structures on this site should provisionally be designed to span a

5 m loss of support.

- d) SANS 1938-2:2012 indicates that as a minimum for a feasibility level investigation, 1 borehole should be drilled per hectare. A total of 7 boreholes have been drilled on this 7,2 hectare site.
- * The investigation by BR almost meets the minimum requirement, but it should be noted that 8 boreholes should have been drilled on this stand.

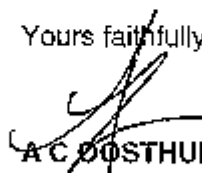
Based on the results from the report by BR, this office is therefore in principle support of the proposed subdivision of Portion 67 Witfontein 15-IR, as indicated in the Urban Dynamics Divisional Plan, Plan No. 156 564 G, dated 20 May 2015. Our support for the proposed subdivision is conditional to the following:

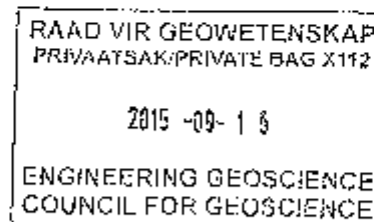

- e) Footprint investigations will have to be conducted prior to any development on this site. All results of footprint investigations will have to be submitted to this office for our review and comments. Only once this office is in agreement with the results and recommendations for the proposed Licensing Hub development, this office would be in a position to offer final comment on the development itself.
- f) The precautionary measures as set out in SANS 1936 Part 3: Design and construction of buildings, structures and infrastructure, must be studied and implemented for a D3 site.
- g) A site specific Dolomite Risk Management Plan must be compiled in accordance with the requirements of SANS 1936-4:2012 and implemented on the site.
- h) The professional team involved, including BR, shall carefully consider the appropriate water precautionary measures and then ensure and finally certify that these have been implemented.
- i) The Local Authority must implement a risk management system. Commenting on the suitability of sites within its jurisdiction is based on the premise that this system will be implemented.

This letter reflects the Council for Geoscience's view and approach to development on dolomite at this time, as reflected by the above date. These comments may not be viewed as open-ended. If a property changes ownership or land-use changes are made, the comment may in part or wholly no longer apply. This Office should be informed of such changes and the Competent Person responsible for the dolomite stability investigation should be given the opportunity to indicate the influence such changes could have on the overall stability.

If you have any further queries, please do not hesitate to contact this office.

Yours faithfully,


A.C. OOSTHUIZEN
Engineering Geologist



CC: Urban Dynamics Gauteng Inc.

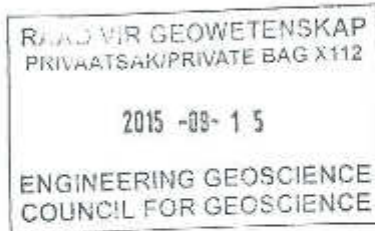
Attention: Danie van der Merwe

By email: danie@urbandynamics.co.za

280 Pretoria Street, Silverton, Pretoria
Private Bag X112, Pretoria 0001, South Africa
Tel: +27 (0)12 841 1911
Fax: +27 (0)12 841 1221
email: info@geoscience.org.za
website: www.geoscience.org.za



Council for Geoscience



Our Reference: F4684.1
Proposed Licensing Hub –
Portion 67 of Witfontein Ext 78
Your Reference: WO 830
Enquiries: T Oosthuizen
Tel: 012 841 1160
Fax: 086 615 6682
Email: toosthuizen@geoscience.org.za
No. of Pages: 4

15 September 2015

Ekurhuleni Metropolitan Municipality
P O Box 13
Kempton Park
1620

ATTENTION: Pilusa Mashamaite

By Email: Pilusa.Mashamaite@ekurhuleni.gov.za

Dear Sir,

PROPOSED NEW LICENSING HUB

The firm, Urban Dynamics submitted the report by Blue Rain Consultants (BR): "Dolomite stability and soils investigation for the proposed Licensing Hub at Portion 67 Witfontein 15-IR, Esslen Park, Ekurhuleni Metropolitan Municipality – Phase 1", dated August 2014 to this office for comment on 7 September 2015. This office acts as an agent to state authorities in reviewing dolomite stability investigations on their behalf.

Urban Dynamics submitted the report as part of their application for division of Portion 67 (a portion of Portion 15) of the farm Witfontein 15-IR into two portions, namely:

- Portion RE/67 and
- Proposed Portion 137 of the farm Witfontein 15-IR.

The division is required to create a separate portion (Portion 137) for the proposed Tembisa Licencing Hub and simultaneously to incorporate the zoning of the Licencing Hub ("Social Services") into the Ekurhuleni Town Planning Scheme, 2014. The Remaining Extent of Portion 67 of the farm Witfontein 15-IR is the road reserve for the K60 Provincial Road.

BR was appointed by the Ekurhuleni Metropolitan Municipality (EMM) to conduct a dolomite stability and soils investigation for the proposed Licencing Hub in Esslen Park at Portion 67, Witfontein-IR.

The following is noted from the BR report:

- 1) The site is currently vacant and covers an approximate area of 7,2 hectares. The site is situated adjacent to a railway line station at the intersection of Pretoria Road and Sam Molela Street in Esslen Park.

- 2) This project is in line with the integrated Development Plan as well as the objective of the Department of establishing Motor Vehicle Registration Authority (MVRA) facilities and Drivers Licensing Testing Centres (DLTC) throughout the EMM. The proposed development consists of a two storey office building, testing bays, access roads and the associated infrastructure.

BR indicates that detailed layout plans were not available and their study only focused on a general dolomite stability assessment for the site. **No footprint drilling** has been conducted on the site.

According to BR the proposed development classifies as a C1 type development in SANS 1936-1:2012.

- 3) According to the published geological map (2528 CC Pretoria), the site is underlain by chert-rich dolomite of the Monte Christo Formation of the Malmani Sub-group, Chuniespoort Group, Transvaal Supergroup.

BR indicates that only limited groundwater information is available. The site is located in the Sterkfontein West Groundwater Compartment. Groundwater levels are expected in the order of 60 m below surface and the original groundwater level for this compartment is between 1490 and 1500 mamsl. BR states that no groundwater was encountered during the investigation.

- 4) Seven percussion boreholes were drilled on the site as well as the excavation of seven test pits. The following is noted from Section 7 of the BR report:

- The site is characterised by relatively shallow dolomite bedrock.
- The blanketing layer comprises colluvium, residual chert and weathered dolomite, including wad-rich material.
- Granite was encountered in boreholes EMM1485 and EMM1487.
- Sample and air losses were encountered in a number of boreholes drilled on the site.

- 5) In Section 8.2, the following is noted:

- The site is blanketed by a thin layer (6 m on average) of competent overburden, considered to have a low mobilisation potential, consisting of residual chert.
- This layer is underlain by a layer consisting of highly compressible wad (on average 6 m thick). The top portion of the wad often contains stringers of chert, which was encountered in all seven of the boreholes.
- Pinkish, slightly weathered granite gneiss was intersected below the weathered chert in boreholes EMM1487 and EMM1485.
- The entire site generally constitutes Risk Class 1/3/4 for both a non-dewatering and dewatering scenario due to the thick layer of wad present above the dolomite bedrock.
- A dolomite area designation D3 was assigned to the site.

- 6) Foundation recommendations are made in Section 9.3 of the report. The following is noted:

- The two storey building and other heavily loaded structures should be founded on a reinforced concrete raft design to span a 5 m loss of support.
- Other lightly loaded structures can be founded on Normal shallow strip foundations considering the prevailing geological conditions on site.

This office would like to comment as follows:

- a) This office would like to indicate the following regarding the hazard assessment of the site:
- * It should be noted that it is no longer being referred to as the Risk Class (as indicated in various sections of the report). SANS 1936 (2012) made reference to Inherent Hazard Class (IHC) or the hazard assessment of a site.
 - * BR indicates that the residual chert has a low mobilisation potential. Historically, chert has always been believed to have a medium mobilisation potential due to the loose nature of the material, usually being present as a chert rubble. Sinkholes have also very regularly formed through chert, and this office is not in agreement that chert generally has a low mobilisation potential.
 - * This office is uncertain about the presence of 'granite' in two of the boreholes. What is the origin of this material, and how is it possible that it is present in only two boreholes on the site and not in any other boreholes on or in close proximity of the site. **Clarity regarding the origin and interpretation of this material is required.** This site is situated quite some distance away from the nearest granite formations, at least about 500 m east of the granite based on available borehole logs at the CGS Database. The two boreholes which intersected granite are both situated on the eastern portion of the site, which is the furthestmost away from the granitic formations.
 - * This office is not entirely in agreement that the site represents IHC 1/3/4 conditions. In our opinion, the boreholes drilled all revealed medium hazard conditions, i.e. IHC 3/4. Since groundwater is expected to be present at depth, within dolomite bedrock, we are of the opinion that the site represents a low hazard in terms of dewatering, i.e. IHC 1. In our opinion, the site therefore represents a composite classification of IHC 3/4/1.
- b) BR indicates that the proposed land use is considered as C1, as per Table 2, SANS 1936-1:2012. In our opinion, the development type can either be viewed as C1 or C3. On IHC 3/4 land, **a dolomite area designation D3 is required as well as footprint investigations.**
- ✓ BR did assign a dolomite area designation D3 to the site, and it is therefore supported.
 - ✓ BR indicated that their investigation was not to fulfil the footprint drilling requirement, but only to investigate the general dolomite stability conditions of the site. Footprint drilling therefore still needs to be conducted.
- c) BR made foundation recommendations in Section 9.3 in their report, as summarised in (6) above. This office would like to comments as follows:
- ✓ We are in agreement that the two-storey office building as well as any other heavily loaded structures should be placed on a foundation designed to span a 5 m loss of support.
 - * We are not in agreement that other lightly loaded structures can be founded on normal shallow strip foundations. SANS 10400 Part H also indicates in Section A.7.3.2.1 that: "*The design of a building in areas underlain by dolomites with a dolomite area designation of D3 shall be such that a sinkhole that has a nominal diameter of 2,0 m on inherent hazard class 5 sites and 5,0 m on inherent hazard class 3 and 4 sites, occurring anywhere on, beneath or adjacent to the building (see figure A.1), will not envelop the building, or result in the toppling or sliding failure of the building or a portion thereof into such a hole.*" Overall compliance with all relevant SANS documents are therefore required.
 - * It should further be noted that final design recommendations can only be made once footprint investigations have been undertaken. The foundation recommendations by BR should therefore be viewed as provisional. This office would like to indicate that based on the existing information, **all structures on this site should provisionally be designed to span a**

5 m loss of support.

- d) SANS 1938-2:2012 indicates that as a minimum for a feasibility level investigation, 1 borehole should be drilled per hectare. A total of 7 boreholes have been drilled on this 7,2 hectare site.
- * The investigation by BR almost meets the minimum requirement, but it should be noted that 8 boreholes should have been drilled on this stand.

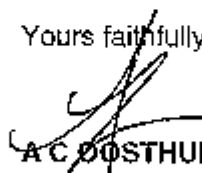
Based on the results from the report by BR, this office is therefore in principle support of the proposed subdivision of Portion 67 Witfontein 15-IR, as indicated in the Urban Dynamics Divisional Plan, Plan No. 156 564 G, dated 20 May 2015. Our support for the proposed subdivision is conditional to the following:

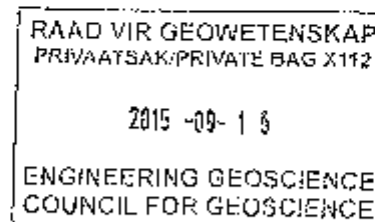

- e) **Footprint investigations will have to be conducted prior to any development on this site. All results of footprint investigations will have to be submitted to this office for our review and comments.** Only once this office is in agreement with the results and recommendations for the proposed Licensing Hub development, this office would be in a position to offer final comment on the development itself.
- f) The precautionary measures as set out in SANS 1936 Part 3: Design and construction of buildings, structures and infrastructure, must be studied and implemented for a D3 site.
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- h) The professional team involved, including BR, shall carefully consider the appropriate water precautionary measures and then ensure and finally certify that these have been implemented.
- i) The Local Authority must implement a risk management system. Commenting on the suitability of sites within its jurisdiction is based on the premise that this system will be implemented.

This letter reflects the Council for Geoscience's view and approach to development on dolomite at this time, as reflected by the above date. These comments may not be viewed as open-ended. If a property changes ownership or land-use changes are made, the comment may in part or wholly no longer apply. This Office should be informed of such changes and the Competent Person responsible for the dolomite stability investigation should be given the opportunity to indicate the influence such changes could have on the overall stability.

If you have any further queries, please do not hesitate to contact this office.

Yours faithfully,


A.C. OOSTHUIZEN
Engineering Geologist



CC: Urban Dynamics Gauteng Inc.

Attention: Danie van der Merwe

By email: danie@urbandynamics.co.za

Comments from I&AP's on Amendments to the Basic Assessment Report



Appendix E8

Not Applicable

Copy of the Register of I&AP's



Appendix E9

Nr	Registered Parties	Contact details
Stakeholders		
1	Council Geo-Science	jgrobler@geoscience.org.za
2	SAHRA Gauteng	asalomon@sahra.org.za nndobochani@sahra.org.za
3	PHRAG	maphata.ramphele@gauteng.gov.za
4	DWA	keetm@dwaf.gov.za siwelanel@dwa.gov.za tshifaror@dwa.gov.za mathebet@dwa.gov.za
5	Eskom	central@eskom.co.za paia@eskom.co.za
6	SANRAL	schmidk@nra.co.za
7	Gautrans	kumen.govender@gauteng.gov.za
8	Randwater	mmpshe@randwater.co.za nkoneigh@randwater.co.za
9	Ekurhuleni Local Municipality Cecilia Rakgoale	cecilia.rakgoale@ekurhuleni.gov.za Tel: 011 999 3316
10	Spoornet	daniel.ramokone@transnet.net loveous.tampane@transnet.net
11	Department of Land Claims Ms Nomfundo Gobodo	CLCC@ruraldevelopment.gov.za Tel: 012 312 8883
12	Constituency head Refiloe Ntsekhe	refiloentsekhe@hotmail.com 0713656850
Interested and Affected Parties		

Comments from I&AP's on the Application



Appendix E10

Not Applicable

**Water use license(s), SAHRA information,
service letters from municipalities, water
supply information**



Response to NID (Notification of Intent to Develop)

In terms of Section 38(8) of the National Heritage Resources Act (Act 25 of 1999)

Attention: Ekurhuleni Metropolitan Municipality

On Portion 67 of Portion 15 of the Farm Witkoppies 15 IR, Kempton Park

Ekurhuleni Metropolitan Municipality is proposing to construct a Traffic licensing hub which will include the licence testing grounds and the offices.. The proposed development will be located on Portion 67 of the farm Witkoppies 15 IR, Ekurhuleni Metropolitan Municipality, Gauteng Province.

In terms of the National Heritage Resources Act (NHRA), no 25 of 1999, heritage resources, including archaeological or palaeontological sites over 100 years old, graves older than 60 years, structures older than 60 years are protected. They may not be disturbed without a permit from the relevant heritage resources authority. This means that before such sites are disturbed by development it is incumbent on the developer (or mine) to ensure that a Heritage Impact Assessment is done. This must include the archaeological component (Phase 1) and any other applicable heritage components. Appropriate (Phase 2) mitigation, which involves recording, sampling and dating sites that are to be destroyed, must be done as required.

No Heritage Impact Assessment was uploaded to this case. Nor a Palaeontological Impact Assessment was uploaded to the case on SAHRIS.

SAHRA Notification of Development comment

SAHRA APM Unit requires a Heritage Impact Assessment study conducted by a suitably qualified professional archaeologist for the proposed development. The assessment should look at the built environment, graves, and archaeology of the proposed development

The proposed development lies in a *Very High to moderate* palaeontological sensitive zone (<http://www.sahra.org.za/sahris/map/palaeo>), thus SAHRA APM unit will require a Palaeontological Impact Assessment Survey for this proposed development also conducted by a suitably qualified professional palaeontologist.

SAHRA will comment further on this proposed development once the above requested studies are submitted to the case.

Should you have any further queries, please contact the designated official using the case number quoted above in the case header.

Yours faithfully





Nokukhanya Khumalo
Heritage Officer
South African Heritage Resources Agency

ADMIN:

Direct URL to case: <http://www.sahra.org.za/node/271163>
(GDARD, Ref:)

Specialist Reports



Agricultural Potential



Appendix G1



REPORT

SOIL, LAND USE AND AGRICULTURAL POTENTIAL SURVEY:

PROPOSED TEMBISA LICENSING HUB, GAUTENG PROVINCE

3 July 2015

Compiled by:
J.H. van der Waals
(PhD Soil Science, Pr.Sci.Nat)

Member of:
Soil Science Society of South Africa (SSSSA)

Accredited member of:
South African Soil Surveyors Organisation (SASSO)

Registered with:
The South African Council for Natural Scientific Professions
Registration number: 400106/08

Declaration

I, Johan Hilgard van der Waals, declare that I –

- I act as the independent specialist in this application
- 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 the specialist report relevant to this application, 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 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;
- all the particulars furnished by me in this form are true and correct; 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.



J.H. VAN DER WAALS
TERRA SOIL SCIENCE

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SOIL, LAND USE AND AGRICULTURAL POTENTIAL SURVEY: PROPOSED TEMBISA LICENSING HUB, GAUTENG PROVINCE

1. INTRODUCTION

1.1 TERMS OF REFERENCE

Terra Soil Science was appointed by **Bokamoso** to conduct an agricultural potential survey/assessment of the proposed Tembisa Licensing Hub site near Tembisa in the Gauteng Province.

1.2 AGRICULTURAL POTENTIAL BACKGROUND

The assessment of agricultural potential rests primarily on the identification of soils that are suited to crop production. In order to qualify as high potential soils they must have the following properties:

- Deep profile (more than 600 mm) for adequate root development,
- Deep profile and adequate clay content for the storing of sufficient water so that plants can weather short dry spells,
- Adequate structure (loose enough and not dense) that allows for good root development,
- Sufficient clay or organic matter to ensure retention and supply of plant nutrients,
- Limited quantities of rock in the matrix that would otherwise limit tilling options and water holding capacity,
- Adequate distribution of soils and size of high potential soil area to constitute a viable economic management unit, and
- Good enough internal and external (out of profile) drainage if irrigation practices are considered. Drainage is imperative for the removal (leaching) of salts that accumulate in profiles during irrigation and fertilization.

In addition to soil characteristics, climatic characteristics need to be assessed to determine the agricultural potential of a site. The rainfall characteristics are of primary importance and in order to provide an adequate baseline for the viable production of crops rainfall quantities and distribution need to be sufficient and optimal.

In the case where crop production is not possible due to soil or climatic constraints aspects such as grazing potential and carrying capacity is considered. Grazing capacity is mainly determined by vegetation characteristics of a site and would therefore have to be deduced from vegetation reports (that do address carrying capacity) or from dedicated discussions with farmers and land users. The combination of the above mentioned factors will be used to assess the agricultural potential of the soils on the site.

2. BRIEF DESCRIPTION OF THE SURVEY AREA

2.1 SURVEY AREA BOUNDARY

The survey area lies between 26° 01' 48" and 26° 01' 59" S and 28° 14' 55" and 28° 15' 16" E southeast of the Tembisa in the Gauteng Province (**Figure 1**). The survey site is surrounded by land with varying degrees of urban development impacts and is bordered by a railway line in the east and a road in the south.

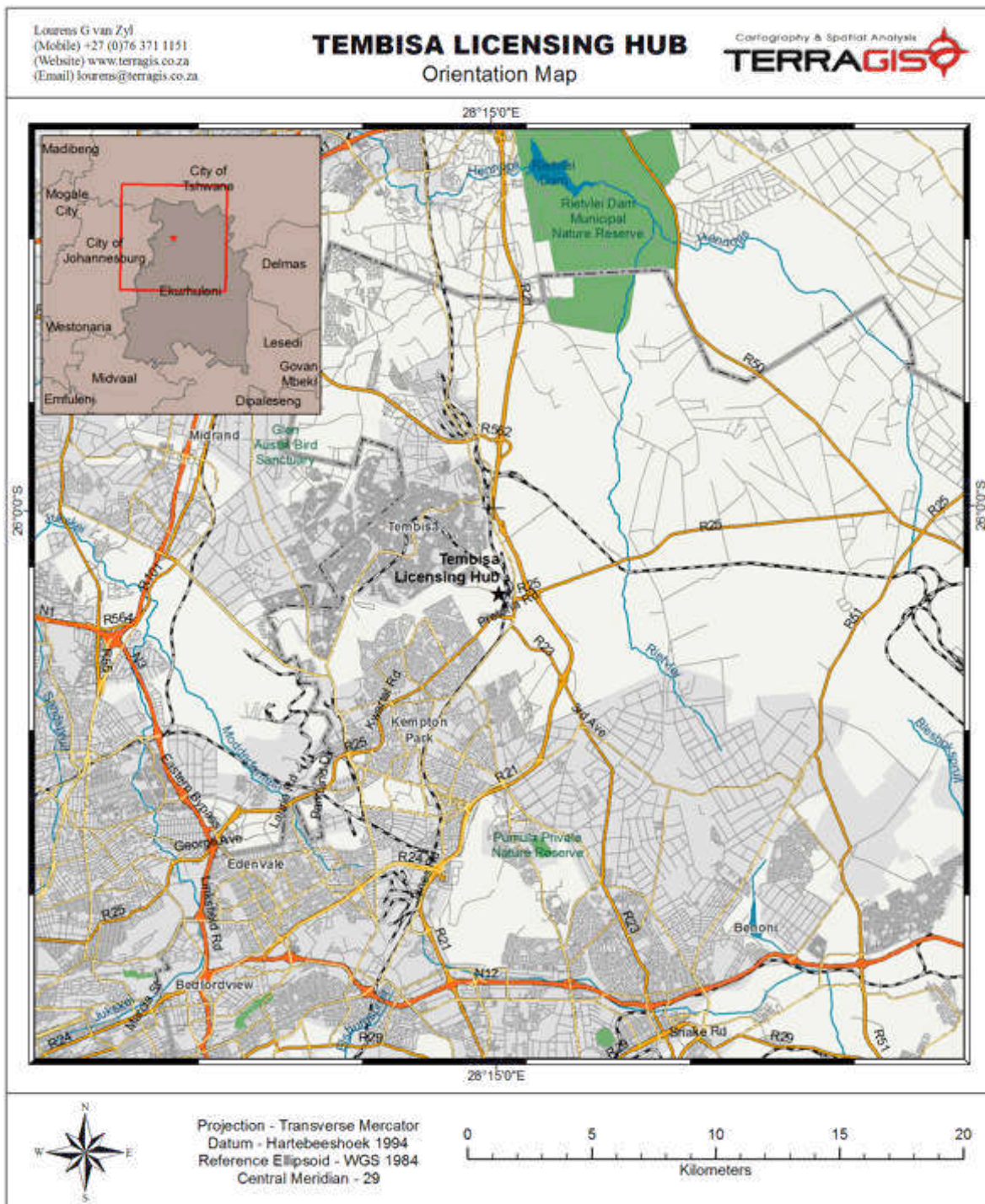


Figure 1 Location of the survey site

2.2 SURVEY AREA PHYSICAL FEATURES

The site lies on flat terrain at an altitude between 1615 and 1625 m above mean sea level. The geology of the site appears to be influenced by shale and dolomite leading to the dominance of red soils throughout. There are no drainage features on the site.

3. METHOD OF SOIL AND AGRICULTURAL SURVEY

The survey was conducted in four phases.

3.1 PHASE 1: LAND TYPE DATA

Land type data for the site was obtained from the Institute for Soil Climate and Water (ISCW) of the Agricultural Research Council (ARC) (Land Type Survey Staff, 1972 – 2006). The land type data is presented at a scale of 1:250 000 and entails the division of land into land types, typical terrain cross sections for the land type and the presentation of dominant soil types for each of the identified terrain units (in the cross section). The soil data is classified according to the Binomial System (MacVicar et al., 1977). The soil data was interpreted and re-classified according to the Taxonomic System (The Soil Classification Working Group, 1991).

3.2 PHASE 2: TOPOGRAPHIC PARAMETERS

The topography of the site was elucidated through the generation of a digital elevation model (DEM) map and a topographic wetness index (TWI) for the site. Data generated during this phase was verified during the field survey phase and used to generate additional soil information for the site.

3.3 PHASE 3: SATELLITE IMAGE INTERPRETATION

A dedicated satellite image (Google Earth) interpretation exercise was conducted to determine the current site conditions as well as the historical land uses. This was done through the accessing of Google Earth images from different periods in the past.

3.4 PHASE 4: SITE VISIT AND SOIL SURVEY

For the soil survey the site was traversed on foot. Important characteristics of the site were noted and photographed. Soil profiles were described where auguring was possible.

4. SURVEY RESULTS

4.1 PHASE 1: LAND TYPE DATA

Figure 2 presents the land type distribution for the site and surrounding area. The land type found on the site is **Ba1** (Land Type Survey Staff, 1972 – 2006). Below follows a brief description of the land type in terms of soils, land capability, land use and agricultural potential.

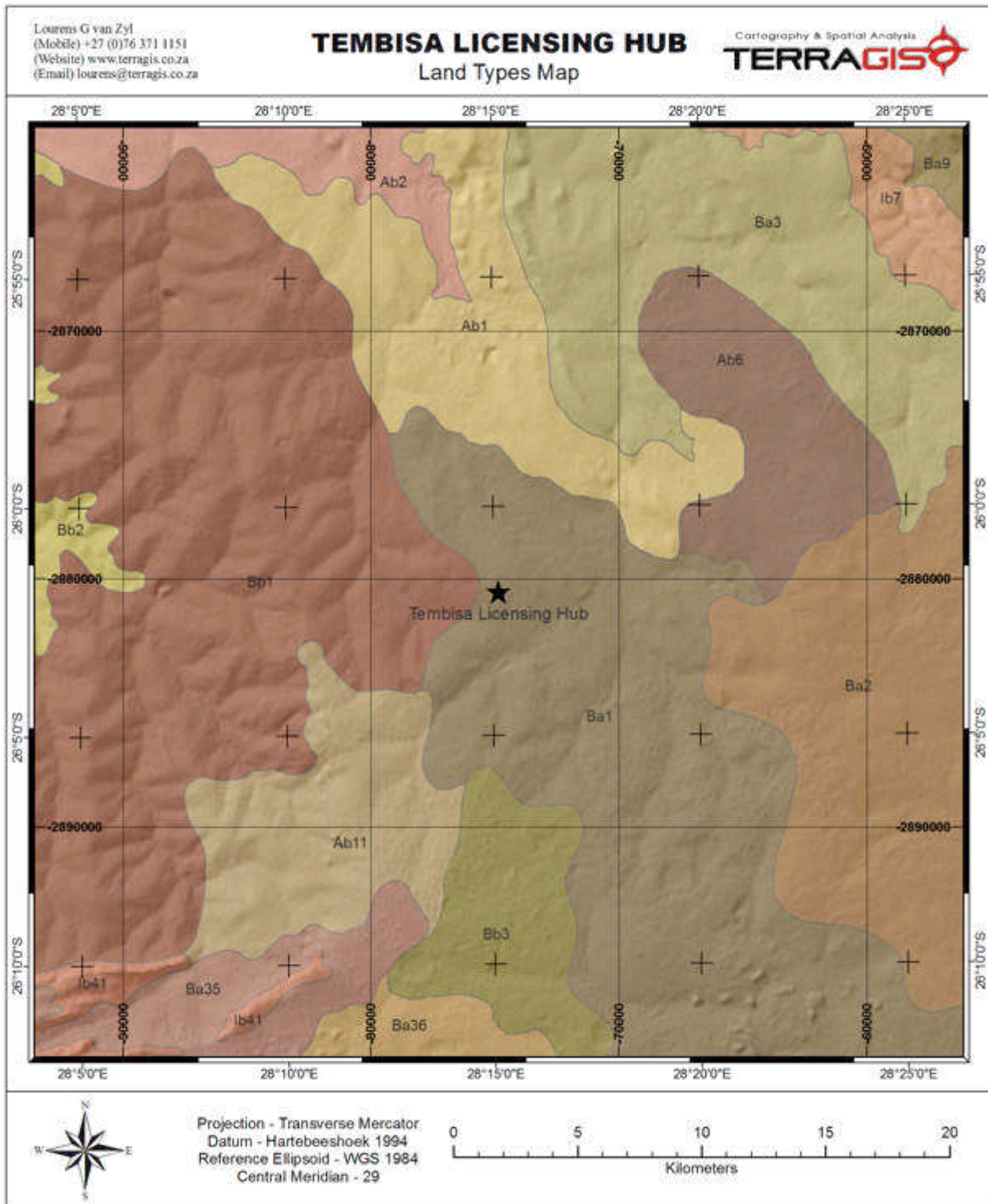


Figure 2 Land type map of the survey site and its surrounding area

Land Type Ba1

Land Type – General: Ba land types accommodate plinthic landscapes where the dominant soils are red apedal and dystrophic or mesotrophic.

