Basic Assessment Process

Basic Assessment for the expansion of a Chicken Broiler Facility on a 2.57 hectare farm on plot 62, Mapleton, Ekurhuleni District, Gauteng.

BASIC ASSESSMENT REPORT

CSIR Report Number: CSIR/IU/021SE/IR/2017/0009/A

September 2018

Prepared for:

Mthunzi chicken supplier

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report details

Title:	**Basic Assessment for the expansion of a Chicken Broiler Facility on a 2.57 hectare farm on plot 62, Mapleton, Ekurhuleni District, Gauteng.**
Purpose of this report:	This Basic Assessment for the expansion of a Chicken Broiler Facility on a 2.57 hectare farm on plot 62, Mapleton, Ekurhuleni District, Gauteng. The purpose of this BA Report is to: • Present the proposed project and the need for the project; • Describe the affected environment at a sufficient level of detail to facilitate informed decision-making; • Provide an overview of the BA Process being followed, including public consultation; • Assess the predicted positive and negative impacts of the project on the environment; • Provide recommendations to avoid or mitigate negative impacts and to enhance the positive benefits of the project; • Provide an Environmental Management Programme (EMPr) for the proposed project. This is the Draft Basic Assessment Report submitted to the competent authority, i.e. the Gauteng Department of Agriculture and Rural Development (GDARD) for decision-making.
Prepared for:	Mthunzi chicken supplier
Prepared by:	CSIR, P O Box 320, Stellenbosch, 7599, South Africa Tel: +27 21 888 2408 Fax: +27 21 888 2693
Authors:	**EAP Karabo Mashabela (CSIR)** Council for Scientific and Industrial Research (CSIR) Postal Address: P. O. Box 320, Stellenbosch, 7599 Phone: 021 888 2408 Fax: 021 888 2693 Email: kmashabela1@csir.co.za
CSIR Report Number: CSIR Project Number:	CSIR/IU/021SE/IR/2017/0009/A EMS0136
Date:	October 2018
To be cited as:	CSIR, 2018. Basic Assessment for the expansion of a Chicken Broiler Facility on a 2.57 hectare farm on plot 62, Mapleton, Ekurhuleni District, Gauteng.

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appendices

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) – **Attached**
APPENDIX B:	Photographs – **Attached**
APPENDIX C:	Facility illustration(s) – **Attached**
APPENDIX D:	Route position information – **N/A**
APPENDIX E:	Public Participation information – **Attached** ▪ E1 – Proof of site notice ▪ E2 – Written notices issued as required in terms of the regulations ▪ E3 – Proof of newspaper advertisements ▪ E4 –Communications to and from interested and affected parties ▪ E5 – Minutes of any public and/or stakeholder meetings – no public meetings have been undertaken ▪ E6 - Comments and Responses Report ▪ E7 –Comments from I&APs on Basic Assessment (BA) Report – N/A at this stage of the process ▪ E8 –Comments from I&APs on amendments to the BA Report – N/A at this stage of the process ▪ E9 – Copy of the register of I&APs
APPENDIX F:	▪ F1: SAHRA information – **SAHRIS confirmation** ▪ Water Use Authorization – **not applicable at this stage** ▪ Service Letters from municipality – **not applicable at this stage**
APPENDIX G:	Specialist reports - **Attached** Ecology Heritage
APPENDIX H:	EMPr- **Attached**
APPENDIX I:	Other information

	▪ I1: CV's of the project team (EAPs who prepared the report) ▪ I2: Application for exemption from application fee

executive summary

INTRODUCTION AND BACKGROUND

Mthunzi Chicken Supplier (Pty) Ltd is a family owned business located on Plot 62, Diana Road, Mapleton, in Ekurhuleni District (Co-ordinates: 26°21' 10.8"S; 28°14' 51.2"E), Gauteng, which is 2.57 hectares in size. The proposed project requires a Basic Assessment (BA) process in terms of the NEMA EIA Regulations 2017.