Soils: Soils are predominantly red coloured sandy to sandy loam on crests, yellow-brown with plinthic subsoils in midslope positions, bleached with plinthic and G horizon subsoils in footslope and valley bottom positions. Clay contents generally increase from crest to valley bottom..

Land capability and land use: The land use in the general land type area ranges from irrigated and dryland crop production to extensive grazing in areas where soils are too shallow and rocky to cultivate. The land capability mimics the land use.

Agricultural potential: The agricultural potential is generally moderate to high due to adequate rainfall (**Figure 3**) and moderate to deep soils. In areas where urban and mining developments have take place the agricultural potential is lower due to a range of human related challenges to commercial agricultural production. Areas dominated by shallow and rocky soils are also of low agricultural potential.

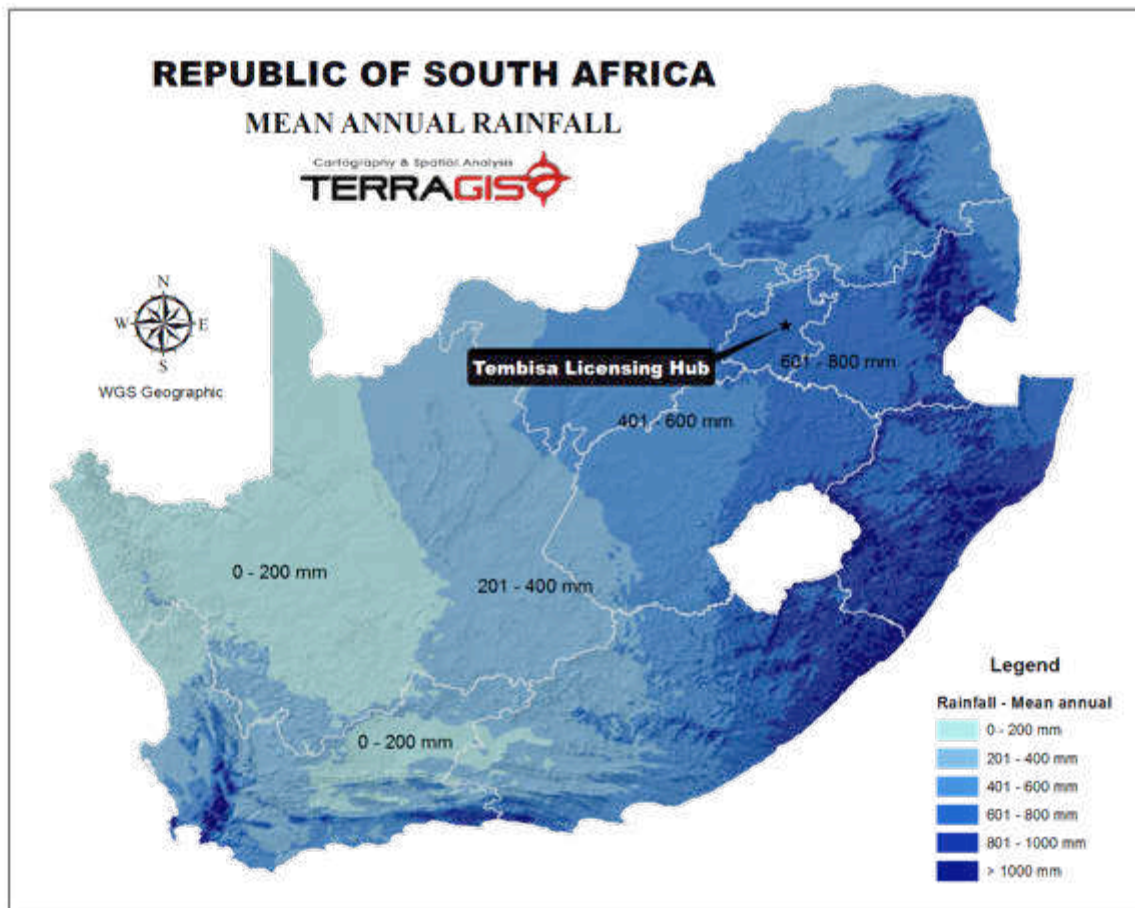


Figure 3 Rainfall map of South Africa indicating the survey site

4.2 PHASE 2: TOPOGRAPHIC PARAMETERS

Contours of the site (5 meters) were used to generate a digital elevation model (**Figure 4**). This data was used to generate the topographic wetness index (TWI) for the site (**Figure 5**). The TWI indicates areas where water will flow and accumulate on the surface and does not necessarily indicate wetlands.

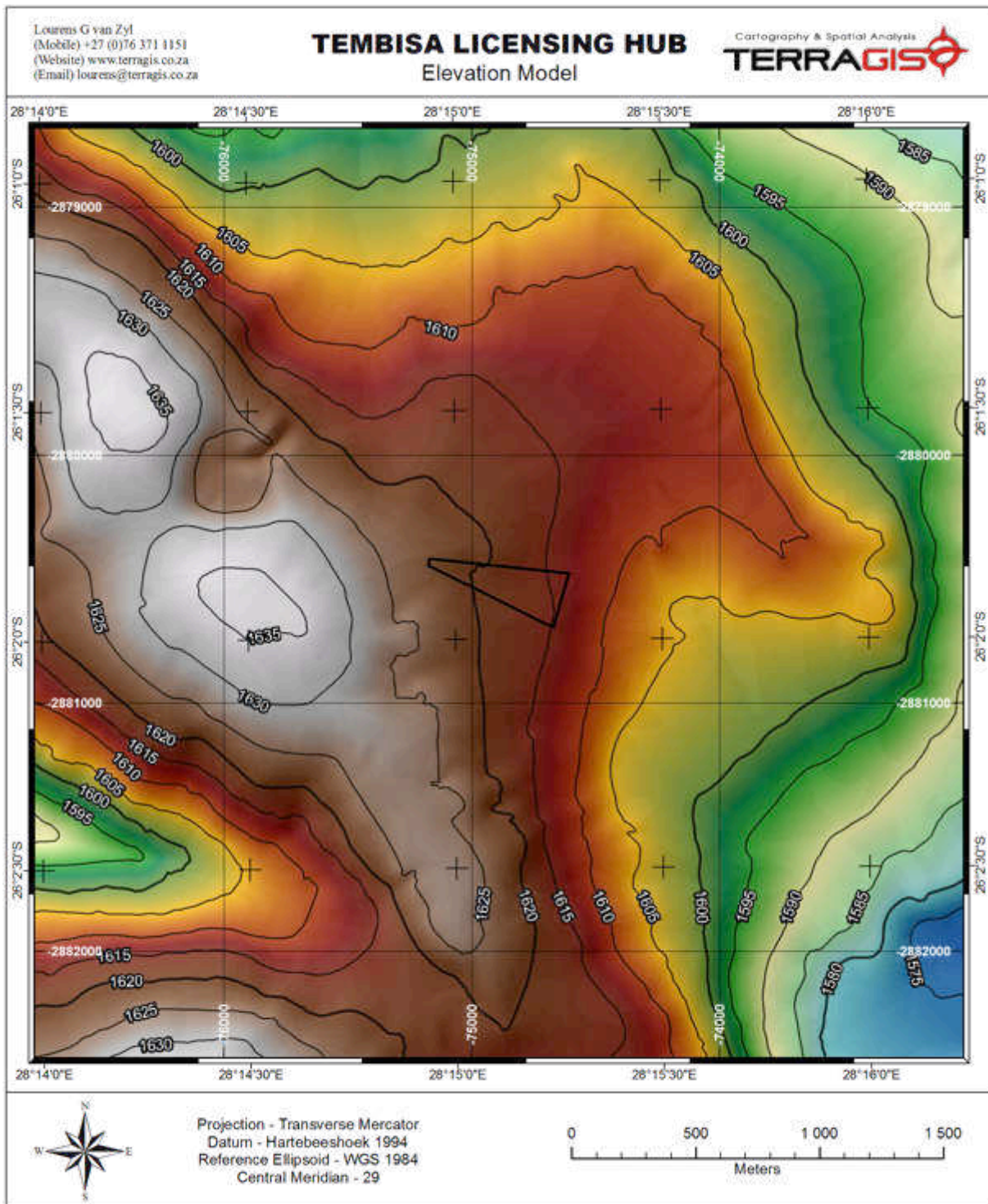


Figure 4 Digital elevation model for the survey site

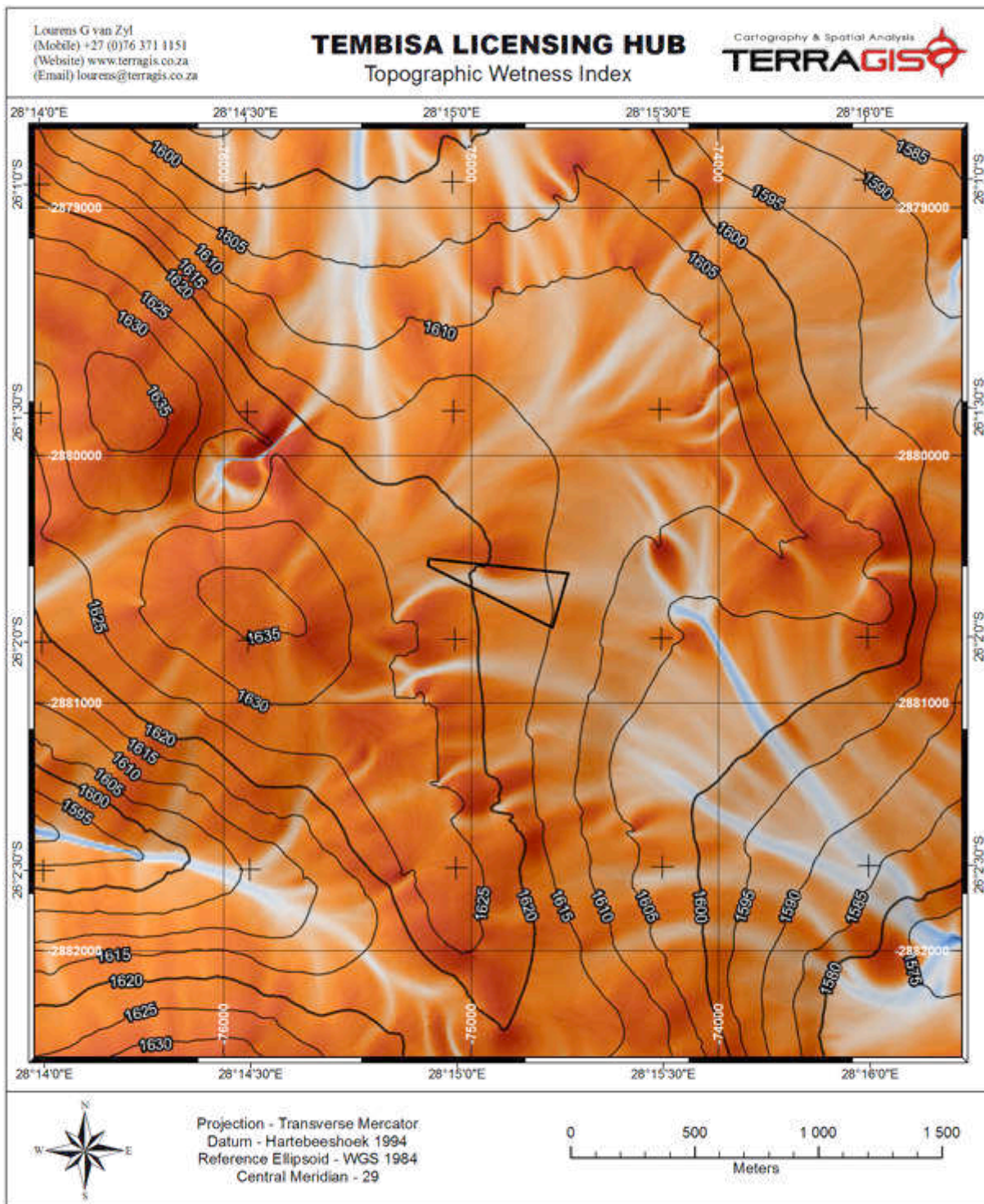


Figure 5 Topographic wetness index for the survey site

From extensive experience on the field of hydrogeology it is evident that the TWI provides a very accurate indication of water flow paths and areas of water accumulation that are often correlated with wetlands. This is a function of the topography of the site and ties in with the dominant water flow regime in the soils and the landscape. Areas in blue indicate concentration of water in flow paths with lighter shades of blue indicating areas of regular water flows in the soils and on the surface of the wetland / terrestrial zone interface. The site does not have any wetland features.

4.3 PHASE 3: SATELLITE IMAGE INTERPRETATION

The contours of the site are superimposed on a recent satellite image of the area in Figure 6. Various Google Earth images of the site (**Figures 7 to 10**) were accessed and interpreted to identify land use characteristics (current and historical) of the site and surrounding area.



Figure 7 Land use on the site and surrounding area (Google Earth image 2011/10/22)



Figure 7 Google Earth image (2002/05/16) indicating the presence of several aspects of land disturbance on the site



Figure 8 Google Earth image (2011/08/01) indicating increased dumping of rubble on the site and surrounding area as well as subsistence agriculture to the north



Figure 9 Google Earth image (2013/10/26) indicating the dumping of rubble on the site and surrounding area as well as subsistence agriculture area to the north dissected by a new fence



Figure 10 Google Earth image (2014/04/24) indicating the dumping of rubble along the new fence north of the site as well as cessation of subsistence agriculture activities

4.4 PHASE 4: SITE VISIT AND SOIL SURVEY

The soil survey revealed that the soils on the site are predominantly red coloured and of a sandy loam to sandy clay loam texture. The dominant soil on the site is of the Hutton (orthic A horizon / red apedal B horizon / unspecified material – usually weathering rock) form. The subsoil, and often topsoil horizons, indicates copious amounts of manganese concretions in a darkened apedal matrix. This is an indication of a distinct influence of dolomite as parent material.

The site has been altered and degraded drastically through the dumping of rubble and land disturbances associated. **Figures 11 to 23** provide a record of the land characteristics.



Figure 11 Land disturbances on the site



Figure 12 Land disturbances on the site with rubble



Figure 13 Land disturbances on the site



Figure 14 Rubble on the site



Figure 15 Rubble on the site



Figure 16 Rubble on the site



Figure 17 Altered and alien vegetation on the site



Figure 18 Land disturbances on the site



Figure 19 Land disturbances on the site



Figure 20 Rubble and alien vegetation on the site



Figure 21 Alien and disturbed vegetation on the site



Figure 22 Historical land alteration on the site



Figure 23 Rubble and alien vegetation on the site

5. AGRICULTURAL POTENTIAL

5.1 AGRICULTURAL POTENTIAL OF THE SITE

The agricultural potential of the site is linked to the current status of the land as well as the disturbances that are evident throughout. The conclusion is that the agricultural potential is low.

5.2 SOIL POTENTIAL LINKED TO CURRENT LAND USE AND STATUS

The current land use and status of the land precludes it from being used for agricultural purposes. This is especially evident in the sporadic subsistence agriculture practised north of the site and not on the site itself.

5.3 COST-BENEFIT ANALYSIS

In the light of the condition of the site it is considered that large costs would have to be incurred to restore the site to agricultural production. The size and location of the site does not allow for the recovery of such costs and a cost-benefit analysis will invariably yield negative results in terms of agricultural use.

5.4 CURRENT ACTIVITIES / DEVELOPMENTS / BUILDINGS

The site is currently in a poor state with severe alteration and extensive dumping of rubble. No buildings are evident on the site.

5.5 SURROUNDING DEVELOPMENTS / LAND USES / ACTIVITIES WITHIN A 500 M RADIUS

The surrounding land uses include areas that have been changed from agriculture to various urban related activities. It is therefore not possible to incorporate the site with any functioning surrounding agricultural activities.

5.6 CURRENT STATUS OF LAND

The current status of the land is as discussed above under the relevant headings.

5.7 POSSIBLE LAND USE OPTIONS FOR THE SITE

Due to the extensive alteration of the site the only option that is considered viable is the development and subsequent management of the site and surrounding area. The site is not suited to crop production.

6. CONCLUSIONS AND RECOMMENDATIONS

It is concluded that:

1. From the soil and site survey the conclusion is that the agricultural potential is low with no possibility of improving it without significant cost.
2. The site has been degraded and the surrounding land has very similar impact.
3. The only viable option for effective land management is considered to be development and management of the site and surrounding open land.

References

Land Type Survey Staff. 1972 – 2006. Land Types of South Africa: Digital map (1:250 000 scale) and soil inventory databases. ARC-Institute for Soil, Climate and Water, Pretoria.

MacVicar CN, De Villiers JM, Loxton RF, Verster E, Lambrechts JJN, Merryweather FR, Le Roux J, Van Rooyen TH, Harmse HJ von M. 1977. Soil Classification. A binomial system for South Africa. *Sci. Bull. 390. Dep. Agric. Tech. Serv., Repub. S. Afr.*, Pretoria.

Soil Classification Working Group. 1991. Soil Classification. A taxonomic system for South Africa. *Mem. Agric. Nat. Resour. S.Afr.* No.15. Pretoria.

Dolomite Report



Appendix G2

Memorandum



Ekurhuleni
METROPOLITAN MUNICIPALITY

TO :	REAL ESTATE DEPARTMENT: SPRINGS CUSTOMER SERVICE CENTRE	Corporate Office
Attention	S. Ndlandla	City Planning
Tel	+27 (0) 11 999-8880	Ground Floor, Sanlam Building Cnr Margaret Ave & Kempton Road
Email		KEMPTON PARK
FROM :	Dolomite Risk Management	1620
Enquiries	Pilusa Mashamaite	Tel : (011) 999 4019
Ref	Portion 1,2,3,4,5,6,7,8,9,10 & 11 Erf 235 Iggagqa Ext 1	Fax : (011) 999 3517
Tel	011 999-4666	www.ekurhuleni.gov.za
Date	15 July 2014	

REQUEST TO RENDER ASSISTANCE TO THE RELIGIOUS COMMUNITY WITH FACILITIES, LAND AND BUILDINGS TO BE USED FOR THE PURPOSE OF WORSHIPPING: PORTION 1,2,3,4,5,6,7,8,9,10 & 11 OF ERF 235 IGQAGQA EXT 1

The following document with reference to the above mentioned site was submitted by the Real Estate Department to the Dolomite Risk Management Section (DRMS) of the Ekurhuleni Metropolitan Municipality (EMM) for evaluation and comments in July 2014.

- Memorandum Subject: Request to render assistance to religious community with facilities, land and buildings to be used for the purpose of worshipping

The combined size of the stands measures approximately 10, 29 hectares. The site is earmarked for building of churches.

Evaluation of Existing Dolomite Information

According 1:250 000 geological sheet 2628 of East Rand, the site is directly underlain by the migmatite, banded gneiss, porphyritic granodiorite of the Halfway House Granite and the eastern corner of portion 5/235 is underlain by quartzite of the Black Reef Formation. The area is non-dolomitic except for the area underlain by quartzite. The area underlain by Black Reef quartzite formation is classified as dolomitic due to the presence of WAD material which is highly susceptible to erosion by concentrated ingress water which may trigger sinkhole and subsidence formation. However, the historic dolomite investigations in the proximity to site indicates no dolomite was encountered during drilling and the regional Inherent Hazard Classification (IHC) for the area is IHC0 implying no hazard.

Conclusions and Recommendations

From the dolomite stability point of view, DMRS has no objection for the proposed land use on all other portions except for portion 5 of erf 235 which is partly underlain by quartzite of Black Reef formation which implies that footprint drilling will be required if there will be new buildings to be constructed on that particular stand.

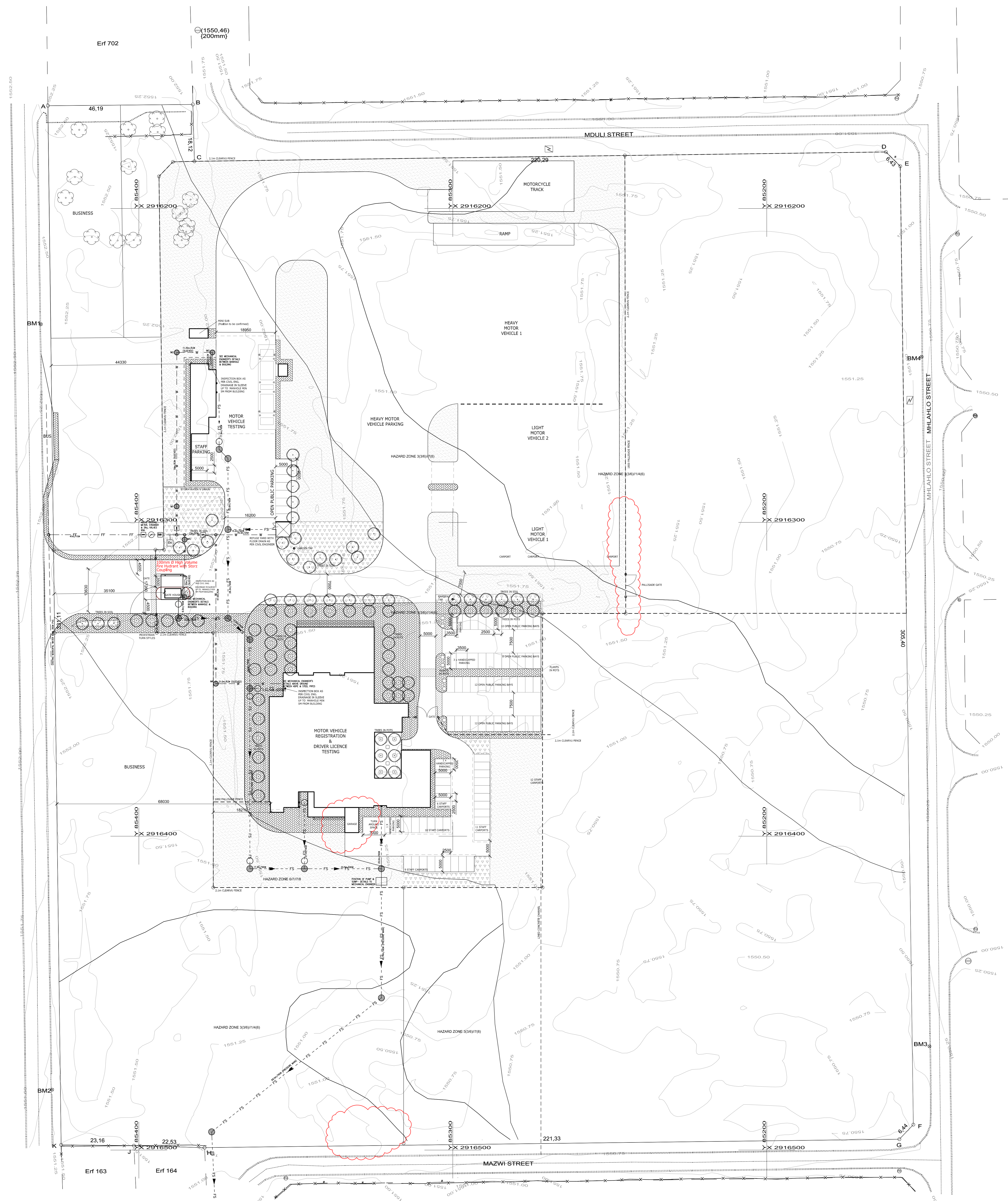
The Real Estate department should also submit the building footprint drawings so that the geotechnical investigations can be done accordingly.

NB: It must be noted that these are from a geotechnical perspective only, therefore comments from Roads, Water and Sewer departments must also be obtained.

If you require any additional information, please contact Mr. Pilusa Mashamite (011 999-4666).
pilusa.mashamite@ekurhuleni.gov.za



Morena Letsosa
Divisional Head: Geo-Informatics
City Planning Department



SITE LAYOUT
Scale 1:500

SURVEY LEGEND

	Tree
	Light pole
	Traffic Light
	Sewer manhole cover
	Storm water manhole cover
	Telkom manhole cover
	Sign post
	Water meter
	Telephone pole
	Valve
	Fire Hydrant
	Fence or wall
	Electrical box / substation
	Cable marker
	(1642,53) Invert level
	(200mm) Pipe diameter

Description of Beacons:

A Hole drilled in paving
 B 12mm from peg in concrete
 C,D,F,G,H,J,K 12mm from peg
 BM1, BM2, BM3, BM4 12mm from peg next to kerb

Heights of Reference Marks:

BM1 = 1552,435m
 BM2 = 1551,331m
 BM3 = 1550,475m
 BM4 = 1550,920m

Notes:

1. The figure ABCDEFGHJK represents Erf 553, measuring 8,6104 hectares in extent.

LANDSCAPE LEGEND

	FEATURE TREE IN SOIL
	FEATURE TREE IN TREE GRID
	FEATURE TREE IN ENVIRO ELEMENTS BLOC 1200 PLANTER
	FEATURE PLANTING IN ENVIRO ELEMENTS BLOC 1200 PLANTER
	HYDRO-SEEDED VELD GRASS
	WATER-WISE GROUND COVER PLANTING
	60mm BOSUN URBAN PAVING SHL, MED, LRG, VARIOUS COLOURS
	80mm BOSUN INTERLOCKING PAVER, VARIOUS COLOURS

NOTE:
 BOLLARDS, BENCHES, LITTER BINS TO LATER DETAIL

PARKING CALCULATIONS

1	OFFICES (2107m ²): 4 bays / 100m ² = 84 NEEDED
2	TOTAL NEEDED: 84 bays
PROVIDED:	
	Covered: 37 bays
	Open: 47 bays
	TOTAL: 84 bays

COVERAGE CALCULATIONS

1	TOTAL SITE = 86104m ²
2	COVERAGE = 3.33%
3	FAR = 0.037

AREA SCHEDULE:

GROUND FLOOR:
 Covered Waiting Area = 349m²
 Ground Floor MVR + DLT = 181m²
 Covered Patio = 71m²
 Staff Entrance = 23m²
 MVT Shed = 603m²
 MVR Office = 166m²
 Public Admin = 11m²

FIRST FLOOR:
 First Floor MVR = 309m²

GATEHOUSE 1:
 = 18m²

TOTAL = 3 173m²

NOTE:

- ALL LEVELS AND DIMENSIONS TO BE CHECKED ON SITE PRIOR TO THE COMMENCING OF WORK.
- ALL WORK TO BE IN ACCORDANCE WITH THE NATIONAL BUILDING REGULATIONS (SANS 10400) AND LOCAL AUTHORITY BY-LAWS.
- CONTRACTORS MUST VERIFY ALL DIMENSIONS AND LEVELS ON SITE BEFORE COMMENCING OF WORK. ARCHITECT TO BE NOTIFIED OF ANY DISCREPANCIES IMMEDIATELY.

No.	DATE	REVISION
B	2014.02.12	Parking areas and roads
	2014.02.11	Refuge yard, kerbs, sewage and water supply
	2014.01.17	Stores, gatehouse, testing grounds, parking
A	2014.01.17	Weight bridge road layout

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- NOTE:**
- ROADS AND STORM WATER TO ENGINEER'S DESIGN
 - DRAINAGE TO ENGINEER'S DESIGN
 - ALL PARKING BAYS MIN: 5 X 2.5m
- DRAWING LIST:**
- 13.44.101 REVO - Location plan
 - 13.44.102 REVO - Site plan
 - 13.44.201 REVO - MVR + DLT Ground floor
 - 13.44.202 REVO - MVR + DLT First floor
 - 13.44.203 REVO - MVT Ground floor
 - 13.44.204 REVO - Roof plans
 - 13.44.205 REVO - Gatehouses and stores Ground floor
 - 13.44.301 REVO - MVR + DLT Elevations
 - 13.44.302 REVO - MVT Elevations and Sections
 - 13.44.303 REVO - Gatehouse Elevations
 - 13.44.304 REVO - Store Elevations, Sections and Schedule
 - 13.44.401 REVO - MVR + DLT Sections
 - 13.44.701 REVO - Window Schedule
 - 13.44.801 REVO - Door and Finishing Schedule



project name: 13.44_KLHUB page type: A1
 JA du Pisani SACAP: 7031

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discipline: —
 project description: **KATLEHONG LICENSING HUB, EKURHULENI**
 location: **LETSOHO STREET, KATLEHONG**
 drawing title: **SITE LAYOUT**
 phase: **4.1 MUNICIPAL SUBMISSION**
 scale: 1:500 on A0 drawn: ADP / TGM
 date: 2014-03-26 checked: ADP
 drawing number: **13.44/102_REV C**

Flora & Fauna Assessment



Appendix G3



Bokamoso Landscape Architects & Environmental Consultants

Basic assessment Flora and Fauna Assessment

PROPOSED Tembisa Licensing Hub: Portion 67 Witfontein No 15 IR GAUTENG, South Africa

By

Samuel Laurence

Lukas Niemand

sam@enviro-insight.co.za

¹ Image of habitat made during the field survey

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1 INTRODUCTION AND PROJECT PURPOSE

Enviro-Insight CC was commissioned by Bokamoso Landscape Architects and Environmental Consultants to perform a fauna and flora study for a basic assessment of the PROPOSED WITFONTEIN LICENSING HUB ON A PORTION OF THE FARM WITFONTEIN 16-LR situated within Esselen Park Ext 1 north of Sam Mobeke Drive and west of the railway servitude (west of Pretoria Road, M57). The surface extent of the study site is approximately 5.5 ha. This site falls within the Carletonville Dolomite Grassland regional vegetation unit (Figure 1; Mucina & Rutherford 2006). The assessment was carried out in order to obtain an ecological baseline of the site and relate the data Impacts and Mitigations relating to the proposed development. In addition, the study area was not earmarked by GDARD as a conservation priority (e.g. irreplaceable or important) or part of an ecological support area (according to the Gauteng Conservation Plan V.3).

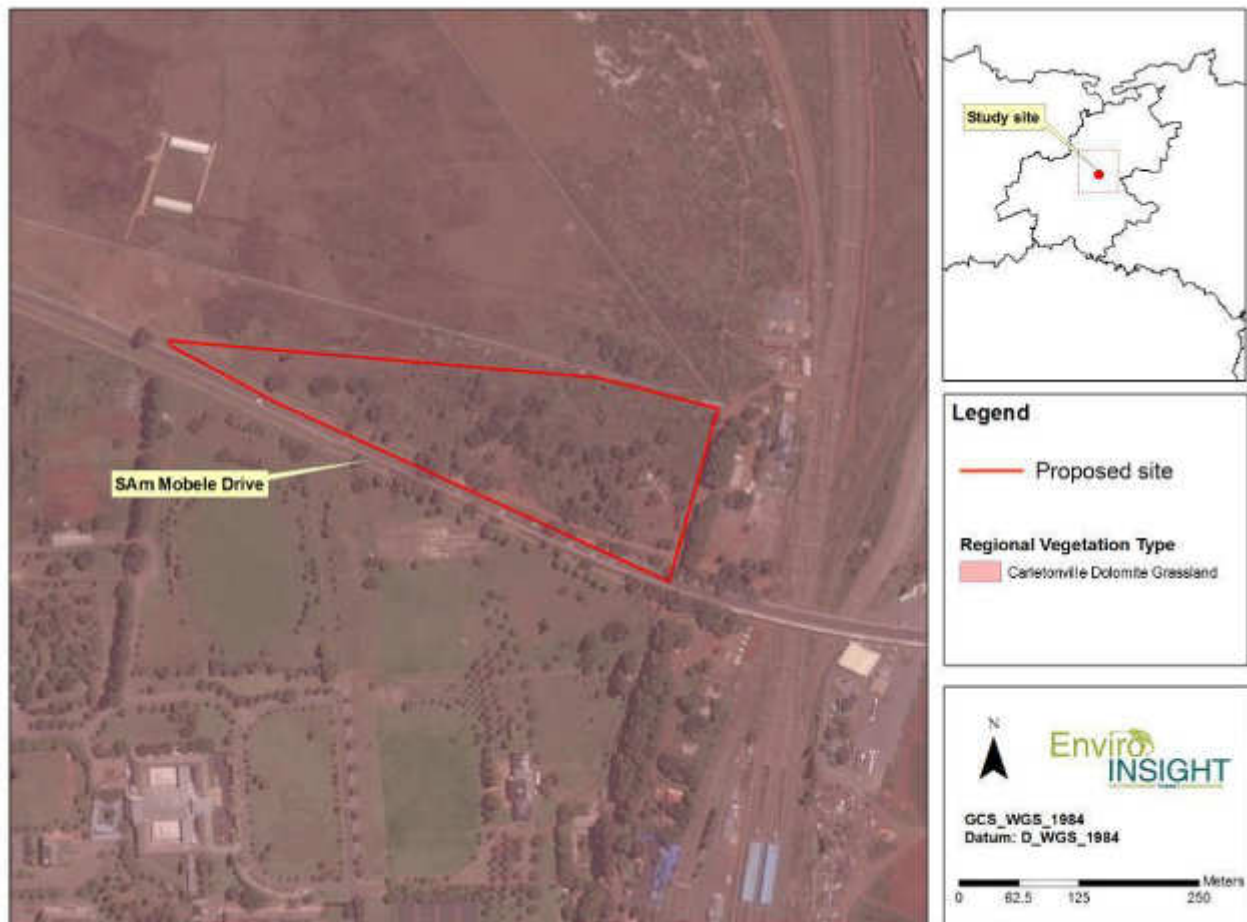


Figure 1: The study area in relation to the regional vegetation type

2 METHODS

2.1 FIELD SURVEY AND SEASONALITY

A field survey was performed during 23 April 2015 by a specialist zoologist/ecologist where the botanical and the faunal aspects of the study site were evaluated. The timing of the study represented late wet-season conditions which were still considered to be optimal. During the field survey, the proposed development site was covered on foot and within vehicles and a series of georeferenced photographs were taken of the habitat attributes that would serve to drive the results and conclusions. The field survey focused on a classification of the dominant flora and habitats as well as the actual and potential presence of threatened, near-threatened and declining plant and animal species (also referred to as Red-Listed species), which are species of conservation concern in South African (*sensu* Raimondo *et al.*, 2009 and <http://redlist.sanbi.org>, including taxa protected by NEMBA (2014) or indeed other legislations applicable provincially or nationally). An analysis of the diversity and ecological integrity of the habitat(s) present on site was also performed as well as the presence of indigenous vegetation with an extent of more than 1 (connected) hectare.

2.2 DESKTOP SURVEY

2.2.1 Literature study

As mentioned above, much of the approach for this survey followed the guidelines stipulated by the GDARD minimum requirements for Biodiversity Studies (GDARD, 2012). The level of this study does not warrant intensive sampling but rather serves to combine the aspects of the regional vegetation unit (obtained from Mucina and Rutherford 2006) with the field study in order to formulate a series of conclusions and any subsequent recommendations based on the ecological integrity of the habitat types present. Many of the potential avifaunal triggers were referenced by the Southern Africa Bird Atlas Project (SABAP 2), Taylor (*in press*) and Hockey *et al.* (2005). Mammal information was referenced by Skinner and Chimimba (2005) and Friedman and Daly (2004) while reptiles and amphibians were referenced from Bates *et al.* (2014) and Du Preez and Carruthers (2009) respectively. Plant taxon nomenclature follows that of Germishuizen *et al.* (2006). The applicability of the information obtained from the literature sources was evaluated for the proposed study site only, and subsequent recommendations are to be used by the client (Bokamoso) in order to drive the development process in accordance with the relevant legislation.

2.2.2 GIS

Ground truthing and the use of recent satellite imagery were used to assist in the characterisation of the study site.

2.3 IMPACT ASSESSMENT

The following list of impacts was evaluated against the data captured during the fieldwork to identify the relevance to the study area. The relevant impacts (the associated number indicated in **bold**) were then subjected to a prescribed Impact Analysis methodology which is described below. Mitigation measures were only applied to Impacts deemed relevant on the basis of the Impact Analysis. The EIA parameters and the Significance matrix were shown in Table 1 and **Error! Reference source not found.** respectively.

FLORA

Potential Impacts:

1. Loss, destruction and/or eradication of plant species of 'conservation concern'
2. Impact on plant communities of particular scientific, conservation or educational value
3. Impact on sensitive plant ecological systems:
 - Wetlands
 - Riparian vegetation along river/stream banks
4. Decrease in bio-diversity of natural plant communities
5. Possibility to enhance the spread of invasive and/or alien plants and declared weeds
6. Threat to the ecological functioning of natural plant communities due to:
 - Isolation of plant communities by destruction of habitat
 - Reduction in the effective size of habitat/community
 - Physical destruction of the habitat
7. Degradation of plant habitat through:
 - Compaction of the topsoil through trampling, vehicles, machinery etc.
 - Introduction and/or spread of invasive alien species - creation of dispersal sites
 - Potential for bush encroachment through disturbance of topsoil

It must be noted that after evaluation, "non-significant" identified impacts were not subjected to post mitigation quantification analysis. Mitigation measures proposed for such impacts (and this is SITE SPECIFIC) are considered best practice and generic.

FAUNA

Potential Impacts:

1. Loss and/or displacement of animal species of “conservation concern”
2. Impact on natural communities of particular scientific, conservation or educational value
3. Impact on natural movement of species (flight pathways etc.)
4. Disturbance of non-resident or migrant species (birds over-wintering, breeding)
5. Decrease in bio-diversity of natural animal communities
6. Decrease in availability and reliability of food sources for animal communities
7. Possibility to introduce and/or enhance the spread of alien animal species
8. Threat to the ecological functioning of natural terrestrial communities due to:
 - Isolation of animal communities by destruction of habitat
 - Physical destruction of the habitat
9. Construction of barriers to animal movement or migration

Table 1: EIA Parameters

LIKELIHOOD DESCRIPTORS

Probability of impact	RATING
Highly unlikely	1
Possible	2
Likely	3
Highly likely	4
Definite	5

Sensitivity of receiving environment	RATING
Ecology not sensitive/important	1
Ecology with limited sensitivity/importance	2
Ecology moderately sensitive/important	3
Ecology highly sensitive/important	4
Ecology critically sensitive/important	5

CONSEQUENCE DESCRIPTORS

Severity of impact	RATING
Insignificant / ecosystem structure and function unchanged	1
Small / ecosystem structure and function largely unchanged	2
Significant / ecosystem structure and function moderately altered	3
Great / harmful/ ecosystem structure and function largely altered	4
Disastrous / ecosystem structure and function seriously to critically altered	5

Spatial scope of impact	RATING
Activity specific/ < 5 ha impacted / Linear features affected < 100m	1
Development specific/ within the site boundary / < 100ha impacted / Linear features affected < 100m	2
Local area/ within 1 km of the site boundary / < 5000ha impacted / Linear features affected < 1000m	3
Regional within 5 km of the site boundary / < 2000ha impacted / Linear features affected < 3000m	4
Entire habitat unit / Entire system/ > 2000ha impacted / Linear features affected > 3000m	5

Duration of impact	RATING
One day to one month : Temporary	1
One month to one year : Short Term	2
One year to five years: Medium Term	3
Life of operation or less than 20 years: Long Term	4
Permanent	5

2.3.1 Limitations and Implications to the Proposed Development

- The level of study did not warrant long-term or quantitative trapping methods (i.e. small mammal trapping, camera trapping, night surveys, and phytosociological delineation) and therefore the data-set represents the sampling effort. The confidence in the data however is high due to the *status quo* of the study area, the size of the study area (being very small) and the prevailing conditions during the study period.
- The level of detail only represents an evaluation of the current ecological status and integrity of the habitat types/plant communities on the study site.

3 RESULTS

3.1 DESCRIPTION OF STUDY AREA

The study area was classified as falling entirely within the Carletonville Dolomite Grassland regional vegetation unit. This unit has been classified as Vulnerable due to the high levels of cultivation, urban sprawl and mining activities (Mucina & Rutherford 2006). It was however evident from the ground-truthing (photos provided in the Appendix 1) that much of the study site is not ecologically intact and reminiscent of both historical and recent perturbation events. As far as the regional vegetation unit, the site shows no ecological resemblance to its original floristic composition which therefore suggests persistent transformation. Also, very little of the study site coincides with any threatened ecosystem, and very little of the remaining (original) late-successional extent of the Carletonville Dolomite Grassland occurs on the study site (Figure 2). The potential for Red Listed species is discussed below. Significant current impacts (shown photographically in Table 2) were recorded on site, most of which related directly to ecological edge effects and adjacent anthropogenic activities. In addition, the study site is characterised by ongoing ecological impacts, resulting in the loss of natural vegetation (followed by invasion by ruderal and exotic weed and invader taxa), subsistence cultivation and refuse dumping.

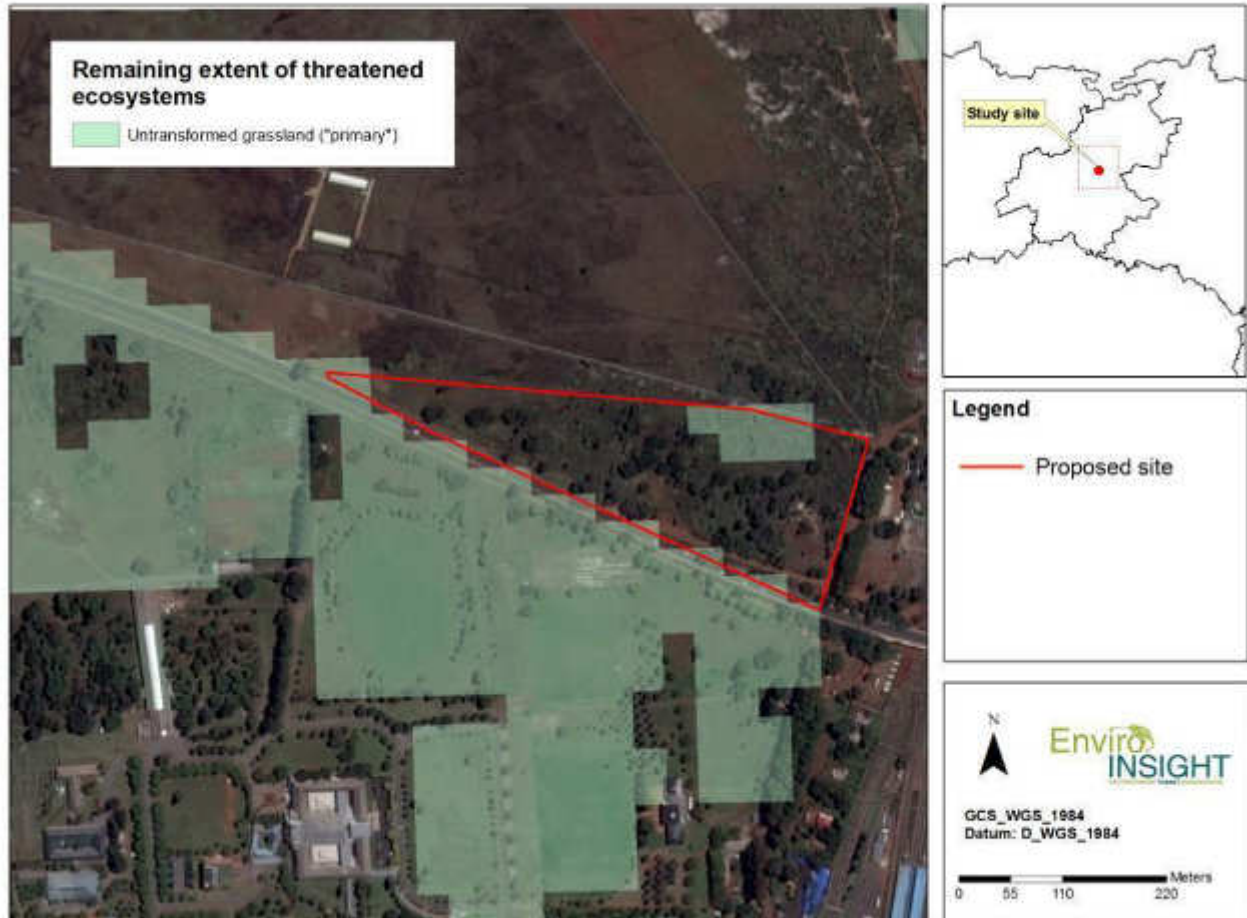


Figure 2: The remaining extent of threatened ecosystems corresponding to the study site.

The most significant identified current impacts on site included:

- The high densities of alien invasive and ruderal weed species including *Bidens pilosa*, *Melia azedarach*, *Eucalyptus camaldulensis* and *Tagetes minuta*;
- The physical transformation (subsistence agricultural practice) of the site;
- Adjacent industrial activities (noise and traffic effects);
- Dumping of human and building refuse.

Photographic evidence of the current impacts on the site is shown in Table 2.

Table 2: Examples of current impacts observed in the study area during the survey

	
<p>Invasion by <i>Melia azedarach</i></p>	<p>Habitat transformation by means of subsistence cultivation</p>
	
<p>Dumping of building waste</p>	<p>Clearing of vegetation</p>

3.2 DESCRIPTION OF STUDY AREA

The following section provides a description of each of the habitat types occurring within the study site. The past history of transformation of events along with the small surface area of the study site obscured the delineation of many discrete habitat types of floristic units. Therefore, the study site is composed of two diffused habitat types, namely Infrastructure (composed mainly of exotic vegetation) and Transformed secondary grassland (Appendix 2 provides a preliminary shortlist of the plant species).

3.2.1 Habitat Unit 1 – Infrastructure

The extent of this unit on the study site is 3.87 ha (or 71.0 % of the site). This unit comprises of completely transformed habitat.

The vegetation occurring within this unit comprises of exotic invader tree species and ruderal weed communities, especially *Bidens pilosa*, *Tagetes minuta*, *Pennisetum clandestinum*, *Melia azedarach* and *Acacia mearnsii*. This vegetation has very low species richness in terms of indigenous species and does not contain suitable habitat for any plant or vertebrate 'species of conservation concern' (*sensu* Raimondo *et al.*, 2009). This unit is therefore **negligible** in terms of its ecological importance and function. The photographic example of the Infrastructure Habitat Type is shown as Figure 3.



Figure 3: Photographic example of the Infrastructure habitat type

3.2.2 Habitat Unit 2- Transformed Secondary Grassland

The extent of this unit on the study site is 1.58 ha (or 29.00% of the site). This grassland habitat type is located on areas that were historically severely disturbed, and is representative of a grassland sere that is at a so-called “plagioclimax” stage based on the dominance of increaser grass species pertaining to the genus *Hyparrhenia*. This habitat unit displays comparatively low species richness and the unit does not provide suitable habitat for any threatened, near-threatened or declining plant or vertebrate ‘species of conservation concern’, although a single individual of the protected *Bonatea antennifera* was recorded from this habitat.

The vegetation unit is strongly dominated by grasses, while forb diversity is low. The dominant species is the grass *Hyparrhenia tamba*. The grasses *Hyparrhenia hirta*, *Aristida congesta* and *Cynodon dactylon* are common and localised sub-dominants. Other common grasses include *Eragrostis curvula*, *Melinis repens*, *Urochloa mossambicensis* and *Brachiaria eruciformis*. Forbs include *Tagetes minuta*, *Bidens pilosa*, *Verbena bonariense* and *Cosmos bipinnatus*.

This unit comprises of secondary vegetation confined to previously transformed habitats. It has a low species richness in terms of indigenous species and is not representative of untransformed regional vegetation types (as defined by Mucina & Rutherford 2006). Most of the species richness is made up of alien ruderal weeds and indigenous pioneer species, which is typical of secondary grassland. Furthermore, no threatened or near-threatened species (*sensu* Raimondo *et al.*, 2009) were recorded from the unit. This unit has a **low** ecological sensitivity. A photographic example of the Disturbed Vegetated Habitat Type is shown as Figure 4.



Figure 4: Photographic example of the Transformed Secondary Grassland

3.3 HABITAT DELINEATION

Figure 5 shows the final delineation of the proposed study site. As per the discussion, the study was carried out in the absence of classification of seeps and/or other wetland characteristics. Overall, all the habitats on site are considered to be transformed and reminiscent of past and extant disturbance events.

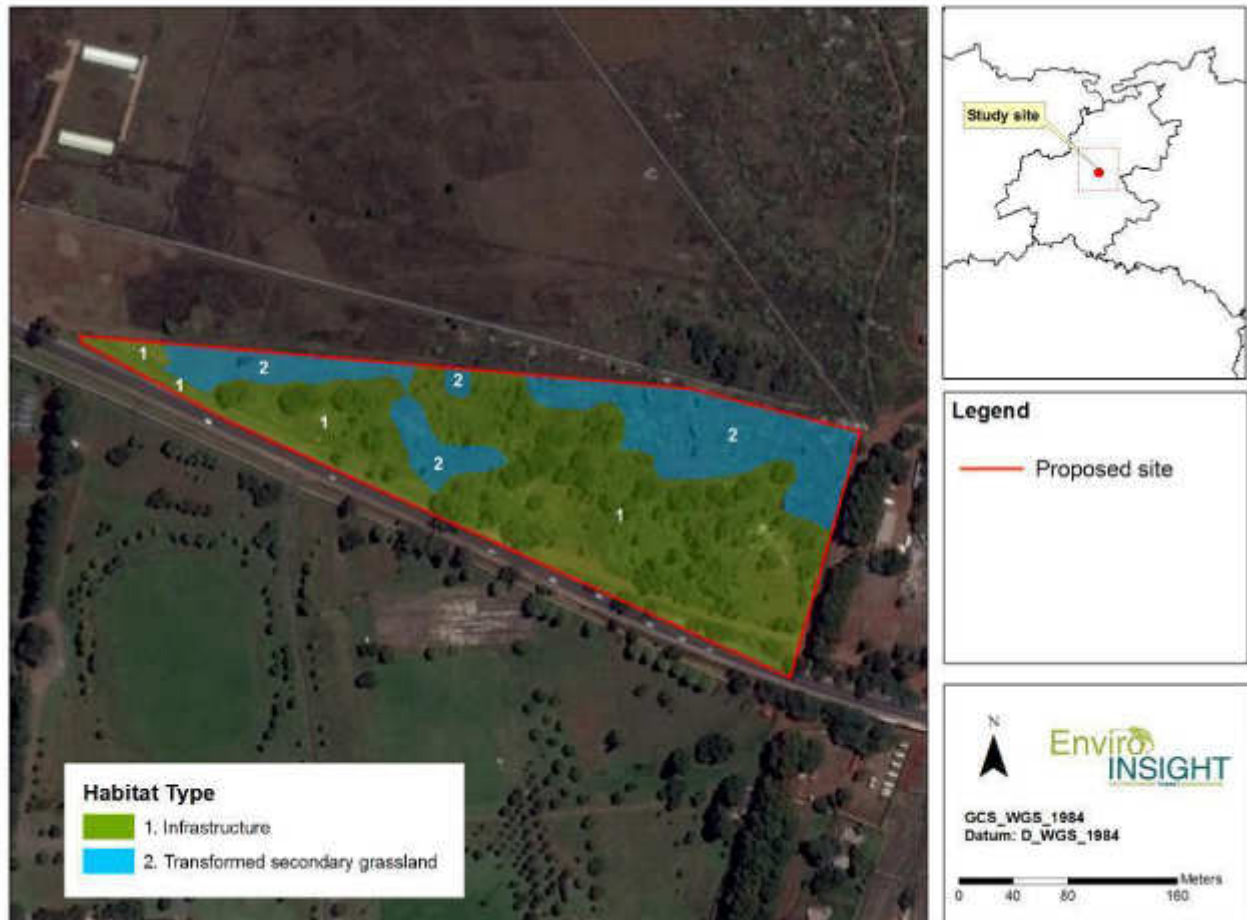


Figure 5: Final Habitat Delineation of the designated study site

3.4 FAUNAL SPECIES OF CONSERVATION CONCERN

Through the assessment of faunal characteristics of the site (habitat suitability and frequency of disturbances) as well as applying a basic assessment performed in conjunction with the aforementioned faunal references, only one faunal “trigger” species was identified and thus require further discussion. The species identified was based on its probability of occurrence (based on habitat potential and historical records) and are discussed below:

South African Hedgehog *Atelerix frontalis*

The South African Hedgehog is listed as national near-threatened taxa (*sensu* Friedman & Daly, 2004) and historical records

show that this species is sympatric to the study area (it was recorded from the same quarter-degree grids, 2628AA & 2628AB which overlap with the study site; Figure 6). In general, this species is widespread and shows a wide habitat tolerance, although its occurrence on the study site is regarded to be low based on the high frequency of disturbances present.

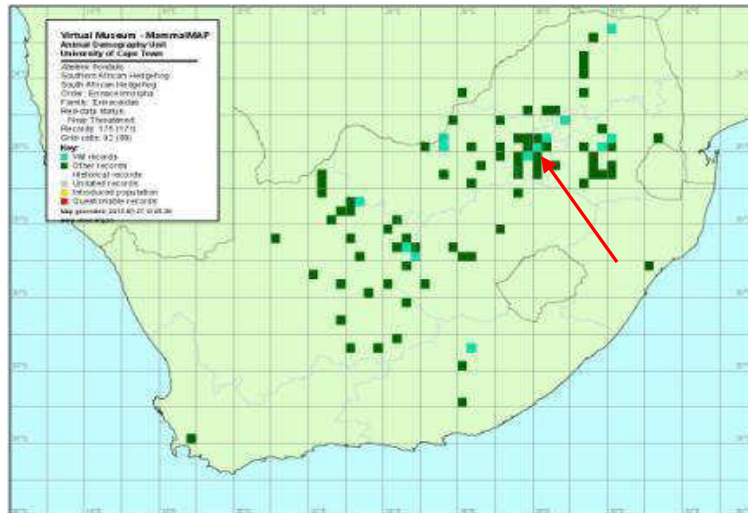


Figure 6: The known distribution range of the South African Hedgehog *Atelerix frontalis*. The arrow indicates the approximate position of the study area. (The maps are courtesy and the copyright of the Animal Demography Unit)

3.5 FLORAL SPECIES OF CONCERN

Based on the vegetation analysis and the observations made during the survey it is evident that the area currently does not contain any suitable habitat for threatened or near-threatened plant taxa to be present. This is reiterated by the fact that the soil layer has been transformed sufficiently in order to severely limit the presence of such species. However, a single specimen of the geophyte *Bonatea antennifera* (Orchidaceae) was recorded from the transformed secondary grassland (Figure 7). Although this species is not threatened or near-threatened (*sensu* Raimondo *et al.*, 2009), it is protected under Schedule 11 of the Transvaal Nature Conservation Act (No.12 of 1983). Although old, the Act is still applicable to the province. A permit is required to remove or disturb a protected plant. It is recommended that protected plants in danger of becoming destroyed during any of the planned activities be removed (rescued) prior to the commencement of construction activities and translocated to transformed or degraded habitat of potentially suitable habitat within the study area, or used during the rehabilitation phase.