In terms of the National Environmental Management Act (NEMA EIA) Regulations 2017, an application for Environmental Authorisation will be submitted to the Gauteng Department of Agriculture and Rural Development (GDARD) as the competent Authority.

In terms of the NEMA EIA Regulations published in GNR 327, 324 and 325 on the 4 December 2014 Government Gazette Number 40772, the listed activities shown in Table S.1 are triggered by the proposed project.

PROJECT DESCRIPTION

Mthunzi Chicken Supplier (Pty) Ltd is a chicken farming and abattoir enterprise, located on a 2.57 hectare farm. The property is currently zoned as agricultural land and the current land use is agricultural. The site for the project falls within an area designated as being for agricultural purposes in the current SDF (dated 2015). The proposed development is therefore compatible with the SDF.

Mthunzi Chicken Supplier currently has infrastructure that can accommodate 5 000 broiler chickens, and plans to expand to more chicken broiler houses that will accommodate up to an additional 25 000 chickens.

The chicken facility currently has two 225 m^2 chicken houses (2500 chickens each house). Each chicken house has a footprint of approximately 225 m^2. The facility is also proposing an office and processing unit of 15 m X 15 m.

The applicant is proposing an additional nine 225 m^2 chicken houses (with approximately 2500 chickens in each house), one vegetable garden of 1000 m^2, one waste storage site for chicken manure of approximately 225 m^2, office and a processing facility (Abattoir) of approximately 225 m^2.

The total footprint of the additional facilities is therefore approximately 3500 m^2 (0.35 hectares). Clearing between these facilities will result in an area of approximately 1.4 hectares potentially needing to be cleared.

Mthunzi chicken supplier is being provided *pro-bono* environmental services by the DEA/CSIR's Special Needs and Skills Development Programme, which aims to assist small-medium micro-enterprises with special needs to obtain Environmental Authorization in order to enhance local economic development.

Table S.1: Listed activities triggered by the proposed chicken farm

Relevant notice:	Activity No (s) (in terms of the relevant notice) :	Description of each listed activity as per the Government Notice:
GNR 327, 7 April 2017	3(i)	The development and related operation of facilities or infrastructure for the slaughter of animals with a product throughput of poultry exceeding 50 poultry per day
GNR 327, 7 April 2017	40(ii)	The expansion and related operation of facilities for the concentration of poultry, excluding chicks younger than 20 days, where the capacity of the facility will be increased by (ii) more than 5 000 poultry per facility situated outside an urban area in an agricultural land.
GNR 327, 7 April 2017	27	The clearance of an area of 1 hectare or more, but less than 20 hectares of indigenous vegetation, except where such clearance of indigenous vegetation is required for- i) the undertaking of a linear activity; or ii) maintenance purposes undertaken in accordance with a maintenance management plan
GNR 921, 29 November	Category A	1.Storage of waste- 2. Construction, expansion or decommissiong of facilities and associated structures and infrastructure- The storage of general waste in lagoons. The construction of a facility for a waste management activity listed in Category A of this Schedule (not in isolation to associated waste management activity).

IMPACT ASSESSMENT

An ecological study was undertaken the CSIR and reviewed by NSS and the Heritage Impact assessment was undertaken by HCAC Heritage Consultants to inform the BA process.

EAP'S RECOMMENDATION

This BA Report has investigated and assessed the significance of the predicted, potential positive and negative direct, indirect and cumulative impacts associated with the proposed development. No negative impacts have been identified within this BA that, in the opinion of the EAPs who have conducted this BA Process, should be considered "fatal flaws" from an environmental perspective, and thereby necessitate substantial re-design or termination of the project.

Based on this, this BA was undertaken to ensure that these principles are met through the inclusion of appropriate management and mitigation measures and monitoring requirements. These measures will be undertaken to promote conservation by avoiding the sensitive environmental features present on site.

In order to ensure the effective implementation of the mitigation and management actions, an EMPr has been compiled and is included in Appendix H of the BA Report. The mitigation measures necessary to ensure that the project is planned and carried out in an environmentally responsible manner are listed in the EMPr. The EMPr is a dynamic document that should be updated as required and provides clear and implementable measures for the proposed project.