Figure 7: An example of *Bonatea antennifera* from the study site and approximate distribution

4 HABITAT SENSITIVITY AND IMPACTS RATINGS

The section will also be broken down into the various components of Environmental Impact Assessment, Fauna, Flora and Habitats. The Impact Table is shown as Table 3.

4.1 HABITAT SENSITIVITY

The final habitat sensitivity is illustrated as Figure 8. The overall sensitivity is defined as being low or negligible due to poor ecological condition of the habitat types as well as high levels of disturbance.

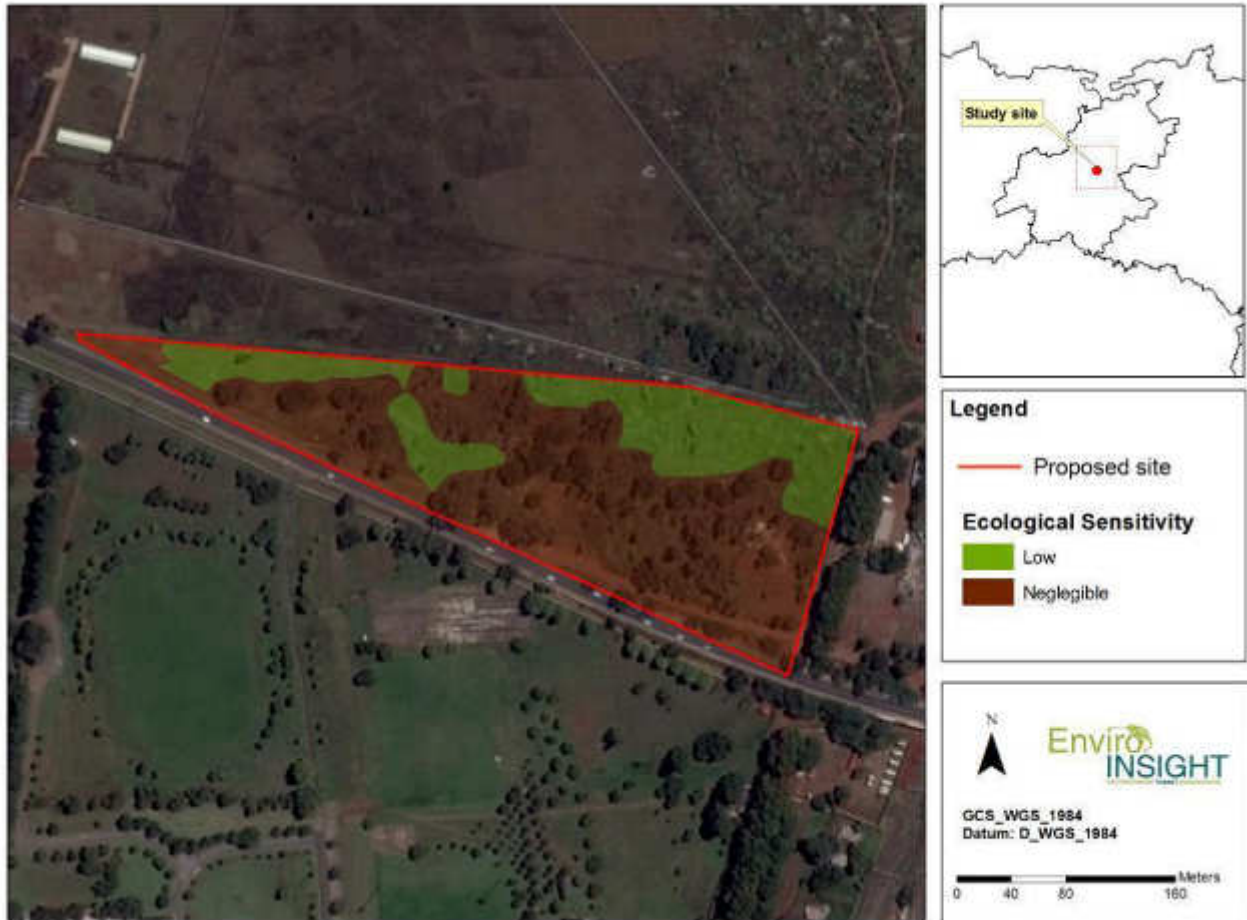


Figure 8: Final habitat sensitivity mapping of the designated study area

4.2 ENVIRONMENTAL IMPACT RATINGS

Table 3: Positive/Negative Mitigation Ratings

Code	Impact	Pre-mitigation						Post-mitigation					
		Duration of Impact	Spatial Scope	Sensitivity of Receiving Environment	Severity of Impact	Probability of Impact	Significance	Duration of Impact	Spatial Scope	Sensitivity of Receiving Environment	Severity of Impact	Probability of Impact	Significance
Flora	Loss destruction and/or eradication of plant species of 'conservation concern'	Long term	Development Specific	Ecology with limited sensitivity	Small	Likely	Low-Moderate	Short-term	Activity-specific	Ecology not sensitive	Insignificant	Possible	Very low
Flora	Decrease in bio-diversity of natural plant communities/habitat types	Medium term	Local Area	Small / ecosystem structure and function largely unchanged	Very low	Possible	Low-Negative	Short-term	Development Specific	Insignificant / ecosystem structure and function unchanged	Insignificant	Highly unlikely	Very low
Habitat Degradation	Introduction and/or spread of invasive alien species - creation of dispersal sites	Long-term	Regional	Significant / ecosystem structure and function moderately altered	Moderately Significant	Possible	Moderate	Short-term	Site-specific	Insignificant / ecosystem structure and function unchanged	Very low	Possible	Very low

5 CONCLUSION AND PROFESSIONAL OPINION AS REQUIRED BY APPENDIX 6 OF THE REGULATIONS AND ASSESSMENT OF THE PRESENCE OF INDIGENOUS VEGETATION AND HABITAT SENSITIVITY

5.1 PROFESSIONAL OPINION

Extents of natural vegetation with a continuous extent of more than 1 ha must be documented. The study site exhibits limited natural functionality and the species composition is highly affected by anthropogenic activities and perturbation events. Infestation by alien invader taxa and ruderal weeds is extremely high. In summary, and in accordance with the new legislation concerning the presence of 1 ha or more of continuous indigenous vegetation, a summary based upon the findings of the basic assessment level study is listed below.

- The assessment identified 1 ha or more of continuous indigenous vegetation within the study area;
- Transformed secondary grassland occurred discontinuously with a high infestation of ruderal weeds;
- Indigenous floristic species richness is low; and
- Overall, none of the identified indigenous vegetation is considered to be sensitive.

It has been required by the regulations that the specialist provides a professional opinion in regards to the proposed development. Due to the poor ecological condition of the site due to significant current impacts, the lack of threatened and near-threatened species, the development does not appear to threaten either the overall integrity of the prevailing habitat types or the local population of fauna. The final summary opinion of the study area is provided below.

- The final habitat sensitivity is illustrated as Figure 8. The overall sensitivity is defined as being low or negligible due to poor ecological condition as well as high levels of disturbance.
- As no significant ecological triggers were identified on a habitat level, the sensitivity of the site remains low.

5.2 MITIGATION RECOMMENDATIONS

Appoint competent and appropriate management authority to implement the EMP and EA conditions throughout all phases of development (including the operational phase). The EMP and EA should take into account all mitigation and recommendations as outlined for the entire specialist investigations conducted to date for the property area. The following recommendations are proposed:

- The attached sensitivity map(s) should be used as a decision tool to guide the layout design. Construction activities should preferably be restricted to areas identified with negligible or low conservation importance.

- An overspill of construction activities into areas outside of the study site is prohibited. The extent of the construction area should be demarcated on site layout plans (restricted to areas identified with low ecological sensitivity), and no construction personnel or vehicles may leave the demarcated area except those authorised to do so.
- It is recommended that prior to any development that all the individuals (if more than one individual occurs) of *Bonatea antennifera* be identified and be marked. In the event that any of these individuals are threatened by the proposed development, appropriate ex situ conservation measures should be developed and implemented (e.g. translocation to suitable albeit degraded habitat or be used during rehabilitation or landscaping).
- A pre- and post-construction alien and invasive plant eradication and control programme must be implemented along with a follow-up programme. The programme must be compiled by a qualified botanist/ecologist and the implementation thereof should be supervised by a qualified botanist/ecologist.
- Limit construction activities to daytime.
- Where active rehabilitation/restoration is mandatory, it should make use of indigenous plant species, and preferably of species native to the study area. The species selected should strive to represent habitat types typical of the ecological landscape prior to construction.
- Intentional killing of any faunal species (in particular invertebrates and snakes) should be avoided by means of awareness programmes presented to the contractor. The contractor should be made aware of the conservation issues pertaining to the taxa occurring on the study area. Any person found deliberately harassing any animal in any way should face disciplinary measures, following the possible dismissal from the site.

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SKINNER J.D. & CHIMIMBA, C.T. 2005. The Mammals of the Southern African Subregion (New Edition). Cambridge University Press. South Africa.

TAYLOR, M.R. (ed.) *in press*. The Eskom Red Data Book of Birds of South Africa, Lesotho and Swaziland. BirdLife South Africa, Johannesburg. In press.

Transvaal Nature Conservation Act (No.12 of 1983)

7 APPENDIX

Appendix 1: Photographs taken during the fieldwork survey



Habitat unit 1



Habitat unit 1



Habitat unit 1



Habitat unit 1



Habitat unit 2



Habitat unit 2



Habitat unit 2



Habitat unit 2



Habitat unit 2



Habitat unit 2



Habitat unit 2



Habitat unit 2

Appendix 2: A shortlist of plant species recorded on the proposed study site. * - refers to exotic species. 1 – Infrastructure & 2 – Transformed secondary grassland.

FAMILY & Species	1	2
ORCHIDACEAE		
<i>Bonatea antennifera</i>		1
COMMELINACEAE		
<i>Commelina benghalensis</i>	1	
CYPERACEAE		
* <i>Cyperus esculentus</i>		1
POACEAE		
<i>Aristida congesta</i> subsp. <i>congesta</i>		1
<i>Brachiaria eruciformis</i>		1
<i>Cynodon dactylon</i>	1	1
<i>Eragrostis curvula</i>		1
<i>Hyparrhenia hirta</i>		1
<i>Hyparrhenia</i> cf. <i>tamba</i>		1
<i>Melinis repens</i>	1	1
* <i>Pennisetum clandestinum</i>	1	1
<i>Urochloa mossambicensis</i>		1
Dicotyledons		
AMARANTHACEAE		
* <i>Alternanthera pungens</i>	1	1
* <i>Amaranthus hybridus</i>	1	1
* <i>Guilleminea densa</i>	1	1
ASTERACEAE		
* <i>Bidens pilosa</i>	1	1
* <i>Conyza albida</i>	1	1
<i>Conyza podocephala</i>		1
* <i>Cosmos bipinnatus</i>		1
<i>Lactuca inermis</i>		1
* <i>Schkuhria pinnata</i>	1	1

FAMILY & Species	1	2
* <i>Taraxacum officinale</i>		1
* <i>Tagetes minuta</i>	1	1
* <i>Zinnia peruviana</i>	1	
BIGNONIACEAE		
* <i>Jacaranda mimosifolia</i>	1	
BRASSICACEAE		
* <i>Lepidium bonariense</i>	1	
CELTIDACEAE		
* <i>Celtis australis</i>	1	
CHENOPODIACEAE		
* <i>Chenopodium album</i>	1	1
CONVOLVULACEAE		
* <i>Ipomoea purpurea</i>	1	
CUSCUTACEAE		
* <i>Cuscuta campestris</i>	1	
EUPHORBIACEAE		
<i>Chamaesyce hirta</i>	1	1
FABACEAE		
<i>Acacia karroo</i>	1	
* <i>Acacia mearnsii</i>	1	
* <i>Acacia decurrens</i>	1	
* <i>Acacia dealbata</i>	1	
<i>Chamaecrista mimosoides</i>		1
* <i>Medicago sativa</i>	1	
* <i>Robinia pseudoacacia</i>	1	
<i>Vigna vexillata</i> var. <i>vexillata</i>		1
MALVACEAE		
<i>Sida rhombifolia</i>	1	1
MELIACEAE		
* <i>Melia azedarach</i>	1	
MORACEAE		

FAMILY & Species	1	2
* <i>Morus alba</i>	1	
MYRTACEAE		
* <i>Eucalyptus cf. camaldulensis</i>	1	
NYCTAGINACEAE		
* <i>Mirabilis jalapa</i>	1	
OXALIDACEAE		
* <i>Oxalis corniculata</i>	1	1
PINACEAE		
* <i>Pinus spp.</i>	1	
PLANTAGINACEAE		
<i>Plantago lanceolata</i>	1	
SIMAROUBACEAE		
* <i>Ailanthus altissima</i>	1	
SOLANACEAE		
* <i>Datura ferox</i>	1	
* <i>Physalis angulata</i>	1	
* <i>Solanum mauritianum</i>	1	
ULMACEAE		
* <i>Ulmus parvifolia</i>	1	
VERBENACEAE		
* <i>Verbena bonariensis</i>	1	1

Appendix 2: Specialist Proof of Qualification

Sameul Laurence



Personal Details

Date of Birth:	30 November 1979
Place of Birth:	London, United Kingdom
Nationality:	South African/Australian
ID No.:	7911305937089
Gender:	Male
Race:	Caucasian/White
Language Proficiency:	English/Afrikaans (basic working proficiency)
Email:	sam@enviro-insight.co.za
Website:	www.enviro-insight.co.za

Career History

- 2009- Present: Director, Co-Founder and Specialist Zoologist and Ecologist of **Enviro-Insight Consulting (CC)**, an Environmental Specialist Consultant company focusing on the application of the latest technology to facilitate environmental studies, census and assessments, management plans and related fields.
- 2008/2009 **Advanced Snake Handling Demonstrator**, Chameleon Village Reptile Centre
- 2009-**Wildlife Chemical Immobilisation**, Tamboti Animal Care Centre.
- *2003–Present Environmental Specialist Consultant (with specialisation in Mammalogy, Marine Science, Botany, Carnivore Ecology, Linear Avifaunal Studies and Ecological Management Plans), Enviro-Insight, University of Pretoria, EKOINFO, EKO CHECK and AWE consulting, Specialising in carnivore census and monitoring, botany, small mammal trapping and reptile capture.*
- 2006-2009-**Lecturer, SAQA Assessor and Facilitator** (FGASA Levels 1-2, Trails Guiding and Lodge Management)

- 2005-2006- Wildlife and University **Technician**, - University of Pretoria (Centre for Wildlife Management)
- 2006– **Lion Research Field Researcher**, Kruger National Park, Mpumalunga
- 2005-2006 – **Field Guide**, Ezemvelo Nature Reserve, Mpumalunga, under private contract in Kruger Park and Sabi Sands
- 2003-2005- **Carnivore Researcher and Assistant Reserve Manager**, Ezemvelo Nature Reserve, Mpumalunga
- 1997-1998- Scuba Schools International **Open Water and Advanced** Diver Qualification
- 2008- Advanced **Snake and Reptile Handling**- Chameleon Village Reptile Centre, NW Province.
- 2010-present Training material creator and staff induction trainer for **Safety in Dangerous Game Areas**, in conjunction with ESKOM and the Endangered Wildlife Trust (EWT).

Education and qualifications

- All Saints College, Perth Western Australia 1993-2002
Matric Subjects –

English
Geography
Biology
Physical Science
Mathematics
- Murdoch University, Perth, Western Australia 1998-2001

(BSc) Bachelor of Science Degree

Majors - Conservation Biology

Marine Biology

- University Of Pretoria 2002 – 2010

(BSc Hons) Wildlife Management Honours (*Ecological Assessment and Management Plan of Varsvlei, Rooiwaal and Zandriverspoort, Thabazimbi, Limpopo, RSA*)

- (MSc) Wildlife Management Masters (cand) (*Ecological Niche Separation of Canis mesomelas, Panthera pardus and Parahyaena brunnea in the Grassland Biome, Mpumalunga, RSA*)
- SACNASP Registered Ecological and Zoological Science (Registration number: 400450/13)

Ecological and Environmental Specialities

- Dangerous game training in conjunction with the Endangered Wildlife Trust
- Scat analysis for the purpose of understanding the feeding ecology of meso and large carnivores
- Radio supervision from the Mammal Research Institute (Chris Chimimba)
- Red-Data Faunal Analysis (Mammalogy, Avifauna)
- IFC projects
- Mozambican specialist
- West Africa specialist
- Carnivore ecology studies in conjunction with the Kruger National Park and the University of Pretoria.
- Avifaunal analysis and surveys for linear structures, under the auspices of Lukas Niemand.
- Zoological Monitoring Specialist
- telemetry and tracking of large mammals
- General Zoological Science (professionally registered)
- General Ecological Science (professionally registered)
- Game capture under the auspices of Professor David Meltzer.
- Training of field-guides in trails guiding and dealing with dangerous game
- Development of Environmental Management Plans (EMP)

- Botanical survey (Braun Blanquet Phytosociological analysis and BECVOL) techniques and ecological capacity (Wildlife Management) assessment. under the auspices of the University of Pretoria (Ben Orban)
- 10 years experience in Census Techniques and the Monitoring of African carnivores
- Spoor tracking having learnt under the supervision of Bos van Wyk and Andrew Kruiper, Senior Trackers and Field Guides in the Kalahari Gemsbok National Park
- Small mammal trapping and identification (using references and tooth pattern analysis) under the auspices of Professor Chris Chimimba.
- Red-Data Faunal Analysis (Mammalogy, Avifauna)
- IFC projects
- Mozambican specialist
- West Africa specialist
- Carnivore ecology studies in conjunction with the Kruger National Park and the University of Pretoria.
- Avifaunal analysis and surveys for linear structures, under the auspices of Lukas Niemand.
- Zoological Monitoring Specialist

JOB PROFILE

History:

From 2002 until 2009, I operated in a variety of internship roles under the auspices of a number of SACNASP registered Zoological, Botanical and Ecological scientists. The names of the relevant scientists have been listed as mentors and potential referees. Over this time, I was exposed to the environmental impact assessment industry, focusing on scientific sampling, relevant legislation, report compilation, logistical procedures and impact analysis. Under the guidance of Willem De Frey, Lukas Niemand, Dr Theo Mostert, Retief Grobler, Luke Verburgt, Dewald Kamferr, Ben Orban, Dr John Hatton, Professor Christian Chimimba and Professor Andrew Mckechnie, All of the above specialists are registered professional scientists.

During the time of my internship, I was exposed to an extremely broad base of ecological knowledge and study in order to maximise my effectiveness as a field biologist, analytical scientist and business leader. It was upon completion of this work that I was able to form my company with confidence in my abilities as both a manager and a specialist.

Current:

Enviro-Insight was founded in 2009 by Luke Verburgt and me as a way to uphold the best standards of zoological and ecological practices through the Environmental Impact Assessment industry. Since then, I have been involved in more than 60 projects in various capacities, with many projects taking place in countries outside of South Africa. My current roles are as follows:

- Co-Owner of Enviro-Insight
- Co-Managing Director
- Specialist Zoologist
- Specialist Ecologist
- Specialist Marine Scientist
- Marketing Manager
- Trainee Mentor

Specialist Roles:

As a senior specialist at Enviro-Insight, I have fulfilled a number of ecological and zoological roles in a number of high profile projects in sub-Saharan, West and East Africa. A summary of the ecological and management roles fulfilled are provided below.

Mentoring and Management Roles:

As co-director of Enviro-Insight, I have been involved in the following mentoring and management roles;

- Training of ecologists in ecological census techniques
- Budgeting and proposal creation for projects
- Hiring of staff
- Marketing management

Mammal studies:

- Mammalian diversity and relative density studies as part of monitoring programs.
- Mammalian habitat assessments
- Mammalian management plans
- Mammalian Impacts and Mitigation reports

The methods encompassed the following survey techniques:

- Sherman trapping for small mammals
- Remote sensing camera trapping
- Intensive searching and spoor tracking
- Nocturnal surveys
- Predator immobilisation
- Acquisition of photographic evidence using camera equipment.
- Utilisation of local hunters and residents will be extensively interviewed using photographic aids, in order to facilitate the process.

Avifaunal studies:

- Point count surveys
- Acquisition of photographic evidence of red-data species
- Sound recording and call-ups in forest habitats
- Avifaunal habitat assessments
- Nocturnal assessments of avifauna
- Avifaunal baseline studies
- Linear assessments, especially avifauna/power line interaction (under supervision).

Herpetofaunal studies:

(Note: This has mostly been carried out in an assistant role)

- Use of herpetofaunal intercept funnel trap arrays (passive habitat specific capturing).
- Intensive active searching of herpetofauna
- Nocturnal census/driving for herpetofauna
- Sound recording of vocalising amphibians.

Botanical Studies:

- Braun Blanquet (if applicable) phytosociological assessment and delineation of habitats
- Sensitivity analysis based on structural and species diversity
- Habitat management plan creation
- Floral impacts and mitigation reports
- Identification of floral red-data species

Deliverables:

As a specialist I have been involved with the following deliverables;

- Environmental Management Plans
- Zoological and Ecological baseline studies
- Zoological and Ecological impact assessments
- Basic Assessments
- Red-data species analysis
- Public participation meetings
- Environmental Control Officer management design and execution.

A summary of my work on the African continent is provided below:

- 14 faunal and botanical projects carried out in the TETE PROVINCE of Mozambique including work for Riversdale/ Rio Tinto (including Benga).
- Over 2000 km of Linear developments walked (mostly powerlines for Eskom) to develop Environmental Management Plans.
- More than 60 projects done of varying capacities and roles.
- More than 200 people trained in the area of dangerous game protocol in the field.
- More than 10 public participation meetings.

I believe that after 12 years of experience, I have gained the knowledge and skills required in order to join the professional scientific community in South Africa and continue to uphold the highest possible standards for the protection of biodiversity in the country.

For example projects, please do not hesitate to contact me for a review of key documents.

Recent projects pertinent to Biodiversity and Ecology related Environmental Impact Assessments (EIA), Environmental Management Plans (EMP), Environmental Control Officer (ECO) contracts.

- SUN CITY: Faunal Impact Assessment of the Proposed Golf Course, North West Province, RSA, 2007. Zoological Specialist.
- PTM mining: Faunal Impact Assessment of proposed platinum mine, North West Province, RSA, 2007.

Zoological Specialist.

- JEFFARES and GREENE, Terrestrial Faunal Assessment of the inundation of 150 ha of land at Nacala Dam, Mozambique, 2009. Full zoological study including a full mammalian, herpetological and amphibian survey of the proposed inundation zone.
- LONMIN: Faunal Impact Assessment of proposed platinum mine, North West Province, RSA, 2008.
- NUCOAL: Faunal Impact Assessment of proposed platinum mine, North West Province, RSA, 2009.
- TRANSNET: Faunal Impact Assessment and Sensitivity Analysis of proposed railway, Richards Bay, KZN, RSA, 2010. Zoological Specialist.
- ESKOM/ARCUS GIBB: Hydra-Perseus Environmental Management Plan and Walkdown, total distance 400km, Northern Cape, RSA, 2008. Ecological Specialist.
- ESKOM: Spitzkop-Madupi. Environmental Sensitivity Analysis and Walkdown, Section 1, total distance 69km, Limpopo Province, RSA. 2009.
- ESKOM: Spitzkop-Madupe Environmental Sensitivity Analysis and Walkdown, Section 2, total distance 170 km, Limpopo Province, RSA, 2009.
- SASOL: Environmental Impact Assessment, Proposed Pipeline, Mpumalunga, RSA, 2010.
- EKOINFO: Faunal Impact Assessment, Klipriviersberg Housing Development, Gauteng Province, RSA, 2008. Zoological Assistant.
- ECOCHECK: Faunal Impact Assessment of proposed platinum mine, Selebi Pikwe, Botswana, 2008. Zoological Assistant.
- AGES: Golden Mole and Wetland Assessment, Bronberg, Gauteng Province, 2010. Zoological lead specialist.
- AGES: Curro School Python Scoping Analysis and Vegetation Functionality Analysis, Kameelsdrift, Gauteng Province, 2010. Ecological Assistant.
- ENVIROAFRIK: Red Data Flora Identification and Relocation, Siyabuswa Municipality (D section), Mpumalunga, RSA, 2010. Botanical Specialist.
- De Beers, Herpetological assistant, Benfontein, Dronfield, Rooipoort, Northern Cape Province, RSA, 2009/2010.
- IMPACTO: Full Mammal Impact Assessment for the IMPANDA NKUA HYDROELECTRICAL DAM, Zambezi Valley, Mozambique. September 2010-Feb 2011. Mammalogy lead specialist.
- IMPACTO: Full Faunal Analysis (mammalogy, herpetofauna, avifauna) for the Boroma Hydro-electric dam, lower Zambezi valley, Tete Province, Mozambique. Feb 2011. Zoological lead specialist.
- VALE: Mammal Monitoring Specialist, Vale Coal Mine, Tete, Mozambique. 2010-2011. Zoological lead

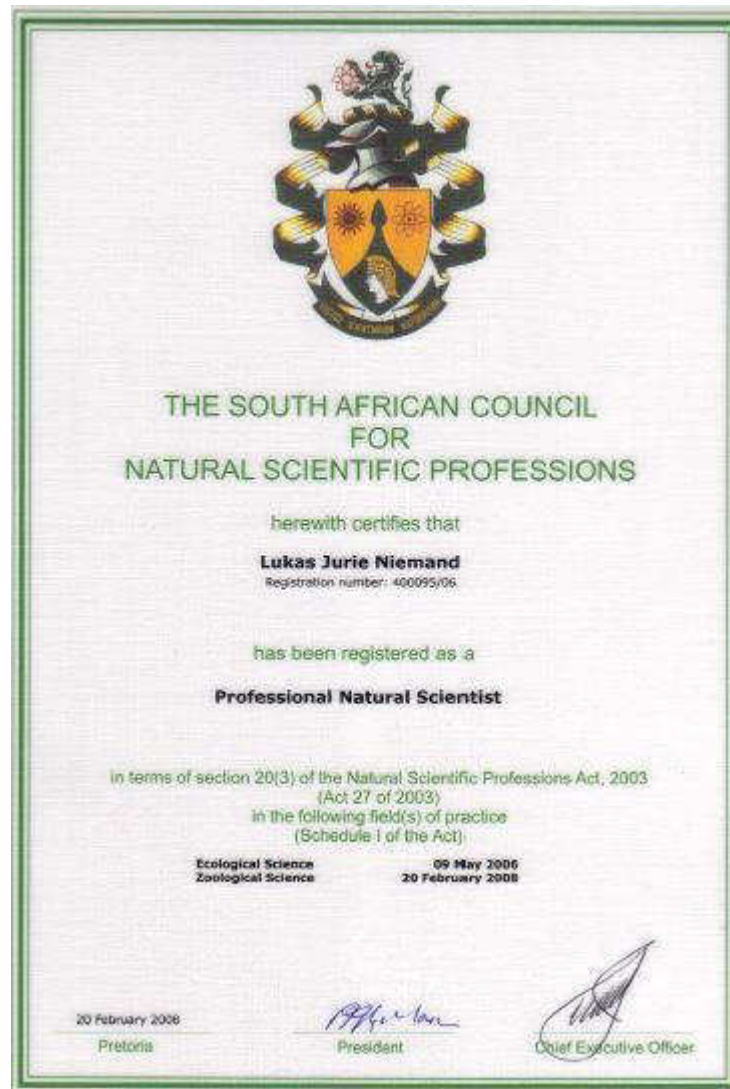
specialist.

- IMPACTO: Full Faunal Analysis (mammalogy, herpetofauna, avifauna) for the Lupatta Hydro-electric dam, lower Zambezi valley, Tete Province, Mozambique. March 2011. Zoological lead specialist.
- RIVERSDALE: Benga Watercourses, Full Faunal (avifaunal, herpeto-faunal and mammalogy) assessment, Tete Province, Mozambique. February 2011.
- RIVERSDALE: Zambezi Coal Project. SUMMER study. Tete, Mozambique. April 2011. Mammalogist.
- NCONDEZI: Coal mine project, Mammology study. Tete Province, Mozambique. April/May 2011.
- ESSAR: Site selection (based on full ecological assessment) for proposed harbour. Beira, Mozambique. February 2011. Lead marine and terrestrial ecologist.
- NEW LARGO: Coal mine. Summer and Winter survey of the Paardeplaats coal mine, Belfast, Mpumalunga. South Africa. 2011. Lead mammalogist.
- ANADARKO: LNG Site Selection Study Section 1. Full Ecological Study. Cabo Delgado Province. Mozambique. May 2011.
- ANADARKO: LNG Site Selection Study Section 2. Full Ecological Study. Cabo Delgado Province. Mozambique. August 2011. Lead terrestrial ecologist.
- ANADARKO: LNG plant detailed study. Dry season study. Cabo Delgado Province. Mozambique. September 2011. Lead mammalogist
- JINDAL: Coal mine. Wet season botanical survey. Tete Province, Mozambique. November 2011.
- ANADARKO: LNG plant detailed study. Wet season study. Cabo Delgado Province. Mozambique. December 2011. Lead mammalogist.
- ESKOM: Medupi-Massa 400 kV powerline, Environmental Management Plan and Ground Verification. Full botanical and faunal study. Limpopo Province, South Africa. December 2011.
- ESKOM: Medupi-Massa 400 kV powerline, marking of (TOPS LISTED) protected tree species. Limpopo Province, South Africa. January 2012. Lead ecologist.
- COFFEY CONSULTING: Baobab Iron Ore Mine. Scoping Study. Lead mammalogist. Tete Province, Mozambique. November 2011.
- ANADARKO: Pemba Port study. Marine and Terrestrial Ecology. Cabo Delgado Province. Mozambique. March 2012. Lead terrestrial ecologist.
- EXXARO: Gravelote Iron Ore Mine. Environmental Impact Assessment. Lead mammalogist. Phalaborwa, Limpopo Province. South Africa. March 2012.
- ANADARKO: LNG plant detailed study. Wet season study phase 2. Cabo Delgado Province. Mozambique. April 2012. Lead mammalogist.

- KALAHARI: Prieska solar farm, winter biodiversity study and Environmental Impact Assessment. Lead Faunal Specialist and Botanical Scientist. August 2012.
- BAAGI: Ngwedi Substation Environmental Management Plan. Lead Ecologist and Avifaunal Specialist (with Lukas Niemand). North West Province, RSA. August 2012.
- BAAGI: Ngwedi Powerline Environmental Management Plan. Lead Ecologist and Avifaunal Specialist (with Lukas Niemand). North West Province, RSA. August 2012.
- BAAGI: Ngwedi Powerline Protected Tree Assessment and Demarcation. Lead Ecologist. North West Province, RSA. August 2012.
- ANADARKO: LNG plant EMP Implementation. Lead Environmental Control Officer/Manager. Cabo Delgado Province. Mozambique. April 2012.
- CHINA UNION: Bong Mine Environmental Impact Assessment, full ecology (Scoping Phase) and Lead Mammalogist (Detail Study): Liberia. May/October 2012.
- WESTERN CLUSTER LIMITED: Bea Mountain Environmental Impact Assessment, Lead Mammalogist (Detail Study): Liberia. October-March 2012-2013.
- WESTERN CLUSTER LIMITED: Bomi Hills Environmental Impact Assessment, Lead mammalogist (Detail Study): Liberia. October 2012.
- WESTERN CLUSTER LIMITED: Manu River Environmental Impact Assessment, Lead Mammalogist (Detail Study): Liberia. October 2012.
- ANADARKO: Update of EIA and Regional Study of LNG Project, Lead Mammalogist (Detail Study): Palma District, Mozambique. 2014-2015.
- ItalThai: EIA of Proposed Railway and Port, lead Botanist, Avifaunal Specialist and Mammalogist (Detail Study): Gaza and Tete Provinces, Mozambique. 2014-2015.

Recent Publications: Tambling, C. J. Laurence, S. D. Bellan, S. Cameron, E. Du Toit, J and Wayne Getz. 2011. Estimating carnivore diets using a combination of carcass observations and scats from GPS clusters. *Zoology*: February 2012.

Lukas Niemand



Name: **LUKAS JURIE NIEMAND**
Company: Pachnoda Consulting cc (Director)
Date of Birth: 1974-03-12
Nationality: South African
Languages: English and Afrikaans

EDUCATIONAL QUALIFICATIONS

1992 Hoërskool Hartbeespoort, Hartbeespoort - Senior Certificate.
1996 University of Pretoria, Pretoria - B.Sc. (Zoology and Entomology).
1997 University of Pretoria, Pretoria - B.Sc. (Hons) (Entomology).
2001 University of Pretoria, Pretoria - M.Sc. (Restoration Ecology/Zoology).

MEMBERSHIP IN PROFESSIONAL SOCIETY

- Professional Natural Scientist (Pr. Sci. Nat.) (Reg. no. 400095/06)
- BirdLife South Africa
- Hartbeespoort Natural Heritage Society

EXPERIENCE

A. Work conducted in South Africa

1. General Ecological Assessments (Fauna, Flora and Red Data Scans, including both functional and compositional aspects):

- Belvedere Trust, Proposed retirement village on Amorosa Agricultural Holdings, Roodepoort, Gauteng (2004);
- City of Joburg Property Development Company, Proposed upgrade and development of the Orlando Dam Intersection, Soweto, Gauteng (2004);
- PDNA, Proposed NASREC development, Johannesburg, Gauteng (2004);
- 17 Shaft Conference and Education Centre, Proposed establishment of the Veteran's Heritage Education Centre, Crown Mines, Gauteng (2004);
- GAUTRANS, Proposed re-alignment of Road D781 and construction of a road bridge over the Rietvleispruit, Kempton Park, Gauteng (2004);
- Mr. N. Lang, Ecological Opinion on the proposed establishment of a township, Muldersdrift, Gauteng (2004);
- AGES, Proposed Equestrian Centre, Leeufontein 299 IR, Gauteng (2004);
- PDNA, Proposed new bridge and re-alignment of a portion of provincial road P101-2 (R51), Laversburg, Gauteng (2004);
- Blenneerville Investment (Pty) Ltd, Proposed construction of a residential and commercial development on of Paradiso Estate, Tweefontein 372 JR, Gauteng (2004);
- Les Roches (Pty) Ltd, Proposed zoning of holdings 1, 2 & 3 of Hyde Park Agricultural Holdings, Gauteng (2004);
- Transnet Limited, Terrestrial Faunal Ecological Opinion: Phase 1B expansion of the Sishen-Saldanha Iron ore export corridor, Saldanha Bay, Western Cape (2005);
- Celebration North Riding (Pty) Ltd, Proposed mixed land-use development, North Riding, Gauteng (2005);
- Wilderness Safaris, Proposed upgrade of the Manzengwenya Dive Camp, Greater St. Lucia Wetlands Park, KwaZulu-Natal (2005);
- Wilderness Safaris, Proposed upgrade of the Rocktail Bay Camp, Greater St. Lucia Wetlands Park, KwaZulu-Natal (2005);
- GAEA Projects, Corridor Assessment for the proposed Sibaya Precinct, KwaZulu-Natal (2005);

- Computer Domain Holdings (Pty) Ltd, Red Data Floral Scan on portion 3 of the farm Elandshoek, portions 12 & 27 of the farm Groot Suikerboschkop, and portions 5 & 10 of the farm Palmietfontein, Dullstroom (2005);
- Zong's Property Investments, Proposed establishment of a residential development on a portion of Pomona Estates Agricultural Holdings, Pomona, Gauteng (2005);
- GJ van Zyl Trust, Proposed development of a resort on the Farm Witpoort 216 JS, Mpumalanga (2005);
- Mr. Howard Walker, Proposed subdivision of the Farm Lunsklip 105 JT, and the Farm Morgenzon 122 JT, for the establishment of a private resort, Dullstroom, Mpumalanga (2005);
- Lavender Manor cc, Proposed establishment of a retail, commercial and Lavender Manor Township on part of farm Rietfontein 189 IQ, Muldersdrift, Gauteng (2005);
- Geo Pollution Technologies, Proposed establishment of a residential development: Noordwyk Ext 65 & 80 on Erand Agricultural Holdings, Midrand, Gauteng (2005);
- Mr. A. Le Roux, Proposed Cradle View Country Estate, Muldersdrift, Gauteng (2006);
- Viking Bay Development Company (Pty) Ltd, Proposed Viking Bay freshwater marina and hotel development, Vaal Dam, Gauteng (2006);
- Land for Africa (Pty) Ltd, Ecological Opinion for the proposed establishment of a residential township on holding 122 Erand Agricultural Holding Extension 1, Halfway House, Midrand, Gauteng (2006);
- Brickot Developments cc, Ecological opinion for the proposed Bethal Retirement Village on the remainder of portion 3 of the farm Mooifontein 108 IS, Bethal, Mpumalanga (2006);
- Brawild (Pty) Ltd, Red Data Scan for the proposed Annlin Ex 117, Pretoria, Gauteng (2006);
- Mbombela Local Municipality, Ecological Opinion for the proposed extension of the Lowveld Botanical Gardens, Nelspruit, Mpumalanga (2006);
- Natural Scientific Services cc, Botanical survey for the SASOL Mafutha coal project near Lephalale, Limpopo Province, RSA (2008);
- SRK Consulting, Ecological assessment on Vlakfontein area, NW of Ogies, Mpumalanga. Report compiled in association with EkoInfo (2009); and
- Aurecon, Desktop biodiversity assessment and wetland scan: upgrade of the River View waste water treatment works, eMalahleni, Mpumalanga province. Report compiled in association with Imperata Consulting (2009).

2. Mining and Industrial related projects (ecological):

- Lonmin Platinum (Western Platinum Limited), Ecological Assessment for the proposed MK3 Shaft Complex on the farm Wonderkop 400 JQ, Rustenburg, North West Province (2004);

- Impala Platinum Limited, Ecological Assessment for prospecting SEMP's on the farms Buffelshoek 386 KT, Kalkfontein 367 KT, Spitskop 333 KT, Steelpoortpark 366 Kt and Tweefontein 360 KT and Hackney 116 KT (all Sekhukhuneland), Mpumalanga and Limpopo Province (2004);
- Trans-Caledon Tunnel Authority (TCTA), Ecological Assessment for borrow pit SEMP's on the TCTA pipeline, Vaal Marina to Secunda (2005);
- Boynton Platinum (Pty) Ltd, Ecological Assessment for the proposed establishment of platinum mines on the farms Tuschenkomst 135 JP, Witkleifontein 136 JP and Ruighoek 169 JP, North West Province (2005);
- Impala Platinum Holdings, Ecological Assessment for prospecting SEMP's on the Impala Platinum Bafokeng Mining Complex, North West Province (2005);
- Ceramic Industries Limited, Ecological Assessment of the Rietspruit Clay Quarries, Vanderbijlpark, Gauteng (2005);
- Ekurhuleni Metropolitan Municipality, Ecological Assessment Report for the proposed GLB Landfill Site on the farm Zesfontein 27 IR, Benoni, Gauteng (peer reviewed, 2006);
- Ceramic Industries Limited, Ecological Assessment of the Leeukuil Clay Quarries, Vanderbijlpark, Gauteng (2006);
- Council for Geoscience, Habitat sensitivity assessment scoping report for Bon Accord quarry on a portion of the farm de Onderstepoort 300-JR, Tshwane, Gauteng (2007);
- Fraser Alexander, Biodiversity action plan for Lonmin Limpopo & Platinum, North West & Limpopo Province, RSA (2008-2009);
- Envirovolution Consulting (Pty) Ltd., Ecological screening report and site selection process for an Eskom general landfill and hazardous waste storage facility near Lephalale, Limpopo Province, RSA (2009);
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- Shangoni/Vergenoeg Mining Company, Ecological assessment for the proposed construction of a slurry pipeline and waste rock dump at the Vergenoeg Mine, Gauteng (2011);
- ENVASS, An ecological evaluation (vertebrate & avifaunal component) for the proposed alternative energy plant on Portion 3, 4 & 5 of the Farm Groenwater 453, Northern cape (2012); and
- ENVASS, Ecological evaluation (vertebrate & avifaunal component) for the proposed alternative energy plant on Ixun & Khwe, Northern cape (2012).

3. Avifaunal and Invertebrate Assessments:

- Lavender Manor cc, Red Data Bird Assessment for the proposed establishment of a retail, commercial and Lavender Manor Township on part of the farm Rietfontein 189 IQ, Muldersdrift, Gauteng (2004);
- Helga Schneider & Associates, Avifaunal & Invertebrate Red Data Assessment for the proposed rezoning & subdivision on Erf 6486 Orange Farm Ext 2, Johannesburg, Gauteng (2005);
- TOWNDEV, Avifaunal and Arachnid Assessment for the proposed subdivision of Grootfontein 349 JR, Rievlei Dam, Gauteng (2006);
- Prof. Van Rensburg, Red Data Invertebrate Scan for the proposed Rietvalleirand Extension 59, Gauteng (2006);
- Group Five Property Development, Invertebrate Assessment for the proposed Buccleuch Ex 1, Gauteng (2006);
- Zong's Property Investments, Avifaunal and *Metisella meninx* assessment for the establishment of a residential development on a portion of Pomona Estates Agricultural Holdings, Pomona, Gauteng (2006);
- Waterval Islamic Institute, Avifaunal and Invertebrate Assessment for the proposed Northern Golf Course Development, Midrand, Gauteng (2006);
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- Exigent Engineering Consultants, Invertebrate assessment for the proposed Derdepoort X 11, Derdepoort, Gauteng (2007);
- Exigent Engineering Consultants, Invertebrate and Avifaunal scan for the proposed Cutty Sark hotel extension, Scottburgh, Kwazulu-Natal (2007);
- Strategic Environmental Focus, African Grass Owl assessment on the proposed Cradle View country estate on portion 60 of the farm Driefontein 179 IQ, Muldersdrift, Gauteng (2007);
- GEOLAB, Ecological assessment for the West Rand Gold Operations (WERGO) Witfontein tailings disposal facility, Mintails, Gauteng, RSA (2008);
- Coastal Environmental Services, Avifaunal Assessment for the proposed mining of heavy minerals at Port Durnford (Exxaro KZN-Sands), KwaZulu-Natal (2008);

- SRK & Natural Scientific Services cc, A feasibility study for the mining of coal north of the Limpopo Province. Avifaunal & invertebrate assessment, Rio Tinto Exploration, Limpopo Province, RSA (2009);
- Eskom/Baagi Environmental, An environmental management plan (avifaunal & faunal component) for the proposed Dinaledi - Spitskop 400 kV transmission line, North West Province (2010);
- Eskom/Baagi Environmental, An avifaunal impact report for the proposed 400 kV Ariadne-Venus transmission line between Estcourt and Pietermaritzburg, KwaZulu-Natal (2010);
- Eskom/Baagi Environmental, An avifaunal impact assessment report for a 275 kV power line between the substations of Glockner and Kookfontein, Vanderbijlpark, Gauteng (2010);
- Groundwater Consulting Services (Pty) Ltd/EkoInfo, An invertebrate and avifaunal specialist report for the proposed expansion of Exxaro's Glisa coal mine, Belfast, Mpumalanga (2010);
- Eskom/Baagi Environmental, An environmental management plan (avifauna component) for the proposed 400 kV Medupi-Massa transmission lines, Limpopo Province (2011);
- Eskom/Baagi Environmental, An avifaunal and fauna impact assessment report for the proposed 400 kV Arnott-Gumeni transmission line, Mpumalanga Province (2012);
- Eskom/Baagi Environmental, An environmental management plan (avifaunal component) for the proposed 400 kV Ngwedi transmission line and substation, North West Province (2012);
- Exxaro/EkoInfo, An avifaunal and invertebrate assessment (as part of a Biodiversity Assessment and action plan) for the Gravelotte MagVanTi Mining Area, Limpopo Province (2012);
- Groundwater Consulting Services (Pty) Ltd/EkoInfo, An invertebrate and avifaunal specialist report for the proposed Paardeplaats coal mine area, Belfast, Mpumalanga (2012);
- Groundwater Consulting Services (Pty) Ltd/EkoInfo, An invertebrate and avifaunal specialist report for the proposed Leeuwpan coal mine area, Belfast, Mpumalanga (2013);
- Eskom/Baagi Environmental, An environmental management plan (avifaunal component) for the proposed Medupi - Borutho 400 kV transmission line, Limpopo Province (2012);
- Eskom/Baagi Environmental, An environmental management plan (avifaunal component) for the proposed Gromis - Oranjemund 400 kV transmission line, Northern Cape (2013);

4. Other Assessments:

- Facilitation, project management and conduction of environmental scoping exercises, Environmental Impact Assessments, Environmental Management Plans, Feasibility Reports, for a range of projects and issues such as:
 - Housing Projects (West Rand Housing Projects) for the Gauteng Department of Housing;

- Planning and facilitation of environmental awareness workshops (Winterveldt Workshops for the Department of Environmental Affairs and Tourism);
- Compilation and evaluation of EIA reports and Environmental Management Plans (EMPs) for both the private and public sector (e.g. Scoping Report for the relocation of oxidation ponds for the Moqhaka Local Municipality and the installation of an underground additive tank for Sasol Oil (Pty) Ltd).
- Urban Renewal Projects: Bekkersdal Urban Renewal Project and the Greater Evaton Urban Renewal Project for the Gauteng Department of Housing.
- Douglas Collieries (Inkwe Collieries), Biodiversity Assessment and database compilation of the Douglas Collieries (2005);
- Orion Group, Ecological Sensitivity Map for the proposed golf course and related facilities, Mont-Aux-Sources (2005);
- City of Joburg Property Development Company, Specialist *Lepidium mossii* assessment for the proposed upgrade and development of the Orlando Dam intersection, Soweto, Gauteng (2005);
- Johannesburg Roads Agency, Alien Eradication and Rehabilitation Programme for the proposed upgrade of 14th Avenue, Randburg, Gauteng (2006);
- City of Joburg Property Development Company, Ecological Management Plan for the Orlando Dam intersection, Soweto, Gauteng (2006);
- GJ van Zyl Trust, Alien Eradication Programme for the proposed development of a resort on the Farm Witpoort 216 JS, Mpumalanga (2006);
- GJ van Zyl Trust, Fire Management Plan for the proposed development of a resort on the Farm Witpoort 216 JS, Mpumalanga (2006); and
- Khutala Collieries (Inkwe Collieries), Biodiversity Assessment and database compilation (2006)

5. Linear Assessments:

- Johannesburg Roads Agency, Ecological Assessment for the Proposed upgrade of 14th Avenue, Randburg, Gauteng (2004).
- Trans-Caledon Tunnel Authority (TCTA), Proposed Vaal River Eastern Subsystem Augmentation (VRESAP) pipeline from Vaal Marina to Secunda (2005);
- PBA International (in association with Bathusi EC), Ecological Scoping Report for the proposed Eskom Delta-Epsilon 765 kV Transmission lines (2007);
- Bohlweki Environmental (in association with Bathusi EC), Ecological Scoping Report for the proposed Eskom

Malelane-Boulders 132 kV Distribution line (2007);

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- Strategic Environmental Focus, Avifaunal EIA Report for the proposed Eskom Hendrina-Prairie-Marathon 400 kV Transmission line, Mpumalanga (2007);
- Natural Scientific Services cc, Botanical survey for the proposed upgrade of the Transnet railway line between Hotazel, Northern Cape and the Port of Ngqura, Eastern Cape, RSA (2008);
- Envirovolution Consulting (Pty) Ltd, Ecological Report for the proposed Eskom Apollo-Lepini 400kV transmission line (2009);
- Arcus Gibb, An ecological investigation for the Tumelo 132 kV distribution line and power line near Kagiso, Gauteng (2010);
- Ekoinfo/SANRAL, Faunal investigation for the upgrade of the N3 highway (2011); and
- Aurecon (Pty) Ltd, Baseline vegetation survey for the Mokolo – Crocodile River Augmentation Project (MCWAP) pipeline from Mokolo Dam to Thabazimbi (2011).

B. Work conducted in other African countries:

- Rural Maintenance, Invertebrate study for four mini-hydroelectric generation plants, Northern Malawi, Africa (2010);
- Impacto, An avifaunal study (Phase 1) for the proposed Mpanda Nkwua Dam in the Zambezi River, Mozambique, Tete Province (2010);
- Conseil Régional des Pays de la Loire, An avifaunal investigation of the Rusizi and Ruvubu National Parks (Burundi), and the feasibility of establishing an avi-tourism network with specific emphasis on the protection of important flyways used by Palearctic birds - of - prey (2010);
- Impacto, An avifaunal study (Phase 2) for the proposed Mpanda Nkwua Dam in the Zambezi River, Mozambique, Tete Province (2011);
- Rural Maintenance, Invertebrate scan for the expansion of coal mining activities at Kayelekera, Northern Malawi, Africa (2011);
- Rural Maintenance, Invertebrate study for a mini-hydroelectric plant at the Chisanga Falls, Nyika National Park, Malawi (2011);
- Impacto/ERM/Enviro-Insight, Avifaunal investigation for the proposed Ncondezi Coal Mine, Tete Province,

Mozambique (2011);

- Enviro-Insight, Avifaunal investigation for the Riversdale Coal Mine complex, Tete Province, Mozambique (2011);
- Anadarko Petroleum/ERM/Enviro-Insight, Avifaunal investigation for the proposed Anadarko Mozambique Area 1 Liquefied Natural Gas plant in northern Mozambique, Cabo Delgado Province, Mozambique (2012);
- Coffey Environments/ekoInfo, Avifaunal investigation for the mining of iron ore by Baobab Resources, Tete Province, Mozambique (a scoping-level assessment); and
- SRK/Flora, Fauna and Man Ecological Services, An avifaunal and invertebrate assessment for the establishment of a potash mine at Konkoati, Republic of the Congo (2012);
- China Union/ERM/Enviro-Insight, Avifaunal investigation for the proposed mining of iron ore in Bong County, Liberia (2012);
- SRK/Flora, Fauna and Man Ecological Services, An invertebrate assessment for the mining of iron ore by DMC Congo Mining/Exxaro at Mayoko, Republic of the Congo (2012);
- Western Cluster/ERM/Enviro-Insight, Avifaunal investigation for the proposed mining of iron ore at Bomi Hills, Bomi County, Liberia (2013);
- SRK/Flora, Fauna and Man Ecological Services, An invertebrate assessment for the establishment of an ecological offset for the DMC Congo Mining/Exxaro Iron Ore Mine at Mayoko, Republic of the Congo (2013);
- Western Cluster/ERM/Enviro-Insight, Avifaunal investigation for the proposed mining of iron ore at Bea Mountain, Grand Cape Mount County, Liberia (2013);
- Western Cluster/ERM/Enviro-Insight, Avifaunal investigation for the proposed mining of iron ore at Mano River, Grand Cape Mount County, Liberia (2013); and
- WSP/Flora, Fauna and Man Ecological Services, An invertebrate assessment for the establishment of a phosphate mine, Hinda Phosphate Project, Republic of the Congo (current).

C. Additional Experience:

- Monitoring and evaluation of the rehabilitation programme for the mining company Richards Bay Minerals (RBM) with special reference to vegetation, bird, small mammal and millipede assemblages.
- Other responsibilities include assessment of the ecological standard operating procedures (SOP) according to RBM's environmental management programme in compliance with ISO 14001 environmental standards accreditation process.
- Participated in the annual relief programme on the S.A Agulhas voyage to Subantarctic Marion Island (Prins Edward

group). Took part in the research to estimate the population dynamics and demography of the alien house mouse (*Mus musculus*) on the island (under supervision of the University of Pretoria).

- Participated in the preparation of a conservation management plan for a game and trout farm in conjunction with Mpumalanga Parks Board (in charge of the bird section) for the farm Nu-Scotland Bavaria.
- Lead a successful professional bird tour (party of 12) to the Eastern Zimbabwean highlands and adjacent Mashonaland Plato (10 days).
- Lead a successful professional bird tour (party of 9) to the Cape Peninsula, Karoo and West Coast (10 days).
- Lead a successful professional bird tour (party of 12) to the Swaziland and Northern Zululand (10 days).
- Lead a successful professional bird tour (party of 15) to the Namibia (10 days).
- Lead a successful professional bird tour (party of 14) to the Eastern Drakensberg and Lesotho (10 days).

Employment History:

March 2007 – Current: of Director of Pachnoda Consulting cc

2004- January 2007: Strategic Environmental Focus (Pty) - Terrestrial Ecologist

2003 – 2004: Enviro-Afrik (Pty) Ltd– Environmental Consultant

2001 – 2003: University of Pretoria - Research Assistant

PUBLICATIONS:

- McEWAN, K.L., ALEXANDER, G.J., NIEMAND, L.J. & BREDIN, I.P. 2007. The effect of land transformation on diversity and abundance of reptiles. Paper presented at the 50th Anniversary Conference of the Zoological Society of Southern Africa.
- NIEMAND, L. 1997. Distribution and consumption of a rust fungus *Ravenelia macowaniana* by micro-lepidopteran larvae

across an urban gradient: spatial autocorrelation and impact assessment. Hons publication, University of Pretoria, Pretoria

- NIEMAND, L. 2001. The contribution of the bird community of the regenerating coastal dunes at Richards Bay to regional diversity. MSc Thesis, University of Pretoria, Pretoria.
- VAN AARDE, R.J., WASSENAAR, T.D., NIEMAND, L., KNOWLES, T., FERREIRA, S. 2004. Coastal dune forest rehabilitation: a case study on small mammal and bird assemblages in northern KwaZulu-Natal, South Africa. In: Martínez, M.L. & Psuty, N. (Eds.) *Coastal sand dunes: Ecology and Restoration*. Springer-Verlag, Heidelberg.
- VAN AARDE, R., DELPORT, J. & NIEMAND, L. 1999. Of frogs and men. *Mechanical Technology*, June: 32-33.
- VAN AARDE, R., DELPORT, J. & NIEMAND, L. 1999. Gone Frogging. *Getaway*, January: 80-83.

PRESENTATIONS:

- Co-presenter at the Wetland Training Course (30 July – 3 August 2007) entitled: "Wetland-associated fauna". University of Pretoria, Pretoria.