Due to the fact that the project proponent, i.e. Mthunzi chicken supplier, is being assisted *pro-bono* under the DEA Special Needs and Skills Development Programme and thus does not have the economic opportunity to have more than one alternative site available, it is therefore recommended by the EAPs that the proposed layout and site alternative (proposal) be included in the Environmental Authorisation (should such authorisation be granted for the proposed project).

Concluding statement from EAPs:

Provided that the specified mitigation measures are applied effectively, it is proposed that the project receive Environmental Authorisation in terms of the EIA Regulations promulgated under the NEMA.

Karabo Mashabela

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opportunity for review

Opportunity for Review:

This Draft Basic Assessment Report and Draft Environmental Management Programme (EMPr) are hereby released for review by stakeholders. Review comments are to be submitted to the project manager below:

Project Manager – Karabo Mashabela

Council for Scientific and Industrial Research (CSIR)
Postal Address: P. O. Box 320, Stellenbosch, 7599
Phone: 021 888 2408
Fax: 021 888 2693
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glossary

BA	**Basic Assessment**
BAR	Basic Assessment Report
BID	Background Information Document
CA	Competent Authority
CV	Curriculum Vitae
CSIR	Council for Scientific and Industrial Research
DEA	National Department of Environmental Affairs
EA	Environmental Authorisation
EAP	Environmental Assessment Practitioner
EAPs	Environmental Assessment Practitioners
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
EMPr	Environmental Management Programme
ERAP	Emergency Response Action Plan
ESA	Ecological Support Area
GDARD	Gauteng Department of Agriculture and Rural Development
HSSE	Health, Security, Safety and Environment
I&AP	Interested and Affected Party
I&APs	Interested and Affected Parties
IDP	Integrated Development Plan
NDP	National Development Plan
NWA	National Water Act (Act 36 of 1998)
NEM: AQA	National Environment Management: Air Quality Act (Act 39 of 2004)
NEMA	National Environmental Management Act (Act 107 of 1998)
NEMWA	National Environmental Management: Waste Act
NHRA	National Heritage Resources Act (Act 25 of 1999)
PPP	Public Participation Process
SACNASP	South African Council for Natural Scientific Professions
SANS	South African National Standards
SAHRA	South African Heritage Resources Agency
SAHRIS	South African Heritage Resources Information System
SMMEs	Small, Medium and Micro Enterprises
SDF	Spatial Development Framework
TOR	Terms of Reference

Summary of where requirements of Section 22 of the 2014 NEMA EIA Regulations (GN R 983, as amended) are provided in this Basic Assessment Report

Appendix 1	YES / NO	SECTION IN BAR
Objective of the basic assessment process 1) The objective of the basic assessment process is to, through a consultative process- a) determine the policy and legislative context within which the proposed activity is located and how the activity complies with and responds to the policy and legislative context; b) identify the alternatives considered, including the activity, location, and technology alternatives; c) describe the need and desirability of the proposed alternatives, d) through the undertaking of an impact and risk assessment process inclusive of cumulative impacts which focused on determining the geographical, physical, biological, social, economic, heritage, and cultural sensitivity of the sites and locations within sites and the risk of impact of the proposed activity and technology alternatives on the these aspects to determine- (i) the nature, significance, consequence, extent, duration, and probability of the impacts occurring to; and (ii) the degree to which these impacts- (aa) can be reversed; (bb) may cause irreplaceable loss of resources; and (cc) can be avoided, managed or mitigated; e) through a ranking of the site sensitivities and possible impacts the activity and technology alternatives will impose on the sites and location identified through the life of the activity to- (i) identify and motivate a preferred site, activity and technology alternative; (ii) identify suitable measures to avoid, manage or mitigate identified impacts; and (iii) identify residual risks that need to be managed and monitored.	**Yes**	**Section A (2) and** **Section E**
Scope of assessment and content of basic assessment reports 2) (1) A basic assessment report must contain the information that is necessary for the competent authority to consider and come to a decision on the application, and must include: (a) details of: (i) the EAP who prepared the report; and	**Yes**	**Section A (1) and** **Appendix I**