Wetland Delineation



Appendix G4



Bokamoso Landscape Architects & Environmental Consultants

Basic assessment Wetland Delineation

PROPOSED Tembisa Licensing Hub: Portion 67 Witfontein No 15 IR

GAUTENG, South Africa

By

Andrew Husted

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¹ Image of the area surveyed

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1 INTRODUCTION AND PROJECT PURPOSE

The Biodiversity Company was commissioned by Enviro-Insight CC to delineate the wetland areas for a basic assessment of the PROPOSED WITFONTEIN LICENSING HUB ON A PORTION OF THE FARM WITFONTEIN16-LR situated within Esselen Park Ext 1 north of Sam Mobele Drive and west of the railway servitude (west of Pretoria Road, M57).

The surface extent of the study site is approximately 5.5 ha, and the wetland delineation was only conducted for the study site. A general wetland desktop assessment was conducted, whereby a 500m buffer of the project area was considered for the identification of any potential wetland areas.

The wetland delineation was conducted in accordance with document titled, “**A practical field procedure for identification and delineation of wetlands and riparian areas (DWAF, 2005)**”, The assessment was carried out in order to identify and delineate any wetland areas within the study site, demarcating the presence and extent (boundary) of any wetland areas within the project boundary. It was requested that only soil be assessed for the wetland delineation study.

2 METHODS

2.1 FIELD SURVEY AND SEASONALITY

A field survey was performed on 15 June 2015 by a wetland practitioner, in order to identify any potential wetland areas. The timing of the study is considered to be the dry season. Due to the fact that only soil was considered for the study, the seasonality of the survey is irrelevant.

During the field survey, the proposed development site was covered on foot and augured to obtain samples. The first 50cm of the soil profile was assessed for signs of wetness, but auguring generally went beyond this, or until an impermeable layer was encountered.

The wetland areas are delineated in accordance with the DWAF (2005) guidelines. The outer edge of the wetland areas must be identified by considering the following four specific indicators:

- The Terrain Unit Indicator helps to identify those parts of the landscape where wetlands are more likely to occur
- The Soil Form Indicator identifies the soil forms, as defined by the Soil Classification Working Group (1991), which are associated with prolonged and frequent saturation
- The Soil Wetness Indicator identifies the morphological "signatures" developed in the soil profile as a result of prolonged and frequent saturation
- The Vegetation Indicator identifies hydrophilic vegetation associated with frequently saturated soils

Vegetation is used as the primary wetland indicator, which must be present under normal circumstances. However, in practise the soil wetness indicator tends to be the most important, and the other three indicators are used in a confirmatory role. For this study, the Soil Form and Soil Wetness indicators were only considered.

2.2 DESKTOP SURVEY

2.2.1 Datasets

The desktop assessment consisted of relevant information as presented by the South African National Biodiversity Institutes (SANBI's) Biodiversity Geographic Information Systems (BGIS) website (<http://bgis.sanbi.org>). Wetland specific information resources taken into consideration during the desktop assessment of the study area included:

- Aerial imagery (Google Earth).
- The National Freshwater Ecosystem Priority Areas (NFEPA's).
- The Gauteng Conservation Plan (C-Plan) version 3.3.
- Contour data (5m).

The NFEPA project was a partnership and collaborative process with research institutes, government departments and experts. The NFEPA project maps strategic spatial priorities for conserving South Africa's freshwater ecosystems and supporting sustainable use of water resources (Net et al., 2011). For the wetland FEPAs, only the actual mapped wetland zone is indicated, not the associated sub-quaternary catchment.

2.3 IMPACT ASSESSMENT

No wetland area was identified on site, so no impact study was implemented for the project.

3 RESULTS

3.1 DESCRIPTION OF STUDY AREA

A 500m buffer area for the study site was considered in order to identify any potential wetlands adjacent too, or within the project boundary. The NFEPA and Gauteng C-Plan datasets which were considered do not indicate any potential wetlands within the 500m buffer area, nor within the project area. The extent of NFEPA wetlands and Ecological Support and Important Areas as indicated by the C-Plan are presented in Figure 1.

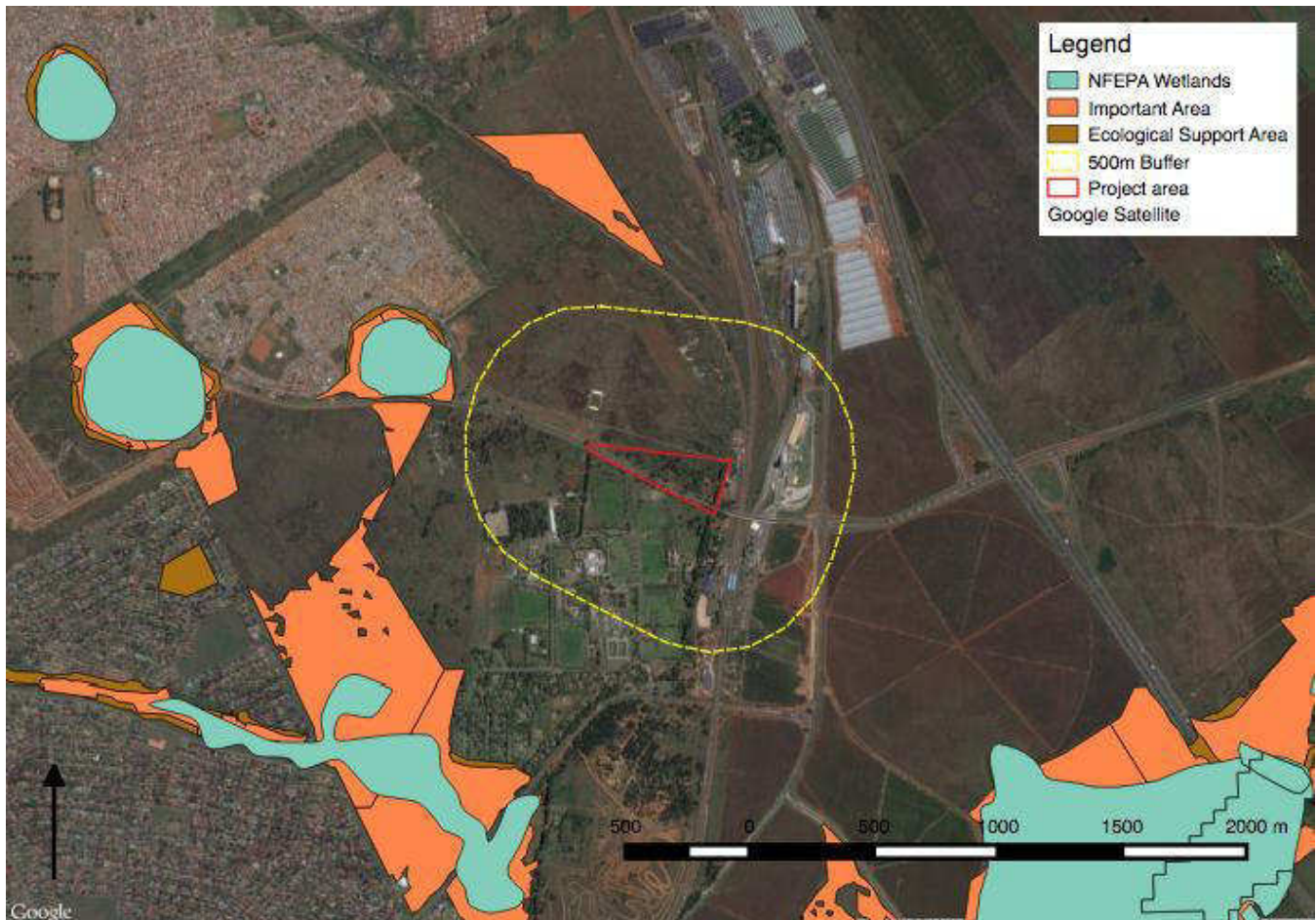


Figure 1: The project area and demarcated 500m buffer, indicating the NFEPA and Gauteng C-Plan datasets to identify potential wetland areas

Based on the desktop findings, no wetlands were expected to occur within the study site, however, this had to be verified by means of a site visit.

3.2 DESCRIPTION OF STUDY AREA

The majority of the project area has been modified and modifications are as a result of dumping, excavation, agricultural activities and construction, photographs for which are presented in Figure 2. Taking into account the local disturbances, soil samples were taken across the project area in order to identify any potential wetland soils and/or signs of wetness that may characterise a wetland.



Figure 2: Photographs of local disturbances to the project area. Left – old infrastructure. Centre – Clearing and dumping. Right – Excavation

The location of the soil samples and the corresponding soil form described for each sample is presented in Figure 4. Three soil forms were identified for the project area, namely the Hutton (Hu), Clovelly (Co) and Oakleaf (Oa) forms, all three of which are not regarded as wetland soils.

The **Hutton** soil form consists of an orthic A horizon on a red apedal B horizon overlying unspecified material. All Hutton profiles are not shallower than 800mm and some are deeper than 1200mm with no restrictive layers and are structureless or have very weakly developed structure. Hutton soils with no restrictions shallower than 500mm are generally good for crop production. Photographs are presented below in Figure 3.

The **Clovelly** form has an orthic A horizon overlying a yellow-brown apedal B1-horizon with unspecified material underneath the apedal horizon. The unspecified material does not have any signs of wetness. The orthic A-horizon is either between 100mm and 300mm deep or absent due to earlier crop cultivation practices.

The **Oakleaf** soil form consist of an orthic A horizon on a neo cutanic B horizon on unspecified material without signs of wetness horizons. The soil form consists of a brown A horizon and red-brown B horizon, with clayey texture.



Figure 3: Photographs of the Hutton soil form recorded for the study

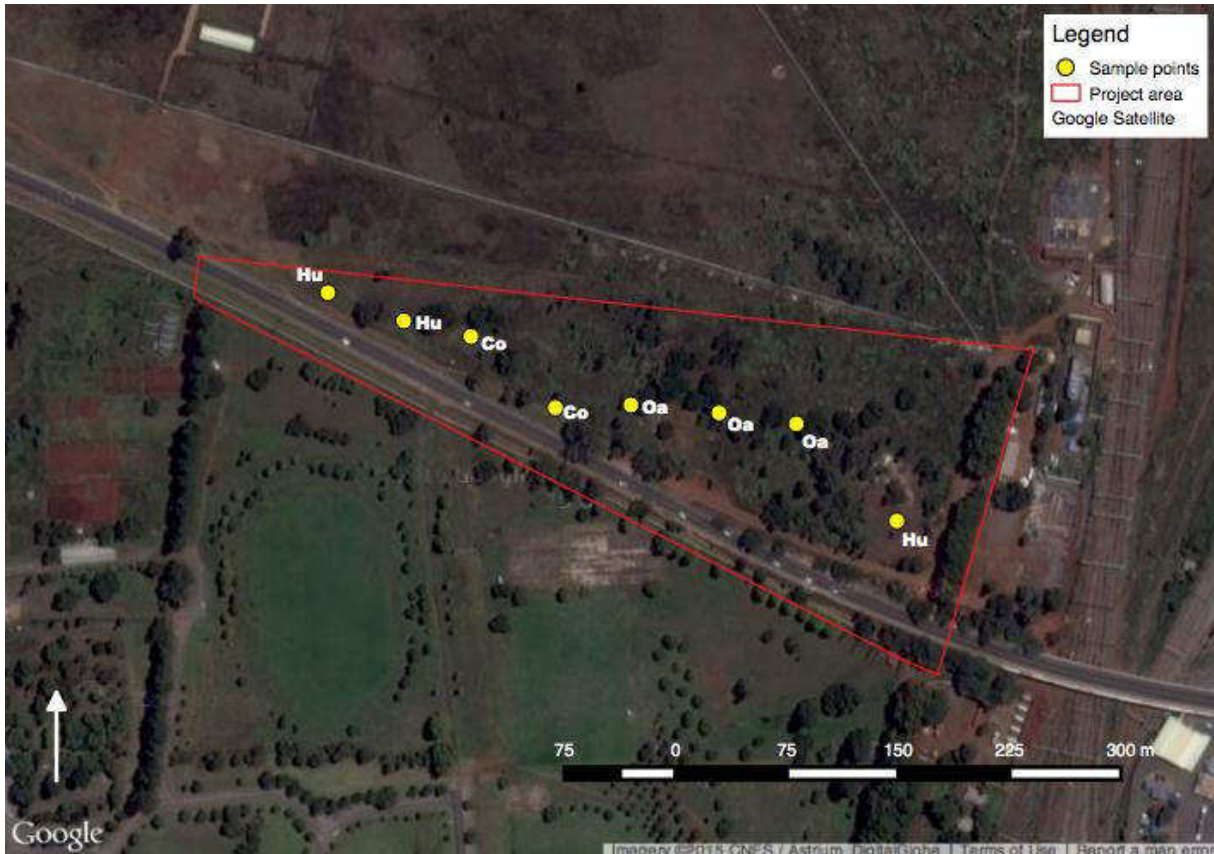


Figure 4: The soil sample locations for the study. Hutton (Hu), Clovelly (Co) and Oakleaf (Oa).

4 CONCLUSION AND PROFESSIONAL OPINION AS REQUIRED BY APPENDIX 6 OF THE REGULATIONS AND ASSESSMENT OF THE PRESENCE OF INDIGENOUS VEGETATION AND HABITAT SENSITIVITY

4.1 PROFESSIONAL OPINION

No wetland soil forms, as described by the DWAF (2005) guidelines were identified for the study. In addition to this, no signs of soil wetness were identified for the study. Based on these findings (soils only), it may be concluded that there is no evidence of wetlands occurring within the project area.

It has been required by the regulations that the specialist provides a professional opinion in regards to the proposed development. The final summary opinion of the study area is provided below.

- There are not wetlands within the study site, so not mitigation or offset strategies will be required.

4.2 MITIGATION RECOMMENDATIONS

Due to the fact that no wetlands are present on site, mitigation measures and recommendation are not required.

5 REFERENCES

Department of Water Affairs and Forestry (DWA) 2005. Final draft: A practical field procedure for identification and delineation of wetlands and Riparian areas.

Nel JL, Murray KM, Maherry AM, Petersen CP, Roux DJ, Driver A, Hill L, Van Deventer H, Funke N, Swartz ER, Smith-Adao LB, Mbona N, Downsborough L and Nienaber S. (2011). Technical Report for the National Freshwater Ecosystem Priority Areas project. WRC Report No. K5/1801.

6 APPENDIX

Appendix 1: Specialist Proof of Qualification

Andrew Husted



Personal Details

Date of Birth:	19 April 1979
Place of Birth:	Johannesburg, South Africa
Nationality:	South African
ID No.:	7904195054081
Gender:	Male
Race:	Caucasian/White
Language Proficiency:	English/Afrikaans (basic working proficiency)
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OVERVIEW

An overview of the specialist technical expertise include the following:

- Aquatic ecological state assessments of rivers and dams.
- Instream Flow Requirement or Ecological Water Requirement studies for river systems.
- Ecological wetland assessment studies, including the integrity (health) and functioning of the wetland systems.
- Wetland offset strategy designs.
- Wetland rehabilitation plans.
- Monitoring plans for rivers and other wetland systems.
- Toxicity and metal analysis of water, sediment and biota.
- Fish telemetry assessment that included the translocation of fish as well as the monitoring of fish in order to determine the suitability of the hosting system.
- Faunal surveys which includes mammals, birds, amphibians and reptiles.
- The design, compilation and implementation of Biodiversity and Land Management Plans and strategies.

TRAINING

Some of the more pertinent training undergone include the following:

- Wetland and Riparian Delineation Course for Consultants (Certificate of Competence) – DWAF 2008
- The threats and impacts posed on wetlands by infrastructure and development: Mitigation and rehabilitation thereof – Gauteng Wetland Forum 2010
- Ecological State Assessment of Lentic Systems using Fish Population Dynamics – University of Johannesburg/Rivers of Life 2010

- Soil Classification and Wetland Delineation – Terra Soil Science 2010
- Wetland Rehabilitation Methods and Techniques - Gauteng Wetland Forum 2011
- Application of the Fish Response Assessment Index (FRAI) and Macroinvertebrate Response Assessment Index (MIRAI) for the River Health Programme 2011
- Tools for a Wetland Assessment (Certificate of Competence) – Rhodes University 2011

PROJECTS

The following project list provides the details of selected studies that I have completed, highlighting the extent of my experience. Providing insight into the various projects, roles and locations I have worked in.

Project	Role	Activities	Resource	Client	Location
Kibali Gold Mine, Hydropower Project	Technical specialist	Instream Flow Requirements	Hydropower	Randgold Resources	DRC
Selebi-Phikwe Economic Diversification Project	Technical specialist	Ecological State Assessment of the Letsibogo Dam	Water (Dam)	European Commission	Botswana
Biodiversity Management Plans (for five operations)	Project Manager	Technical input & project management	Gold	Randgold Resources	DR Congo, Mali and Ivory Coast
Biodiversity Management Plans (for six operations)	Project Manager	Technical input & project management	Coal	Anglo American	South Africa (Mpumalanga & Free State)
Biodiversity Management Plans (for Xstrata Group)	Project Manager	Technical input & project management	Coal	Xstrata Coal South Africa	South Africa (Mpumalanga & KwaZulu - Natal)
Boikarabelo Biodiversity Management Plan	Project Manager	Technical input & project management	Coal	Ledjadja Coal	South Africa (Limpopo)
Putu Iron Ore Mine	Project Manager	Project manager	Iron ore	Putu Iron Ore Mine	Liberia
Balama Graphite Mine	Project Manager	Project manager	Graphite	Syrah Resources	Mozambique
Ntem Iron Ore Mine	Project Manager	Project manager	Iron ore	Putu Iron Ore Mine	Cameroon
Arnot Colliery Wetland Offset Strategy	Technical specialist	Wetland specialist	Coal	Exxaro	South Africa (Mpumalanga)

Klipspruit Assessment	Wetland	Technical specialist	Wetland specialist	Coal	BHP Billiton	South Africa (Mpumalanga)
Syferfontein Assessment	Wetland	Technical specialist	Wetland specialist	Coal	Sasol Mining	South Africa (Mpumalanga)
WULA - Aquatic Biomonitoring (annually)		Technical specialist	Aquatic ecologist	Coal	Penumbra Coal	South Africa (Mpumalanga)
WULA - Aquatic Biomonitoring (annually)		Technical specialist	Aquatic ecologist	Coal	Northern Coal	South Africa (Mpumalanga)
Aquatic Biomonitoring		Technical specialist	Aquatic ecologist	Diamonds	Koidu Holdings	Sierra Leone
Tseletis&Spitzkop Biodiversity Management Plan		Project Manager	Fauna survey	Coal	Msobo Coal	South Africa (Mpumalanga)
Thabametsi Coal Mine		Project Manager	Fauna survey	Coal	Exxaro	South Africa (Limpopo)

EMPLOYMENT EXPERIENCE

CURRENT EMPLOYMENT: The Biodiversity Company (December 2014 – Present)

I founded The Biodiversity Company in 2014 that consist of experienced ecologists who provide technical expertise and policy advice to numerous sectors, such as mining, agriculture, construction and natural resources. The team at The Biodiversity Company have conducted stand-alone specialist studies, and provided overall guidance of studies with a pragmatic approach for the management of biodiversity that takes into account all the relevant stakeholders, most importantly the environment that is potentially affected. We manage risks to the environment to reduce impacts with practical, relevant and measurable methods.

EMPLOYMENT: Digby Wells Environmental (October 2013 – December 2014)

Digby Wells assigned me to the role of Country Manager for the United Kingdom. This was a new endeavour for the company as the company's global footprint continues to increase. The primary responsibilities for the role included the following:

- **Clint liaison** to be able to interact more efficiently and personally with current mining clients, mining industry service providers, legal firms and banking institutions in order to introduce Digby Wells as a services provider with the aim of securing work.
- **Project management** for international projects which may require a presence in the United Kingdom, this was dependent on the location and needs of the client. These projects would mostly be based on the Equator Principles (EP) and International Finance Corporation (IFC) Performance Standards.
- **Technical input** to provide specialist technical expertise for projects, this included fauna, aquatic ecology, wetlands and rehabilitation. Continued with the design and implementation of Biodiversity and Land Management Plans to

assist clients with managing the natural resources. Responsibilities also included the mentorship and management (including reviewing and guiding) other expertise such as flora, fauna and pedology.

EMPLOYMENT: Digby Wells Environmental (March 2012 – September 2013)

Manager of a multi-disciplinary department of scientists providing specialist services in support of national and international requirements as well as best practice guidelines, primarily focussing on the mining sector. In addition to managing the department, I was also expected to contribute specialist services, most notably focusing on water resources. Further responsibilities also included the management of numerous projects on a national or international scale. A general overview of the required responsibilities are as follows:

- **Project management** for single as well as multi-disciplinary studies on a national and international scale. This included legislation and commitments for the respective country being operated in, as well as included the World Bank (WB), EP and IFC requirements.
- **Individual and/or team management** in order to provide mentoring and supportive structures for development and growth in support of the company's strategic objectives.
- **Scientific report writing** to ensure that the relevant standards and requirements have been attained, namely local country legislation, as well as WB, EP and IFC requirements.
- **Report reviewing** in order to ensure compliance and consideration of relevant legislation and guidelines and also quality control.
- **Specialist management** to facilitate the collaboration and integration of specialist skills for the respective projects. This also included the development of Biodiversity and Land Management Plan for clients.
- **Client Resource Manager** for numerous clients in order to establish as well as maintain working relationships.

An overview of the tenure working with the company is provided below:

- **October 2013 – December 2014: London Operations Manager** – Deployed to establish a presence for the company (remote office) in the United Kingdom by means of generating project work to support the employment of staff and operation of a business structure.
- **March 2012 – September 2013: Biophysical Department Manager** – Responsible for the development and growth of the department to consist of four specialist units. This included the development of a new specialist unit, namely Rehabilitation.
- **January 2011 - February 2012: Ecological Unit Manager** – In addition to implementing aquatic and wetland specialist services, the role required the overall management of additional specialist services which included fauna & flora.
- **June 2010 - December 2010: Aquatic Services Manager** – This required the marketing and implementation of specialist programmes for the client base such as biomonitoring and wetland off-set strategies. In addition to this, this also included expanding on the existing skill set to include services such as toxicity, bioaccumulation and ecological flow assessments.
- **August 2008: Aquatic ecologist** – Employed as a specialist to establish the aquatic services within the company. In addition to this, wetland specialist services were added to the existing portfolio.

PREVIOUS EMPLOYMENT: Econ@UJ (University of Johannesburg)

- June 2007 – July 2008: Junior aquatic ecologist
 - Researcher
 - Technical assistant for fieldwork
 - Reporting writing
 - Project management

GENERAL SKILLS

Literacy	Read, write and speak English fluently. Read, write and speak Afrikaans. Basic German.
Generic	Advanced user of Microsoft Office applications.
Mapping	Introductory skill level for ArcGIS and Quantum GIS.

ADDITIONAL EXPERIENCE

Compliance audits	Conducting site investigations in order to determine the level of compliance attained, ensuring that the client maintains an appropriate measure of compliance with environmental regulations by means of a legislative approach
Control officer	Acting as an independent Environmental Control Officer (ECO), acting as a quality controller and monitoring agent regarding all environmental concerns and associated environmental impacts
Screening studies	Project investigations in order to determine the level of complexity for the environmental and social studies required for a project. This is a form of risk assessment to guide the advancement of the project.
Public consultation	The provision of specialist input in order to communicate project findings as well as assist with providing feedback if and when required.
Water use licenses	Consultation with the relevant authorities in order to establish the project requirements, as well as provide specialist (aquatics/wetland) input for the application in order to achieve authorisation.
Closure	Primarily the review of closure projects, with emphasis on the closure cost calculations. Support was also provided by assisting with the measurements of structures during fieldwork.

Visual

The review of visual studies as well as the collation of field data to be considered for the visual interpretation for the project.

ACADEMIC QUALIFICATIONS

University of Johannesburg, Johannesburg, South Africa (2009): MAGISTER SCIENTIAE (MSc) - Aquatic Health:

Title: *Aspects of the biology of the Bushveld Smallscale Yellowfish (Labeobarbus polylepis): Feeding biology and metal bioaccumulation in five populations.*

Rand Afrikaans University (RAU), Johannesburg, South Africa (2004): BACCALAUREUS SCIENTIAE CUM HONORIBUS (Hons) – Zoology

Rand Afrikaans University (RAU), Johannesburg, South Africa (2001 - 2004): BACCALAUREUS SCIENTIAE IN NATURAL AND ENVIRONMENTAL SCIENCES. Majors: Zoology and Botany.

PUBLICATIONS

Tate RB and Husted, A. 2014. 2nd Review. Aquatic Biomonitoring in the upper reaches of the Boesmanspruit, Carolina, Mpumalanga, South Africa. African Journal of Aquatic Science.

Tate RB and Husted A. 2013. Bioaccumulation of metals in *Tilapia zillii* (Gervai, 1848) from an impoundment on the Badeni River, Cote D'Ivoire. African Journal of Aquatic Science.

O'Brien GC, Bulfin JB, Husted A. and Smit NJ. 2012. Comparative behavioural assessment of an established and new Tigerfish (*Hydrocynus vittatus*) population in two manmade lakes in the Limpopo catchment, Southern Africa. African Journal of Aquatic Science.

Tomschi, H, Husted, A, O'Brien, GC, Cloete, Y, Van Dyk C, Pieterse GM, Wepener V, Nel A and Reisinger U. 2009. Environmental study to establish the baseline biological and physical conditions of the Letsibogo Dam near Selebi Phikwe, Botswana. EC Multiple Framework Contract Beneficiaries.8 ACP BT 13 – Mining Sector (EDMS). Specific Contract N° 2008/166788. Beneficiary Country: Botswana. By: HPC HARRESS PICKEL CONSULT AG

Husted A. 2009. Aspects of the biology of the Bushveld Smallscale Yellowfish (*Labeobarbus polylepis*): Feeding biology and metal bioaccumulation in five populations. The University of Johannesburg (Thesis).

Geotechnical: Dolomite Stability & Soils Investigation



Appendix G5

EKURHULENI METROPOLITAN MUNICIPALITY

**CONTRACT PS-CP 53-2013
DOLOMITE SPECIALIST CONSULTANTS**

WORKS ORDER NO. 830

***DOLOMITE STABILITY AND SOILS INVESTIGATION FOR
THE PROPOSED LICENSING HUB AT PORTION 67
WITFONTEIN 15 IR, ESSLEN PARK, EKURHULENI
METROPOLITAN MUNICIPALITY- Phase I***

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AUGUST 2014

WORKS ORDER NO. 830

DOLOMITE STABILITY AND SOILS INVESTIGATION FOR THE PROPOSED LICENSING HUB AT PORTION 67 WITFONTEIN 15 IR, ESSLEN PARK, EKURHULENI METROPOLITAN MUNICIPALITY-PHASE I

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APPENDIX D : GEOPHYSICS RESULTS/REPORT

WORKS ORDER NO. 830

DOLOMITE STABILITY AND SOILS INVESTIGATION FOR THE PROPOSED LICENSING HUB AT PORTION 67 WITFONTEIN 15 IR, ESSLEN PARK, EKURHULENI METROPOLITAN MUNICIPALITY

1. INTRODUCTION

Blue Rain Consultants has been appointed by the Ekurhuleni Metropolitan Municipality (EMM) under Contract No. PS CP 53-2013, to perform a dolomite stability and soils investigation for the proposed Licensing Hub in Esslen Park at Portion 67 Witfontein 15 IR, Sam Molela Street.

2. SCOPE OF WORK

- Determine the dolomite stability of the Licensing Hub site with regard to dolomite-related subsidence.
- Characterise foundation and ground conditions for structures in accordance with the NHBRC methodology and suggested stability classification.
- Determine the ability to excavate and the suitability of excavated materials for use during construction.
- Identify geotechnical constraints, such as shallow groundwater, that may impact on the development.
- Provide a report on the investigation with comments and recommendations.

3. SITE LOCALITY AND DESCRIPTION

The site is situated on Portion 67 Witfontein 15 IR, at Sam Molela Street northern part of Esslen Park Location. The site under investigation covers an approximate area of (70 939 m²) 7.2ha. This site is situated adjacent to a railway line station at the intersection of Pretoria Road and Sam Molela Street in Esslen Park.

The area under investigation is currently vacant and it is covered by grasslands, weeds and trees. The site has a relatively flat slope of less than 1 degree with the highest elevation occurring in the north-eastern portion. Surface runoff water takes place through sheetwash.

4. PROPOSED DEVELOPMENT

This project is in line with the integrated Development plan as well as the objective of the department of establishing Motor Vehicle Registration Authority (MVRA) facilities and Drivers Licensing Testing Centre (DLTC) throughout the EMM. The proposed

structure constitute of two storey office building, testing bays, access roads, and the associated infrastructure (water, sewer and storm water).

Layouts and plans for the construction of the proposed Licensing Hub have not submitted to our office. Therefore this study focuses on a general dolomite stability and soil assessment for the whole site. No footprint drilling/investigation have been conducted on site.

The type of development is classified as a miscellaneous non-residential usage site as described in SANS 1936-1-2012 as a C1 i.e. Police Station type development.

The site layout is shown on Figure 1.

5. GEOLOGY AND GEOHYDROLOGY

According to the published scale Geological Map 2528 Pretoria, the site is underlain by chert-rich dolomite of the Monte christo Formation of Malmani Subgroup of the Chuniespoort Group, Transvaal Supergroup. The soil cover often comprises highly erodible soils, which can readily erode by downward percolating water to create leached or voided zones, which may result in the formation of sinkholes or dolines.

The geological map of the area under investigation is outlined in Figure 4.

Only limited groundwater information is available. According to Hobbs, the site is located in the Sterkfontein West groundawater compartment. The groundwater compartment compiled by DWAF shows that this site in the Sterkfontein West Compartment where generally deep groundwater can be expected i.e. in the order of 60 m depth. The original groundwater levels for this compartment are between 1490 and 1500 m.a.m.s.l. There was no groundwater was encountered during the investigation.

Unfortunately no borehole information exists within relevant proximity to the site.

6. PERCUSSION DRILLING AND TESTPITTING

The site investigation was conducted on 13-17 June 2014 and consisted of the drilling of seven percussion boreholes (EMM 1481A to EMM1487) within the proposed Licensing Hub site. Seven test pits (TP1 to TP7) were excavated to maximum reach of the TLB was conducted on the 07 July 2014. Drilling was performed by Didiba Drilling & Exploration Services Drilling Contractor and the test pits were excavated with a Cat 424 D TLB. Chip samples, taken at 1m intervals from the percussion drilling, were described by an engineering geologist, while accurate measurements were made of penetration rates.

The boreholes and soil profiles were described according to standard practice. Two disturbed soil samples were taken from the various horizons encountered on site for foundation indicator tests. No bulk samples were collected for Modified AASHTO compaction testing and California Bearing Ratio (CBR) determination.

The approximate positions of the test pits and percussion boreholes are shown in Figure 1 and Figure 3.

The test pits were excavated adjacent or close to the percussion boreholes to provide additional soil profile information and to confirm the consistency of soils near ground surface.

7. RESULTS

7.1 Percussion Drilling

The site is characterised by relatively shallow dolomite bedrock. Virtually moderately to slightly weathered sound dolomite rock was encountered in all the boreholes from a depth of between 15m and 31m.. Drilling extended to a depth of at least six meters into bedrock to confirm that bedrock had been reached, and that a large dolomite floater was not misinterpreted as bedrock. Typical penetration rates in the bedrock exceeded 3min/m.

The portion of the ground profile above sound bedrock is referred to as the blanket layer. The material constituting the blanket layer comprised colluvium, residual chert and weathered dolomite, including wad-rich material. Moderately to slightly weathered hard rock dolomite was encountered at various depths in EMM1481A, EMM1482, EMM1483, and EMM1486 above sound dolomite bedrock but at EMM 1484 highly to moderately weathered dolomite samples were recovered.

Zones of moderately weathered rock dolomite was encountered within sound slightly weathered dolomite rock in EMM 1481A (between a depth of 22 m and 30 m below surface), EMM 1482 (between a depth of 22m and 28m below ground level), in EMM 1483 (between a depth of 20m and 22m below the existing ground level) and in EMM 1484 a zone of highly to moderately weathered dolomite was encountered (between a depth of 15m to 22m below surface), EMM 1486 (between a depth of 16m and 31m below ground level) .

At EMM 1485 and EMM 1487 a highly to slightly weathered light grey speckled pink granite rock was encountered.

The distribution of all these material types is fairly irregular, which is typical for a dolomite environment.

Sample and air losses were encountered in any of the boreholes (EMM1481A: 14 m - 24 m , EMM 1482: 22 m - 28 m, EMM 1483: 16 m – 20 m, EMM 1486: 7 m – 26 m and EMM1487: 14 m – 28 m below ground level) during this investigation. Sample or air losses associated with highly weathered dolomite bedrock are based on penetration rates of more than 1min/m and sound dolomite bedrock are based on penetration rates of more than 3min/m. Air losses are an indication that either very porous subsurface conditions are present or that cavities exist that can act as receptacles for material eroded from the subsurface profile under the influence of percolating water.

No water strike has been encountered during the drilling on site.

A summary of the borehole profiles and the detailed borehole logs are given in Appendix B.

7.2 Test Pitting

The typical soil profile for the site can be summarised as follows:

The surface layer consists of colluvium comprising loose silty sand, with chert gravel varying with depth.

Below the colluvium is a residual chert layer consisting of loose silty clayey sand, with various percentages (30% to 70%) chert gravel. At TP4 the residual chert layer consisting of loose to medium dense consistency at depths ranging from 0.30 m to 2.30 m below existing surface was encountered with difficulty to excavate with a TLB.

No water seepage was encountered during the excavation of the test pits.

Table 1 and Table 2 [7.3] provides a summary of the soil profiles and the detailed soil profiles are given in Appendix C.

7.3 Laboratory Testing

Foundation indicator tests and a compaction test were conducted by Geostrada on representative soil samples. The test results are contained in Appendix D.

Table 1
Particle Size Distribution and Atterberg Limit Determination Tests

Pit No	Depth (m)	Description	Particle Size				Atterberg Limits %			GM	Activity
			Clay	Silt	Sand	Gravel	LL	PI	LS		
TP2	0.7-1.0	CLAYEY SANDY SILT.	41	22	34	3	36	15	8.0	0.55	Low
TP7	0.4-1.5	CLAYEY SILTY SAND.	21	23	47	1	31	15	6.0	066	Low

LL- Liquid Limit

GM - Grading Modulus

PI - Plasticity Index

LS - Linear Shrinkage

Results of laboratory tests conducted on the residual chert indicated a well-graded material, which is predominantly fine-grained with a low plasticity. It classified as CL in accordance with the Unified Soil Classification, i.e. silt and clay of low to medium plasticity. The residual chert has a liquid limit of between 31% and 31% and a plasticity index of 7 % with a low potential expansiveness on average.

8. DOLOMITE RISK CHARACTERISATION

8.1 General

The results of the borehole information were used collectively during this study to assess the stability of the site. The dolomite risk characterisation was done in accordance with the method proposed by Buttrick *et al.* [5]. The risk classification of the borehole profiles is summarised in Table 1 at the back of the report.

According to the methodology of scenario supposition [5], the conditions in each borehole must be evaluated in terms of a non-dewatering as well as a dewatering scenario. This method evaluates the stability of an area by investigating the presence of receptacles in the dolomite profile, depth to potential receptacles, maximum sinkhole development space, the nature and mobilisation potential of the blanket material and the presence of mobilising agents.

The factors influencing the stability of the area, as evaluated in the following sections, are described as follows:

The *blanket layer* (dolomitic overburden) comprises all the materials occurring between the ground surface and the dolomitic bedrock surface. The term blanket layer, is defined here as the component of the dolomitic overburden that overlies the potential receptacles.

Receptacles in the dolomite profile may occur either as small disseminated and interconnected openings in the overburden or as substantial openings (especially where chert rubble is present) or as substantial openings (cavities) in the bedrock. Both types of opening may be able to receive mobilised (transported) materials from overlying horizons.

Mobilisation and mobilising agents: Mobilising is defined as the movement of dolomite overburden by subsurface erosion. Mobilizing agents include ingress water, ground vibrations, water level drawdown or any process that can induce mobilisation of the material in the blanket layer under the force of gravity.

Maximum potential development space: This is a simplified estimation of the maximum size sinkhole that can be expected to develop in a particular profile, provided that the available space is fully exploited by a mobilising agent. The available space depends on the depth below ground surface to the throat of a receptacle or disseminated receptacle and the 'angle of draw' in the various blanket materials.

8.2 Risk Classification

Each borehole drilled was classified according to the eight different risk classes (1 to 8) proposed in the method for dolomite land hazard and risk assessment in South Africa [5]. The classification was carried out for both a non-dewatering and dewatering scenario (refer to Table 1 at the back of the report).

For the purpose of this study, the eight classes were combined to represent only one primary stability zone. This zone is defined in the table below.

According to the EMM cadastral data the regional Inherent Hazard Classification (IHC 1/4/7). However drilling results revealed that a larger portion of the site (EMM1483, EMM1484, EMM1485 and EMM1486) is classified as IHC1/3 implying a very small to no risk to sinkhole and subsidence formation and a smaller portion of the site (EMM1481 and EMM1487) classified as IHC 4 of the site implying a high risk for small to very large-size sinkhole and subsidence formation.

The inherent risk class for the footprint of the proposed Licensing Hub is outlined in Figure 3.

Table 2: Summary of the Inherent Hazard Classification

PRIMARY STABILITY ZONE	INHERENT RISK CLASS (NHBRC Risk Class)	NHBRC DOLOMITE AREA DESIGNATION	BOREHOLE NO.	RISK CHARACTERIZATION
ZONE	1/3/4	D3	EMM 1400 –EMM 1403	Low to Medium risk of small to medium sinkhole and medium to high risk for doline formation

Analysis of the inherent dolomite related subsidence risk classes has shown the following:

- Non Dewatering Scenario: No water was encountered during the drilling, therefore this can be regarded as a non-dewatering site.
- Dewatering Scenario: For a dewatering scenario to occur, the water table must be lowered to depths between 7m and 8m empty receptacles into which eroded material can be transported in order for sinkholes to develop. Assuming that all eroded materials can be accommodated in receptacles and that conduits to these receptacles do not become blocked by coarse material, sinkholes of sufficient size are theoretically possible that warrant classifying the area around Borehole EMM 1481, EMM 1487 as Risk Class 4 and EMM01482 and EMM1486 as Risk Class 3 and the remainder of the site as Risk Class 1. Both these risk classes are suitable for places of detention and police stations use provided adequate water control measures are implemented and any infrastructure in this regard is regularly maintained in an effective operational condition. ; therefore effect of dewatering will have a low hazard impact on this site.

Table 3: Summary of dolomite area designation

Dolomite area designation	Description
D1	No precautionary measures are required.
D2	General precautionary measures, in accordance with the requirements of SANS 1936-3, that are intended to prevent the concentrated ingress of water into the ground, are required.
D3	Precautionary measures in addition to those pertaining to the prevention of concentrated ingress of water into the ground, in accordance with the

	relevant requirements of SANS 1936-3, are required.
D4	The precautionary measures required in terms of SANS 1936-3 are unlikely to result in a tolerable hazard. Site-specific precautionary measures are required.

(a) *Blanketing Layer*

The upper portion of the blanket layer consists of residual chert while residual chert with wad was encountered in borehole EMM 1481, EMM 1482, EMM 1484, EMM 1485, and EMM 1486.

The residual chert (viz. chert fragments and/or layers within a matrix of silty sand) varied in thickness between 4 m and 16 m. The residual chert is characterised by its heterogeneous nature and it is therefore difficult to allocate a specific risk of mobilization. The penetration rates through these layers varied between 6s/m and 25s/m. The overall mobilization risk of this horizon is, however, classified as medium to high, the widespread presence of wad the sandy materials being highly erodible, silty materials moderately erodible and the clayey materials having low erodibility.

Weathered chert (viz. Silty clay and very soft wad rich soils) were encountered in EMM 14181A, EMM 1482, EMM 1483, EMM 1485 and EMM 1487 with a thickness varying from 4 m and 20 m below existing surface. The penetration rates through this material varied between 0.15s/m and 0.50min/s. This material is classified as having a medium to high risk due to the presence of wad with high penetration rate.

Weathered dolomite (viz. silty clay with minor chert fragments and wad or wad-rich soils) was encountered with depth. The thickness of the weathered dolomite layer that mainly comprises silty clay or silty sand with chert and dolomite fragments and wad varies between 16 m to 20 m at EMM 1483 and 14 m to 15 m at EMM 1484 below surface. This material classifies as having a medium to high risk, due to the presence of wad with a high penetration rate.

(b) *Receptacles*

Although no receptacles were encountered in any of the boreholes, residual chert comprising highly compressible and erodible wad was found in borehole the boreholes drilled. These wad layers could perhaps be disseminated and can accommodate some mobilised material from overlying horizons. For the purpose of risk assessment it should therefore be assumed that receptacles do occur within the upper portion of the bedrock and/or disseminated zones in the wad, irrespective whether these were encountered by drilling or not.

(c) *Mobilisation Agents*

In an urbanised area it should be assumed that a mobilising agent is always present in the form of leaking wet services, ponding of surface water and ground vibrations.

On site the water table is deep, a greater thickness of the blanketing layer is exposed to mobilisation than in areas with a shallower water table.

The site slopes at a gradient of less than 1° in a north-eastern direction, which implies that ponding and infiltration of water into the subsurface may take place, enhancing the potential of sinkhole or doline formation.

(d) *Maximum Potential Development Space of a Sinkhole and Doline Formation*

The depth to dolomite bedrock across the site is fairly variable but generally shallow. The potential development space for a sinkhole to develop for a non-dewatering scenario is limited and sinkholes, if any, will be small to medium (2m to 5m). In a dewatering scenario (i.e. drawdown of the groundwater level) the potential development space for a sinkhole is also considered to be limited, if any, it will also be small to medium probably in the range of 1m to 4m, due to a moderately competent blanket layer above sound bedrock. The maximum size sinkhole that may be expected to occur at each borehole is indicated in Table 1.

Dolines usually form where compaction of highly compressible material takes place (often associated with the gradual lowering of the groundwater level), or where the receptacles have limited available space, or where the potential sinkhole formation process is halted due to choking of conduits to receptacles or remedial measures taken in time. The potential for doline formation is [considered to be low in Boreholes EMM 1483, EMM 1484, EMM 1485 and EMM 1486, medium in Boreholes EMM1482 and EMM1486 and high in Boreholes EMM1481A and EMM1487.] Taken into account for the assessment of doline formation risk are the occurrence of highly erodible horizons comprising wad, the overall shallow bedrock depth and the lowering of the water table to below bedrock levels.

(e) *Risk Class*

Drilling revealed that Portion 67 Witfontein 15 IR is blanketed by a thin layer (6 m thick on average) of competent overburden, considered to have a low mobilization potential, consisting of residual chert. This was the layer intersected within the boreholes. However this is underlain by a layer of (6.0 m thick on average) of highly compressible wad. The top portion of the wad often contains stringers of chert, with was encountered in all seven of the boreholes. Some blocky wad concretions area also present within highly weathered dolomite intersected above medium to slightly weathered dolomite bedrock that is present to the maximum depth of the boreholes. The only exception is borehole EMM 1487 and EMM 1485 where a pinkish, slightly weathered granite gneiss was intersected below the weathered chert from 24 m to 32 m and 22 m to 28 m below surface. Slight to medium air and material loss was recorded during the drilling and is generally confined to the wad layer.

The entire site therefore generally constitutes Risk Class 1/3/4 for both a non-dewatering and dewatering scenario (NHBRC Class D3) due to the thick layer of wad present above the dolomite bedrock. The classification indicates that there is a low to medium risk for the development of small to medium sized sinkholes as well as

doline formation in both a non-dewatering and watering scenario. Dewatering the site will therefore no influence the stability of the site.

In general it is concluded that the properties of the blanketing layer within the site is fairly competent. The ERF is therefore suitable for the proposed Licensing Hub Construction provided the stringent water precautionary measures according to PW 344 for D3 classification as well as SANS 1936-2 be implemented.

9. GEOTECHNICAL EVALUATION AND DEVELOPMENT RECOMMENDATIONS

It is understood that the development will comprise of two storey office building, testing bays, access roads, and the associated infrastructure (water, sewer and storm water). For the associated infrastructure (water, sewer and storm water): severe water precautionary measures according to **PW344 (Ref. 2)** for **D3** site are instigated.

9.1 Earthworks

Due to the gently sloping nature of the site significant earthworks are not envisaged. It is recommended however that the construction of the earthworks be carried out in accordance with SABS1200D (current version).

9.2 Materials Evaluation

The materials found on the site have been tested and have been classified in terms of the laboratory test results.

The characteristics of the colluvium and residual materials found on site are mostly wad contaminated soils and are deemed not suitable for use for the construction for the proposed Licensing Hub development; therefore it is recommended that foreign competent to a quality of G5 or G6 be imported.

9.3 Foundation Recommendations

The laboratory test results indicate that all the in-situ materials in the upper 3 m have low grading moduli of between 0.55 and 0.66, Plasticity Indices of 15 and Linear Shrinkages of between 6.0 and 8.0.

According to Van der Merwe's plasticity chart, the subsoils have a low potential for expansiveness (moisture related movement of the soils), due to low percentage of clay in the soil matrix.

It is recommended that the two storey building and other heavily loaded structure be founded on a reinforced concrete raft design to span a 5m loss of support.

For other lightly loaded structures can be founded on Normal shallow strip foundations can be used considering the prevailing geological conditions on site. Design a foundation and structural solution which will ensure that the occupants of the structure can escape safely should loss of support occur and also ensure that the structure is in such a state after the event that remedial action can be put in a place and the structure be used again in the future. This could be applied for a warehouse type structure/ vehicle evaluation areas where it could settle or crack but be repaired with underpinning.

The construction of large concrete rafts is expected to be very costly and therefore economically less attractive.

It is recommended that an experienced geotechnical engineer or engineering geologist inspect the foundation excavations prior to commencing with the backfilling and/or casting of concrete to ensure that suitable foundations have been reached.

9.4 Roads and Paved Areas

From the results of the field investigation and laboratory test results it is apparent that the colluvial and residual soils underlying the site are generally poor subgrade materials. Depending on the road design adopted, it may be necessary that as a minimum subgrade improvement measure. The road prism on a site like this is unlikely to exceed 1 m and subgrade can therefore be placed directly on the natural soil provided the latter is compacted to at least 90% Mod AASHTO.

Subsequent layerworks, after the above recommended minimum improvement, will depend on the anticipated traffic loads, volumes and design life and must be designed accordingly.

10. RISK MANAGEMENT PLAN AND PRECAUTIONARY MEASURES

Standard precautionary measures regarding foundation design, wet services specifications, stormwater management and general measures for dolomite areas designated as Risk Class 3 and 5 (NHBRC Class D3) should be adhered to.

The aspects to be attended to are as follows:

10.1 Foundation Design

- The foundations will be constructed as per the structural engineers specifications. The design should be in accordance with the Journal of the Joint Structural Division of SAICE, draft specifications of SANS 1936-4 of 2012.

10.2 Wet Services Specifications

- No new boreholes shall be permitted on the site, except for the monitoring of groundwater levels. If any boreholes currently exist on the site, the groundwater level should be monitored by the owner or manager of the property and recorded regularly (every month) by the responsible person, since the drastic lowering of the groundwater table will increase the risk of sinkhole and doline formation. Actual measurements should ultimately be reported to the Department of Water Affairs and Forestry to form part of a broader, regional monitoring programme.
- All water and sewer materials should be HDPE quality materials with flexible joints to be used. No plumbing and drainage pipes shall be placed under floor slabs.
- Rodding eyes must be provided on the sewer line.
- Pressure release leaking system will flow directly into the sewer system.
- The NBRI air test for leaks will be conducted on all underground sewerage and stormwater pipes (see NBRI info sheet X/BOU 2-34. A plumber should perform Tests after installation).
- Water pipe entries into the building will be in accordance with Figure 53 (Home Builders Manual Part 1, page 27).
- WC pans shall be provided with a flexible connection at the junction with the outlet pipe.
- Water pipes shall have a minimum cover of 500mm.
- All pipes shall be inspected every 6 months.

10.3 Site Stormwater Management

- The entire development should be landscaped to facilitate good drainage and prevent the ponding of surface water against structures. All water courses and road surfaces shall be sealed and rendered impervious.
- The site should be inspected immediately after a heavy downpour to assess the drainage of the site. If ponding is visible it should be noted and be corrected as soon

as possible to prevent any ponding in the future. Ponding should be prevented at all times.

- A minimum gradient of 1:15 should be maintained along site stormwater systems.
- All water borne in sleeves and ducts.
- Stormwater to be discharged into municipall storm water system
- Down pipe guttering should be discharged into a pre-cast furrow, which will remove the water from the structure on a sealed surface.
- Paving immediately against the buildings, should be shaped to fall in excess of 75mm over the first 1,0m beyond the perimeter of the building.
- The regional stormwater system should be well established and thoroughly integrated with the Local Council's Stormwater Management Plan.
- No boreholes to be drilled for water abstraction.

10.4 General

- All structures should be closely inspected for signs of structural cracking on a bi-annual basis. If structural cracks appeared the date and width shall be recorded. If the width increases a structural engineer should be consulted for professional advice.
- Stormwater and sewer pipes should be laid properly in a bed of selected fill or granular material.
- The water pipe should be laid in sleeve.
- Sewer or water pipe line should not be encased in concrete or soilcrete.
- All trenches and excavation works must be properly backfilled and compacted according to the recommendations in sub clause 5.2.4 SABS 1200BA to prevent them as functioning French drains.
- Water pipes entering buildings should be kinked either a Z or a U to allow for relative movement.
- No plants, trees, shrubs, flower beds etc. which require large amounts of water should be allowed. If such is required, it should be placed in sealed pots.
- An isolation valve should be installed in the waterline where it enters the building.
- Water supply to the site should be checked regularly and any leakage and repairs be recorded. This should be done once a month to ensure early detection of leakage.

- Water meter checks should be done once a month. The meter must be observed once the isolation valve is closed to see if there is any consumption. The actual meter reading and date must be recorded. If any flow is detected a plumber shall be appointed to repair the leakage and tested afterwards.
- Sewer line should be checked on a monthly basis to ensure early detection of leakage and any leakage and repairs be recorded.
- A pressure test must be done once a year on the sewer line.
- Brick and pre-cast walls must be designed as to provide drainage ports at ground level permitting passage of water.
- Ensure the roadways are placed below site so as to facilitate drainage.

10.5 Emergency Procedures

- In the event of a sinkhole or doline occurrence a competent person (i.e. geotechnical engineer or engineering geologist) should be consulted for the rehabilitation of the sinkhole or doline.
- A responsible person (manager for example, staying on site) should be assigned and trained to respond to emergency situations caused by sinkhole or doline formation (e.g. where to cut off the water supply if instability had been caused by a leaking pipe or if evacuation of a building is justified).

10.6 Data Base

The findings of the monitoring and maintenance plan should be fed into a data bank and reported regularly to the Council for Geoscience (CGS). The following information should inter alia be included in the data system:

- the dolomite stability and geotechnical report
- relevant (old) reports and correspondence
- a layout plan with location of services
- the zonation map
- records of inspection and testing
- records of maintenance (detailing when, how and what was done)
- a register of damaged structures
- a record of sinkhole and doline occurrences (with rehabilitation taken)

11. CONCLUSIONS AND RECOMMENDATIONS

11.1 Dolomite Stability

A low to medium risk exists for small to medium size sinkhole formation in a non-dewatering and dewatering scenario for the site (NHBRC Class D3). A medium to high risk exists for doline formation, particularly with ingress of surface water.

11.2 Foundation Conditions

Reinforced concrete raft designed to span a 5 m loss of support.

It is recommended that an experienced geotechnical engineer or engineering geologist inspect the foundation excavations prior to the placing of concrete or wet services to ensure that suitable foundations have been reached.

11.3 Risk Management and Precautionary Measures

The risk management plan as set out in Section 9, should be adhered to and precautionary measures followed. NHBRC requirements for development of areas underlain by areas designated by D3 must strictly be adhered to.

REFERENCES

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5. Buttrick, D.B., Van Schalkwyk, A., Kleywegt, R.J. and Watermeyer, R.B. (2001). *Proposed method for dolomite land hazard and risk assessment in South Africa*. Journal of the South African Institution of Civil engineering, 43(2), pp. 27 – 36.
6. National Home Builders Registration Council (1999). *Home Building Manual*. Revision No. 1.

APPENDIX A

ASPECTS OF DOLOMITIC STABILITY ASSESSMENT

ASPECTS OF DOLOMITIC STABILITY ASSESSMENT

A study area is characterized in terms of eight standard Inherent Hazard Classes, also referred to as Inherent Risk Classes. These classes denote the chance of a sinkhole or subsidence occurring as well as its likely size (diameter).

The terminology used in terms of likely size of an event (sinkhole or subsidence) is defined as follows:

Table A.1: Sinkhole size definitions

Maximum diameter of surface manifestation (in metres)	Terminology
<2	Small-size
2-5	Medium-size
5-15	Large-size
>15	Very large-size

The larger the Inherent Hazard Class number, the greater the chance of a sinkhole or subsidence occurring and the larger its potential size should it occur. The meaning/definition of each Inherent Hazard Class is as follows:

Table A.2: Description of Classes and Associated Risk

Class	Description of expected risk
Class 1 Areas:	Areas characterised as reflecting a <u>low</u> Inherent Risk of sinkhole and doline formation (<u>all sizes</u>) with respect to ingress of water.
Class 2 Areas:	Areas characterised as reflecting a <u>medium</u> Inherent Risk of <u>small sinkhole</u> and doline formation with respect to ingress of water.
Class 3 Areas:	Areas characterised as reflecting a <u>medium</u> Inherent Risk of <u>medium</u> sinkhole and doline formation with respect to ingress of water.
Class 4 Areas:	Areas characterised as reflecting a <u>medium</u> Inherent Risk of <u>large</u> size sinkhole and doline formation with respect to ingress of water.
Class 5 Areas:	Areas characterised as reflecting a high Inherent Risk of <u>small</u> sinkhole and doline formation (<u>all sizes</u>) with respect to ingress of water.
Class 6 Areas:	Areas characterised as reflecting a <u>high</u> Inherent Risk of <u>medium</u> size sinkhole and doline formation with respect to ingress of water.
Class 7 Areas:	Areas characterised as reflecting a <u>high</u> Inherent Risk of <u>large</u> sinkhole and doline formation with respect to ingress of water.
Class 8 Areas:	Areas characterised as reflecting a <u>high</u> Inherent Risk of <u>very large</u> size sinkhole and doline formation with respect to ingress of water.

The table below sets out the inherent hazard classes in terms of sinkhole sizes and associated risk of occurrence.