Appendix 1	YES / NO	SECTION IN BAR
(ii) the expertise of the EAP, including a curriculum vitae;		
(b) the location of the activity, including: (i) the 21 digit Surveyor General code of each cadastral land parcel; (ii) where available, the physical address and farm name; (iii) where the required information in items (i) and (ii) is not available, the coordinates of the boundary of the property or properties;	**Yes**	**Sections B (1) and (2)**
(c) a plan which locates the proposed activity or activities applied for as well as associated structures and infrastructure at an appropriate scale; or, if it is- (i) a linear activity, a description and coordinates of the corridor in which the proposed activity or activities is to be undertaken; or on land where the property has not been defined, the coordinates within which the activity is to be undertaken;	**Yes**	**Appendix A and** **Appendix C**
(d) a description of the scope of the proposed activity, including all listed and specified activities triggered and being applied for; and a description of the activities to be undertaken including associated structures and infrastructure;	**Yes**	**Section A**
(e) a description of the policy and legislative context within which the development is proposed including- (i) an identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks, and instruments that are applicable to this activity and have been considered in the preparation of the report; and (ii) how the proposed activity complies with and responds to the legislation and policy context, plans, guidelines, tools frameworks, and instruments;	**Yes**	**Section A (1) and (2)**
f) a motivation for the need and desirability for the proposed development including the need and desirability of the activity in the context of the preferred location;	**Yes**	**Section E (9)**
(g) a motivation for the preferred site, activity and technology alternative;	**Yes**	**Section A (3)**
(h) A full description of the process followed to reach the proposed preferred alternative within the site, including: (i) details of all the alternatives considered;	**Yes**	**Section A (3)**
(ii) details of the public participation process undertaken in terms of regulation 41 of the Regulations, including copies of the supporting documents and inputs;	**Yes**	**Appendix E**
(iii) a summary of the issues raised by interested and affected parties, and an indication of the manner in which the issues were incorporated, or the reasons for not including them;	**Yes**	**Appendix E**

Appendix 1	YES / NO	SECTION IN BAR
(iv) the environmental attributes associated with the alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects;	**Yes**	**N/A**
(v) the impacts and risks identified for each alternative, including the nature, significance, consequence, extent, duration and probability of the impacts, including the degree to which these impacts (aa) can be reversed; (bb) may cause irreplaceable loss of resources; and (cc) can be avoided, managed or mitigated;	**Yes**	**Section E**
(vi) the methodology used in determining and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks associated with the alternatives;	**Yes**	
(vii) positive and negative impacts that the proposed activity and alternatives will have on the environment and on the community that may be affected focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects;	**Yes**	
(viii) the possible mitigation measures that could be applied and level of residual risk;	**Yes**	
(ix) the outcome of the site selection matrix;	**Yes**	
(x) if no alternatives, including alternative locations for the activity were investigated, the motivation for not considering such; and	**Yes**	
(xi) a concluding statement indicating the preferred alternatives, including preferred location of the activity.	**Yes**	**Section A (3)**
(i) a full description of the process undertaken to identify, assess and rank the impacts the activity will impose on the preferred location through the life of the activity, including- (i) a description of all environmental issues and risks that were identified during the environmental impact assessment process; and (ii) an assessment of the significance of each issue and risk and an indication of the extent to which the issue and risk could be avoided or addressed by the adoption of mitigation measures;	**Yes**	**Section E**
(j) an assessment of each identified potentially significant impact and risk, including- (i) cumulative impacts;	**Yes**	**Section E**

Appendix 1	YES / NO	SECTION IN BAR
(ii) the nature, significance and consequences of the impact and risk; (iii) the extent and duration of the impact and risk; (iv) the probability of the impact and risk occurring; (v) the degree to which the impact and risk can be reversed; (vi) the degree to which the impact and risk may cause irreplaceable loss of resources; and (vii) the degree to which the impact and risk can be avoided, managed or mitigated;		
(k) where applicable, a summary of the findings and impact management measures identified in any specialist report complying with Appendix 6 to these Regulations and an indication as to how these findings and recommendations have been included in the final report;	**Yes**	**Section E**
(l) an environmental impact statement which contains- (i) a summary of the key findings of the environmental impact assessment; (ii) a map at an appropriate scale which superimposes the proposed activity and its associated structures and infrastructure on the environmental sensitivities of the preferred site indicating any areas that should be avoided, including buffers; and (iii) a summary of the positive and negative impacts and risks of the proposed activity and identified alternatives;	**Yes**	**Section E**
(m) based on the assessment, and where applicable, impact management measures from specialist reports, the recording of the proposed impact management objectives, and the impact management outcomes for the development for inclusion in the EMPr;	**Yes**	**Section E and Appendix H**
(n) any aspects which were conditional to the findings of the assessment either by the EAP or specialist which are to be included as conditions of authorisation;	**Yes**	**Section E and Appendix G**
(o) a description of any assumptions, uncertainties, and gaps in knowledge which relate to the assessment and mitigation measures proposed;	**Yes**	**Appendix G**
(p) a reasoned opinion as to whether the proposed activity should or should not be authorised, and if the opinion is that it should be authorised, any conditions that should be made in respect of that authorisation;	**Yes**	**Section E**
(q) where the proposed activity does not include operational aspects, the period for which the environmental authorisation is required, the date on which the activity will be concluded, and the post construction monitoring requirements finalised;	**X**	**Not Applicable**
(r) an undertaking under oath or affirmation by the EAP in relation to: (i) the correctness of the information provided in the reports; (ii) the inclusion of comments and inputs from stakeholders and I&APs; (iii) the inclusion of inputs and recommendations from the specialist reports where relevant; and	**Yes**	**Appendix I**

Appendix 1	YES / NO	SECTION IN BAR
(iv) any information provided by the EAP to interested and affected parties and any responses by the EAP to comments or inputs made by interested and affected parties; and		
(s) where applicable, details of any financial provisions for the rehabilitation, closure, and ongoing post decommissioning management of negative environmental impacts;	**X**	**Not Applicable**
(t) any specific information that may be required by the competent authority; and	**X**	**Not Applicable**
(u) any other matters required in terms of section 24(4)(a) and (b) of the Act.	**X**	**Not Applicable**

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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? No

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

The proposed project is not mining related therefore does not require a closure plan

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.

N/A

Have State Departments including the competent authority commented? No

If no, why?

State departments and the competent authority have to date not submitted comments

SECTION A : ACTIVITY INFORMATION

1. PROPOSAL OR DEVELOPMENT DESCRIPTION

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

Basic Assessment for the expansion of a Chicken Broiler Facility on a 2.57 hectare farm on plot 62, Mapleton, Ekurhuleni District, Gauteng.

Select the appropriate box

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

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

YES

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

National Water Act, 1998 (Act 36 of 1998), and the Competent Authority is the Department of Water and Sanitation. Registration of water use in terms of section 39 of the National Water Act, No 36 of 1998 (NWA) Mthunzi chicken supply taking water from the borehole on a 2.57 hectare farm on plot 62, Mapleton, Ekurhuleni District, Gauteng.

National Heritage Resources Act (Act 25 of 1999), and the Competent Authority is the South African Heritage Resources Agency (SAHRA).

Application for the permit/s in terms of Chapter 7 of the National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004), as amended: Alien and invasive species regulations

Act No. 59, 2008. Government Gazette, 10 March 2009. National Environmental Management: Waste ACT. 2008

If yes, have you applied for the authorisation(s)?
If yes, have you received approval(s)? (attach in appropriate appendix)

YES

NO

Note from CSIR:
The client is currently in the process of applying for a Water Use Licence and no outcome has been reached to date.