Table A.3: Statistical occurrences of inherent hazard classes of subsidence and specified-size sinkholes

	2	3	4	5	6
Inherent hazard class	Statistical occurrences of sinkholes and subsidences				
	Small sinkhole	Medium Sinkhole	Large sinkhole	Very Large Sinkhole	Subsidence
	<2 m	2 m to 5 m	5 m to 15 m	> 15m	
1	Low	Low	Low	Low	Low
2	Medium	Low	Low	Low	Medium
3	Medium	Medium	Low	Low	Medium
4	Medium	Medium	Medium	Low	Medium
5	High	Low	Low	Low	High
6	High	High	Low	Low	High
7	High	High	High	Low	High
8	High	High	High	High	High

NOTE: The statistical occurrence of the events/hectare over a 20-year period is in the following ranges:
 -Low: 0 < 0,1 (return period is greater than 200 years)
 -Medium > 0,1 < 1,0 (return period is between 200 and 20 years)
 - High > 1,0 (return period is less than 20 years)

Dolomite Area Designations

Dolomite Area Designations must be identified on sites located on or near dolomite land (land where dolomite is present within 100m of the ground surface).

The definitions of the Dolomite Area Designations as defined in SANS 1936 Part 1 (2012) are as follows:

Table A.4: Guidelines for assessing the risk for mobilisation of the blanketing layer (Inherent Risk for sinkholes)

Inherent Risk	Typical site conditions
Low	The profile displays no voids. No air loss or sample loss is recorded during drilling operations. Either a very shallow water table or a substantial horizon of materials with a low potential susceptibility to mobilisation may be present within the blanketing layer (e.g. continuous intrusive features or shale material). Depth to potential receptacles is typically great and the nature of the blanketing layer is not conducive to mobilisation.
Medium	This type of profile is characterised by an absence of a substantial 'protective' horizon and has a blanketing layer of materials potentially susceptible to mobilisation by extraneous mobilisation agencies. The water table is below the blanketing layer.
High	The blanketing layer of the high-risk profile reflects a great susceptibility to mobilisation. A void may be present and is interpreted to be very likely, within the potential development space, indicating that the process of sinkhole formation has already started. Boreholes may register large cavities, sample loss, air loss, etc. Convincing evidence exists of cavernous subsurface conditions which will act as receptacles. The water table is below the blanketing layer. In a dewatering situation, the lowering of a shallow groundwater level would obviously increase the risk of mobilisation.

The table above is used to provide an indication of how many incidences of subsidence could be expected in a zone categorised as described in the previous table. It is important to note that these figures are largely derived from developments not effectively and appropriately designed or maintained.

Inherent susceptibility is a reflection of the geological susceptibility of a karst area to an event (sinkhole or subsidence formation) and is expressed in three broad categories, namely low, medium and high. The following reference to incidences, gives a perspective of the magnitude of problems encountered in each of the of hazard zones in research areas.

In a dolomitic stability study report Inherent Susceptibility is normally defined in terms of ingress water and groundwater level drawdown reflected by two Inherent Hazard Class designations separated by a double forward slash, i.e.-

Inherent Hazard Class (ingress water) // Inherent Hazard Class (groundwater level drawdown)

As an example, a designation of 1//8 indicates that the zone displays a low inherent susceptibility with respect to water ingress but a high inherent susceptibility with respect to groundwater level drawdown.

As a further example, a designation of Inherent Hazard Class 1//1/4/8 indicates that the zone displays a low inherent susceptibility with respect to water ingress but a low to high inherent susceptibility with respect to groundwater level drawdown. This definition may, for example, be necessary in cases where groundwater was not encountered or the original groundwater level is not known and dolomite bedrock could not be confirmed.

Often a zone is not characterized by a single Inherent Hazard Class. In some instances, the Inherent Hazard Classes are then indicated with the primary zone description given first followed by a suffix in brackets. The primary Inherent Hazard Class describes the predominant characterization of the zone and the suffix describes the characterization of anticipated pockets or small sub-areas within the zone. For example, a designation of Inherent Hazard Class 8(4) indicates that the zone predominantly displays a high inherent susceptibility for up to very large-size sinkhole and subsidence formation with anticipated pockets or small sub-areas of Class 4 i.e. displaying a medium susceptibility for up to large-size sinkhole and subsidence formation.

Specific commentary should be provided on the impact that a lowering of the ground water level or base level of erosion may have on the action of ingress water, i.e. does the susceptibility of the subsurface profile remain unchanged from an ingress of water perspective or not as the groundwater level is lowered, and the previously “protected” profile is exposed?

As a further example, the lowering of the groundwater level and exposure of a poor subsurface profile in an area of previously shallow groundwater level designated as Inherent Hazard Class 3//7 results in a change in susceptibility from medium to high and the Inherent Hazard Class from 3 to 6 thus the Inherent Hazard Class 3//7 will change to Inherent Hazard Class 6//7 once groundwater level drawdown is factored in.

APPROPRIATE LAND USE IN DOLOMITE AREAS

The land uses appropriate to dolomitic areas, depending on their dolomitic designations derived by subsurface stability analysis and geological modeling are given in the table below

Table A.5: Appropriate land use recommendations

1	2	3	4	5	6	7	8	9	10	
Land usage		Inherent hazard class determined in accordance with the requirement of SANS 1936-2								
Designation	Description	1	2	3	4	5	6	7	8	
		Dolomite area designation and footprint investigation requirement								
Commercial and miscellaneous non-residential usage										
C1	Places of detention, police stations, and institutional homes for the handicapped or aged	D3 + FPI					D4			
C2	Hospitals, hostels, hotels	D3 + FPI						D4		
C3	Commercial developments < 3 storeys, including railway stations, shops, wholesale stores, offices, places of worship, theatrical, indoor sports or public assembly venues, other institutional land uses such as universities, schools, colleges, libraries, exhibition halls and museums, light (dry) industrial developments, dry manufacturing, commercial uses such as warehousing, packaging, and electrical sub-stations, filling stations	D2 + FPI	D3 + FPI					D4		
C4	Commercial developments > 3 storeys, including railway stations, shops, wholesale stores, offices, places of worship, theatrical, indoor sports or public assembly venues, other institutional land uses such as universities, schools, colleges, libraries, exhibition halls and museums, light (dry) industrial developments, dry manufacturing, commercial uses such as warehousing, packaging, and electrical sub-stations	D2 + FPI	D3 + FPI	D4						
C5	Fuel depots, processing plants or any other areas for the storage of liquids, waste sites.	D2 + DLI	D3 + DLI				D4			
C6	Outdoor storage facilities, stock yards, container depots	D2 + DLI	D3 + DLI						D4	
C7	Parking garages	D2	D3 + FPI					D4		
C8	Parking garages	D2	D3					D4		

DLI = Design level investigation in accordance with the requirements of SANS 1936-2, as deemed appropriate by the competent person.
FPI = Design level investigation specifically below the footprint of the structure.

Table A.5 (continued)...

Land usage		Inherent hazard class determined in accordance with the requirement of SANS 1936-2							
Designation	Description	1	2	3	4	5	6	7	8
		Dolomite area designation and footprint investigation requirement							
High rise dwelling units									
RH1	>10 Storeys	D4							
RH2	>3 Storeys with a residential with a population of $\leq 1\ 500$ people per hectare	D2 + FPI	D4						
RH3	>3 storeys with a residential coverage ratio of ≤ 0.4 , no higher than 10 storeys, and a population of ≤ 800 people per hectare	D2 + FPI	D3 + FPI				D4		
Low rise dwelling units									
RL1	≤ 3 Storeys with 80 to 120 units per hectare and a population not exceeding 600 people per hectare	D2 + FPI	D4						
RL2	≤ 3 Storeys with up to 80 units per hectare and a population not exceeding 400 people per hectare	D2 + FPI	D3 + FPI				D4		
Dwelling Houses									
RN1	Up to 60 dwelling houses per hectare with stands larger than $150\ m^2$, and a population of ≤ 300 people per hectare	D2	D3	D4					
RN2	Up to 25 dwelling houses per hectare with stands no smaller than $300\ m^2$, and a population of ≤ 200 people per hectare	D2	D3			D4			
RN3	Up to 10 dwelling houses per hectare with 1 000 to 4 000 m^2 stands, and a population of ≤ 60 people per hectare	D2	D3			D3 + FPI		D4	
Other									
AO	Agriculture that does not require irrigation in any form or the storage of water, parkland and public open spaces that are not irrigated and grazing pastures	See SANS 1936-4							
DLI = Design level investigation in accordance with the requirements of SANS 1936-2, as deemed appropriate by the competent person. FPI = Design level investigation specifically below the footprint of the structure.									

Table A5. (continued)

1	2	3	4	5	6	7	8	9	10
Land usage		Inherent hazard class determined in accordance with the requirement of SANS 1936-2							
Designation	Description	1	2	3	4	5	6	7	8
		Dolomite area designation and footprint investigation requirement							
A1	Agriculture that requires intensive irrigation	See SANS 1936-4							
A2	Agriculture that requires irrigation, including botanical gardens, sports fields, driving ranges, golf courses, parkland and public open spaces	See SANS 1936-4							
DLI = Design level investigation in accordance with the requirements of SANS 1936-2, as deemed appropriate by the competent person. FPI = Design level investigation specifically below the footprint of the structure.									
NOTE 1 D1, D2, D3 and D4 have the meanings assigned in table 1.									
NOTE 2 Residential coverage ratio = footprint area/site area.									

APPENDIX B

BOREHOLE PROFILES

HOLE No: EMM 1482
Sheet 1 of 2

JOB NUMBER: WO 830

FORMATION
C -cavity
VS -Very Soft
S -Soft
FH -fairly Hard
SD -Solid
CA -cavernous

HAMMER OPERATION
VI-very irregular
IR-Irregular
R-Regular

CHIP SIZE
CC-coarse (>10mm)
MC -medium (5-10mm)
FC -fine (<5mm)
NA -not applicatble

JOINT ROUGHNESS
W-wet
M-moist
D-dry

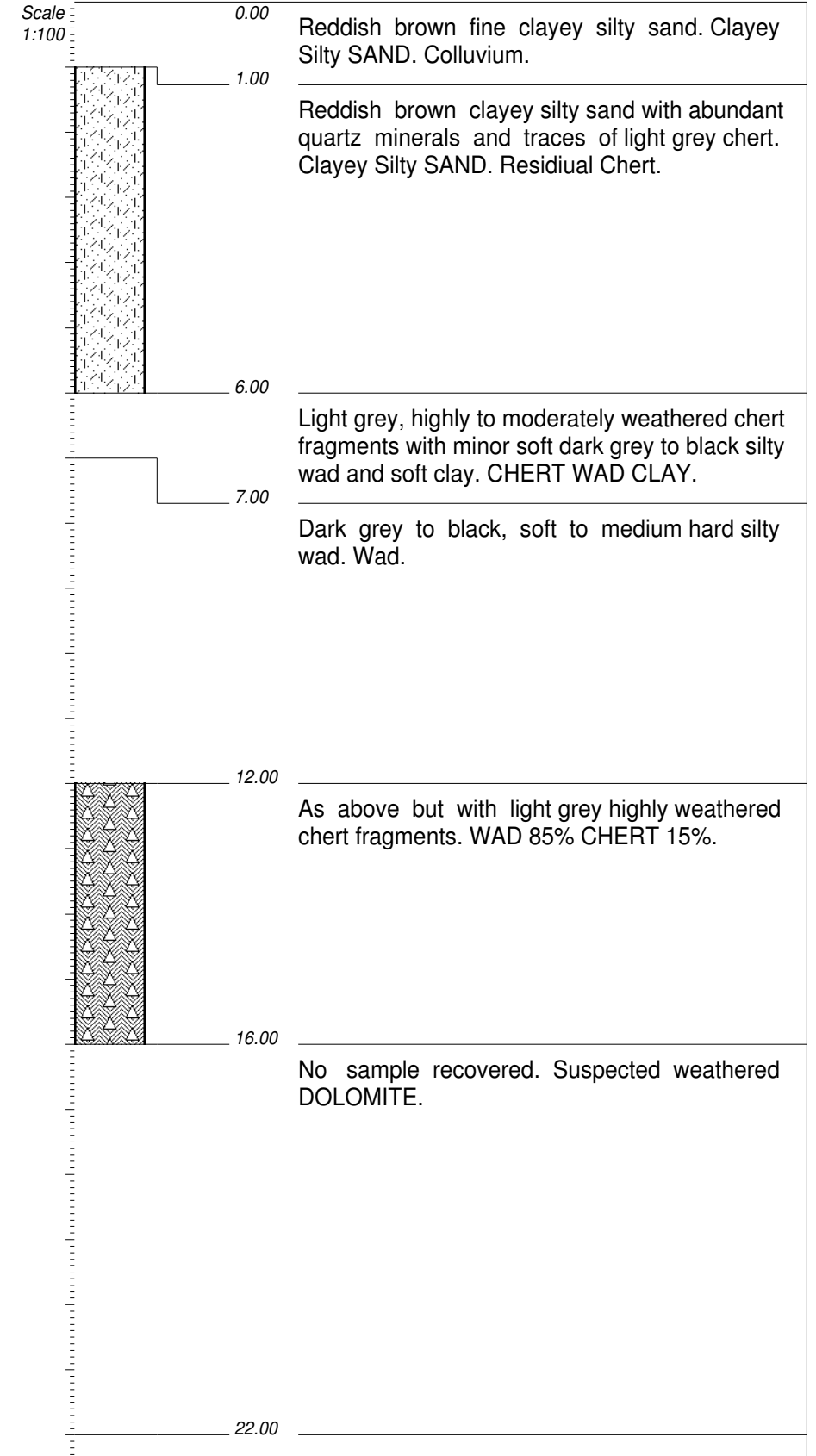
HOLECOLLAPSE
NH-none
MH-moderate
SH-severe

Client: Ekurhuleni Metropolitan Municipality
Project name: LICENCING HUB
Site: MODDERFONTEIN
Borehole No: EMM 1482

HOLE No: EMM 1482
Sheet 1 of 2

JOB NUMBER: WO 830

Depth (m)	Penetration rate (min/m)	Rate (min & sec)	Formation	Hammer operation	Air return (%)	Sample return (%)	Hole collapse	Chip Size	Moisture or Drilling Aid	Elevation (m.a.m.s.l.)	DEPTH Scale 1:100
1.00		0.18	VS	R			NH	F	D	-1.00	1
2.00		0.26	VS	R			NH	F-M	M		2
3.00		0.41	VS	R			NH	F-M	M		3
4.00		0.33	VS	R			NH	F-M	M		4
5.00		0.52	VS	R			NH	F-M	M		5
6.00		1.45	S	R			NH	F-M	M	-6.00	6
7.00		1.58	S	R			NH	F-M	M	-7.00	7
8.00		1.22	S	R			NH	F	M		8
9.00		1.41	S	R			NH	F	M		9
10.00		1.37	S	R			NH	F	M		10
11.00		1.17	S	R			NH	F	M		11
12.00		1.45	S	R			NH	F	M	-12.00	12
13.00		1.36	S	R			NH	F-M	M		13
14.00		1.59	S	R			NH	F-M	M		14
15.00		1.40	S	R			NH	F-M	M		15
16.00		1.54	S	R			NH	F-M	M	-16.00	16
17.00		2.20	FH	IR			NH	NA	M		17
18.00		3.35	SD	IR			NH	NA	M		18
19.00		3.49	SD	IR			NH	NA	M		19
20.00		3.32	SD	IR			NH	NA	M		20
21.00		3.54	SD	IR			NH	NA	M		21
22.00		3.37	SD	IR			NH	NA	M	-22.00	22



HOLE No: EMM 1482
Sheet 2 of 2

JOB NUMBER: WO 830

FORMATION
C -cavity
VS -Very Soft
S -Soft
FH -fairly Hard
SD -Solid
CA -cavernous

HAMMER OPERATION
VI-very irregular
IR-Irregular
R-Regular

CHIP SIZE
CC-coarse (>10mm)
MC -medium (5-10mm)
FC -fine (<5mm)
NA -not applicatble

JOINT ROUGHNESS
W-wet
M-moist
D-dry

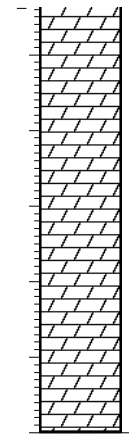
HOLECOLLAPSE
NH-none
MH-moderate
SH-severe

Client: Ekurhuleni Metropolitan Municipality
Project name: LICENCING HUB
Site: MODDERFONTEIN
Borehole No: EMM 1482

HOLE No: EMM 1482
Sheet 2 of 2

JOB NUMBER: WO 830

Depth (m)	Penetration rate (min/m)	Rate (min & sec)	Formation	Hammer operation	Air return (%)	Sample return (%)	Hole collapse	Chip Size	Moisture or Drilling Aid	Elevation (m.a.m.s.l.)	DEPTH Scale 1:100
23.00			3.34	SD	R			NH	M-C	M	23
24.00			3.46	SD	R			NH	M-C	M	24
25.00			3.33	SD	R			NH	M-C	M	25
26.00			3.52	SD	R			NH	M-C	M	26
27.00			3.55	SD	R			NH	M-C	M	27
28.00			3.59	SD	R			NH	M-C	M	28
										-28.00	28



Grey stained olive brown moderately to highly weathered dolomite. DOLOMITE.

End of hole.

NOTES

- 1) Hole completed at 28m
- 2) No water strike
- 3) No collapse of hole recorded

CONTRACTOR : SA Rock drills
MACHINE :
DRILLED BY : Isaac
LOGGED BY : N Vukea
TYPE SET BY :
SETUP FILE : CHIPLO~2.SET

INCLINATION : Vertical
DIAM : 165 mm
DATE : 14/06/2014
DATE :

ELEVATION :
X-COORD :
Y-COORD :

HOLE No: EMM 1482

HOLE No: EMM 1483

Sheet 1 of 2

JOB NUMBER: WO 830

FORMATION
C -cavity
VS -Very Soft
S -Soft
FH -fairly Hard
SD -Solid
CA -cavernous

HAMMER OPERATION
VI-very irregular
IR-Irregular
R-Regular

CHIP SIZE
CC-coarse (>10mm)
MC -medium (5-10mm)
FC -fine (<5mm)
NA -not applicatble

JOINT ROUGHNESS
W-wet
M-moist
D-dry

HOLECOLLAPSE
NH-none
MH-moderate
SH-severe

Client: Ekurhuleni Metropolitan Municipality

Project name: LICENCING HUB

Site: MODDERFONTEIN

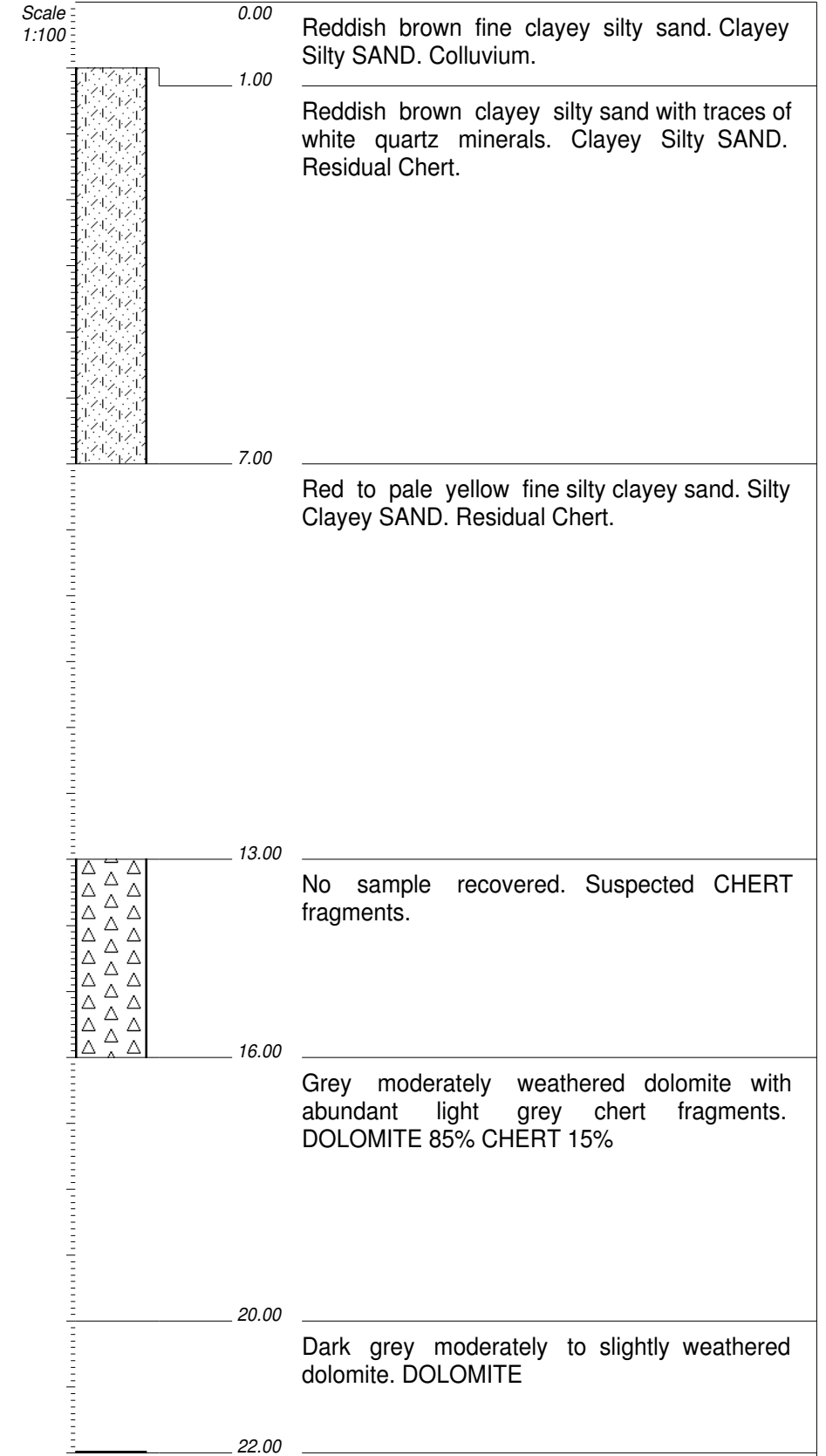
Borehole No: EMM 1483

HOLE No: EMM 1483

Sheet 1 of 2

JOB NUMBER: WO 830

Depth (m)	Penetration rate (min/m)	Rate (min & sec)	Formation	Hammer operation	Air return (%)	Sample return (%)	Hole collapse	Chip Size	Moisture or Drilling Aid	Elevation (m.a.m.s.l.)	DEPTH Scale 1:100
1.00		0.14	VS	R			NH	F-M	M	-1.00	1
2.00		0.21	VS	R			NH	F-M	M		2
3.00		0.42	VS	R			NH	F-M	D		3
4.00		0.25	VS	R			NH	F-M	D		4
5.00		1.30	S	R			NH	F-M	D		5
6.00		1.48	S	R			NH	F-M	D		6
7.00		1.20	S	R			NH	F-M	D	-7.00	7
8.00		1.33	S	R			NH	F-M	M		8
9.00		1.26	S	R			NH	F-M	M		9
10.00		1.43	S	R			NH	F-M	M		10
11.00		1.29	S	R			NH	F-M	M		11
12.00		1.46	S	R			NH	F-M	M		12
13.00		1.52	S	R			NH	F-M	M	-13.00	13
14.00		1.44	N/A	IR			NH	NA	N/A		14
15.00		1.58	N/A	IR			NH	NA	N/A		15
16.00		1.45	N/A	IR			NH	NA	N/A	-16.00	16
17.00		3.21	SD	R			NH	M-C	W	-17.00	17
18.00		3.17	SD	R			NH	M-C	W		18
19.00		3.48	SD	R			NH	M-C	W		19
20.00		3.19	SD	R			NH	M-C	W		20
21.00		3.43	SD	R			NH	M-C	W		21
22.00		3.17	SD	R			NH	M-C	W	-22.00	22



HOLE No: EMM 1483
Sheet 2 of 2

JOB NUMBER: WO 830

FORMATION
C -cavity
VS -Very Soft
S -Soft
FH -fairly Hard
SD -Solid
CA -cavernous

HAMMER OPERATION
VI-very irregular
IR-Irregular
R-Regular

CHIP SIZE
CC-coarse (>10mm)
MC -medium (5-10mm)
FC -fine (<5mm)
NA -not applicatble

JOINT ROUGHNESS
W-wet
M-moist
D-dry

HOLECOLLAPSE
NH-none
MH-moderate
SH-severe

Client: Ekurhuleni Metropolitan Municipality
Project name: LICENCING HUB
Site: MODDERFONTEIN
Borehole No: EMM 1483

HOLE No: EMM 1483
Sheet 2 of 2

JOB NUMBER: WO 830

End of hole.

NOTES

- 1) Hole completed at 22m
- 2) No water strike
- 3) No collapse of hole recorded

Depth (m)	Penetration rate (min/m)	Rate (min & sec)	Formation	Hammer operation	Air return (%)	Sample return (%)	Hole collapse	Chip Size	Moisture or Drilling Aid	Elevation (m.a.m.s.l.)	DEPTH Scale 1:100
2	4	6			20	60	90	25	50	75	

CONTRACTOR : SA Rock drills
MACHINE :
DRILLED BY : Isaac
LOGGED BY : N Vukea

TYPE SET BY :
SETUP FILE : CHIPLO~2.SET

INCLINATION : Vertical
DIAM : 165 mm
DATE : 15/06/2014
DATE :

ELEVATION :
X-COORD :
Y-COORD :

DATE : 22/08/2014 08:44
TEXT : ..OTINPUT\EMM1481A1487.txt

HOLE No: EMM 1483

HOLE No: EMM 1484
Sheet 1 of 2

JOB NUMBER: WO 830

FORMATION
C - cavity
VS - Very Soft
S - Soft
FH - fairly Hard
SD - Solid
CA - cavernous

HAMMER OPERATION
VI - very irregular
IR - Irregular
R - Regular

CHIP SIZE
CC - coarse (>10mm)
MC - medium (5-10mm)
FC - fine (<5mm)
NA - not applicatble

JOINT ROUGHNESS
W - wet
M - moist
D - dry

HOLECOLLAPSE
NH - none
MH - moderate
SH - severe

Client: Ekurhuleni Metropolitan Municipality
Project name: LICENCING HUB
Site: MODDERFONTEIN
Borehole No: EMM 1484

HOLE No: EMM 1484
Sheet 1 of 2

JOB NUMBER: WO 830

Depth (m)	Penetration rate (min/m)	Rate (min & sec)	Formation	Hammer operation	Air return (%)	Sample return (%)	Hole collapse	Chip Size	Moisture or Drilling Aid	Elevation (m.a.m.s.l.)	DEPTH Scale 1:100
1.00		0.22	VS	R			NH	F-M	M	-1.00	1
2.00		0.27	VS	R			NH	F-M	M		2
3.00		0.19	VS	R			NH	F-M	M		3
4.00		0.36	VS	R			NH	F-M	M		4
5.00		0.41	VS	R			NH	F-M	M		5
6.00		0.32	VS	R			NH	F-M	M		6
7.00		0.58	VS	R			NH	F-M	M		7
8.00		1.25	S	R			NH	F-M	M		8
9.00		1.14	S	R			NH	F-M	M		9
10.00		1.34	S	R			NH	F-M	M		10
11.00		1.17	S	R			NH	F-M	M		11
12.00		1.23	S	R			NH	F-M	M		12
13.00		1.40	S	R			NH	F-M	M	-13.00	13
14.00		2.28	FH	R			NH	F-M	M	-14.00	14
15.00		2.44	FH	R			NH	M-C	M	-15.00	15
16.00		3.18	SD	R			NH	M-C	M		16
17.00		3.26	SD	R			NH	M-C	M		17
18.00		3.56	SD	R			NH	M-C	M		18
19.00		3.33	SD	R			NH	M-C	M		19
20.00		3.29	SD	R			NH	M-C	M	-20.00	20
21.00		3.51	SD	R			NH	M-C	M		21
22.00		3.48	SD	R			NH	M-C	M	-22.00	22