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: Department of Environmental Affairs	27 November 1998
National Environmental Management Act EIA Regulations (7 April 2017) **GN. R 327:** **Activity 3(i):** The development and related operation of facilities or infrastructure for the slaughter of animals with a product throughput of poultry exceeding 50 poultry per day **GN. R 327:** **Activity 40(ii):** The expansion and related operation of facilities for the concentration of poultry, excluding chicks younger than 20 days, where the capacity of the facility will be increased by (ii) more than 5 000 poultry per facility situated outside an urban area **GNR 327,** Activity 27: The clearance of an area of 1 hectare or more, but less than 20 hectares of indigenous vegetation, except where such clearance of indigenous vegetation is required for- i) the undertaking of a linear activity; or ii) maintenance purposes undertaken in accordance with a maintenance management plan	National & Provincial: Department of Environmental Affairs (including the Gauteng Department of Agriculture and Rural Development)	7 April 2017
National Water Act, 1998 (Act No. 36 of 1998) as amended	National & Provincial	26 August 1998
National Heritage Resources Act (Act No. 25 of 1999):	South Africa Heritage Resource Agency (SAHRA) and provincial Heritage Authorities	28 April 1999
National Environmental Management: Waste Act (Act No, of 59), as amended.	National and Provincial	29 November 2013
National Environmental Management Biodiversity Act, 2004 (Act No. 10 of 2004)	National & Provincial	2004
National Development Plan	National	2012
City of Tshwane Metropolitan Municipality IDP and SDF	Provincial	2015/2016
Regional Integrated Development Plan: Region 2, 2014 - 2015	Provincial	2014
Gauteng Conservation-Plan 3.3 (2011) Provincial 2011	Provincial	2011

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)	The National Environmental Management Act, 1998 (Act No. 107 of 1998) [NEMA] was enacted in November 1998. It prescribes principles and guidelines that allow for sustainable development. Ensuring that these principles are adhered to is important for sound environmental practice. Activities will not commence until the Environmental Authorisation (EA) is granted and conditions of EA shall be adhered to should

Legislation, policy of guideline	Description of compliance
	approval be granted.
National Environmental Management Act EIA Regulations (8 December 2014)	A number of listed activities have been identified that have triggered the BA to be consulted as per Appendix 1 of the 2014 Regulations (Gazette No 38282). As part of the BA process, the public participation process stipulated in Chapter 6, sub-regulation 41 of the 2014 Regulations (Gazette No 38282) was conducted. Activities will not commence until the EA is granted and conditions of EA shall be adhered to should approval be granted.
National Water Act, 1998 (Act No. 36 of 1998) as amended	This act aims to manage activities related to water courses inclusive of riparian habitats. The act defines offences such as pollution of water resources and lists activities to be addressed during the authorisation phase. No water courses are present in the study area and the Department of Water and Sanitation have received a copy of the draft Basic Assessment Report for comment and to inform the WULA.
National Heritage Resources (Act No. 25 of 1999)	The SAHRA is the relevant competent authority for protection of archaeological and paleontological resources. An application for Heritage Resources review was submitted to SAHRA (Ref No. 9782) in terms of the National Heritage Resources Act, 1999 (Act No. 25 of 1999) as amended (NHRA).
National Environmental Management Biodiversity Act, 2004 (Act No. 10 of 2004)	The NEMBA aims to conserve and provide management of biodiversity in the country. The client has the responsibility to conserve endangered ecosystems in the area and apply any appropriate management tools. The client will aim to limit any further loss of biodiversity. An Ecological specialist study was undertaken (Appendix G).
National Development Plan	The National Development Plan (NDP) aims to *inter alia*, eliminate poverty and reduce inequality by 2030. Additionally it aims to improve the lives of South Africans through better service delivery. It has the following strategies to achieve the above-mentioned goals: 1. Creating jobs and improving livelihoods; 2. Expanding infrastructure; 3. Transition to a low-carbon economy; 4. Transforming urban and rural spaces; 5. Improving education and training; 6. Providing quality health care; 7. Fighting corruption and enhancing accountability; 8. Transforming society and uniting the nation. This proposed development contributes to the NDP by creating jobs and livelihoods as well as transforming urban and rural areas.
Ekurhuleni Municipality IDP and SDF	The Integrated Development Plan (IDP) of the City of Tshwane Ekurhuleni outlines the need to establish seven service delivery regions. Following this, the City developed Regional Integrated Plans which feed into the overall city development plans. These were considered in the study.
Regional Integrated Development Plan: Region 4, 2014 - 2015	The study area is located in region two-in the middle of the north western and north eastern areas of the City of Tshwane.

Legislation, policy of guideline	Description of compliance
	The project area falls in an area with many small holdings and agricultural activities. The N1 runs through the region and is serviced by other main roads.
National Environmental Management: Waste Act no 59, as amended.	The main aim of this act is to manage waste for the protection of human and environmental health. The proposed project will adhere to this act by disposing its waste safely at a registered landfill site.
Gauteng Conservation-Plan 3.3 (2011)	The Gauteng C-Plan map generated by the EAP indicates that some of the area may be in an Ecological Support Area (ESA). An ecological scan was done and can be found in Appendix G.

Table 1: Listed activities relating to the proposed project

Relevant notice:	Activity No (s) (in terms of the relevant notice) :	Description of each listed activity as per the Government Notice:
GNR 327, 7 April 2017	3(i)	The development and related operation of facilities or infrastructure for the slaughter of animals with a product throughput of poultry exceeding 50 poultry per day
GNR 327, 7 April 2017	40 (ii)	The expansion and related operation of facilities for the concentration of poultry, excluding chicks younger than 20 days, where the capacity of the facility will be increased by (ii) more than 5 000 poultry per facility situated outside an urban area
GNR 327, 7 April 2017	27	The clearance of an area of 1 hectare or more, but less than 20 hectares of indigenous vegetation, except where such clearance of indigenous vegetation is required for- i) the undertaking of a linear activity; or ii) maintenance purposes undertaken in accordance with a maintenance management plan

Note from CSIR:
It should be noted that a precautionary approach was followed when identifying listed activities (for inclusion in the Application for EA).

3. ALTERNATIVES

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

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

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

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

As a result of this project being part of the Department of Environmental Affairs Special Needs and Skills Development Programme, many of the applicants do not have the means to acquire different location alternatives. As a result, no additional locational alternatives for this proposed project.

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	Background and site locality: Mthunzi Chicken Supplier (Pty) Ltd is a family owned business located on Plot 62, Diana Road, Mapleton, in Ekurhuleni (Cor-ordinates: 26°21' 10.8"S; 28°14' 51.2"E), which is 2.57 hectares in size. Mthunzi Chicken Supplier currently has infrastructure that can accommodate 5 000 broiler chickens, and plans to expand to more chicken broiler houses that will accommodate up to an additional 25 000 chickens. The proposed project seeks to increase its sustainable production of local produce to the market with the inclusion of 30 000 chickens. The site is currently serviced by the Municipality with electricity services being available from Eskom. There is one borehole currently on the property.
2	Property Alternative	There have been no alternative properties or locations identified for the proposed project due to the applicants' lack of funding and that the proposed plot is a family farm. Therefore this is the only piece of land the applicant has available and it would not be economically feasible for the business to find or purchase a new property. Therefore, no alternate properties have been investigated in the Basic Assessment.

No.	**Alternative type**, either alternative: site on property, properties, activity, design, technology, energy, operational or other(provide details of "other")	**Description**
3	Activity Alternative	Mthunzi Chicken Supplier currently has infrastructure that can accommodate 5 000 broiler chickens, and plans to expand to more chicken broiler houses that will accommodate up to an additional 25 000 chickens.
4	Design or Layout Alternative	The proposed design and layout of the proposed development is done in a way to minimise the potential impacts on the environment. Therefore no alternative layouts have been proposed as the current and preferred layout are on transformed land with relatively low impact significance and allow for the most efficient compliance to chicken welfare legislation, maximising chicken production outputs.
5	Technology to be used	The technology to be used is in line with chicken farming standards. No other technologies have been investigated as the current proposed technologies will be in line with chicken guidelines in terms of best practice associated with chicken production.

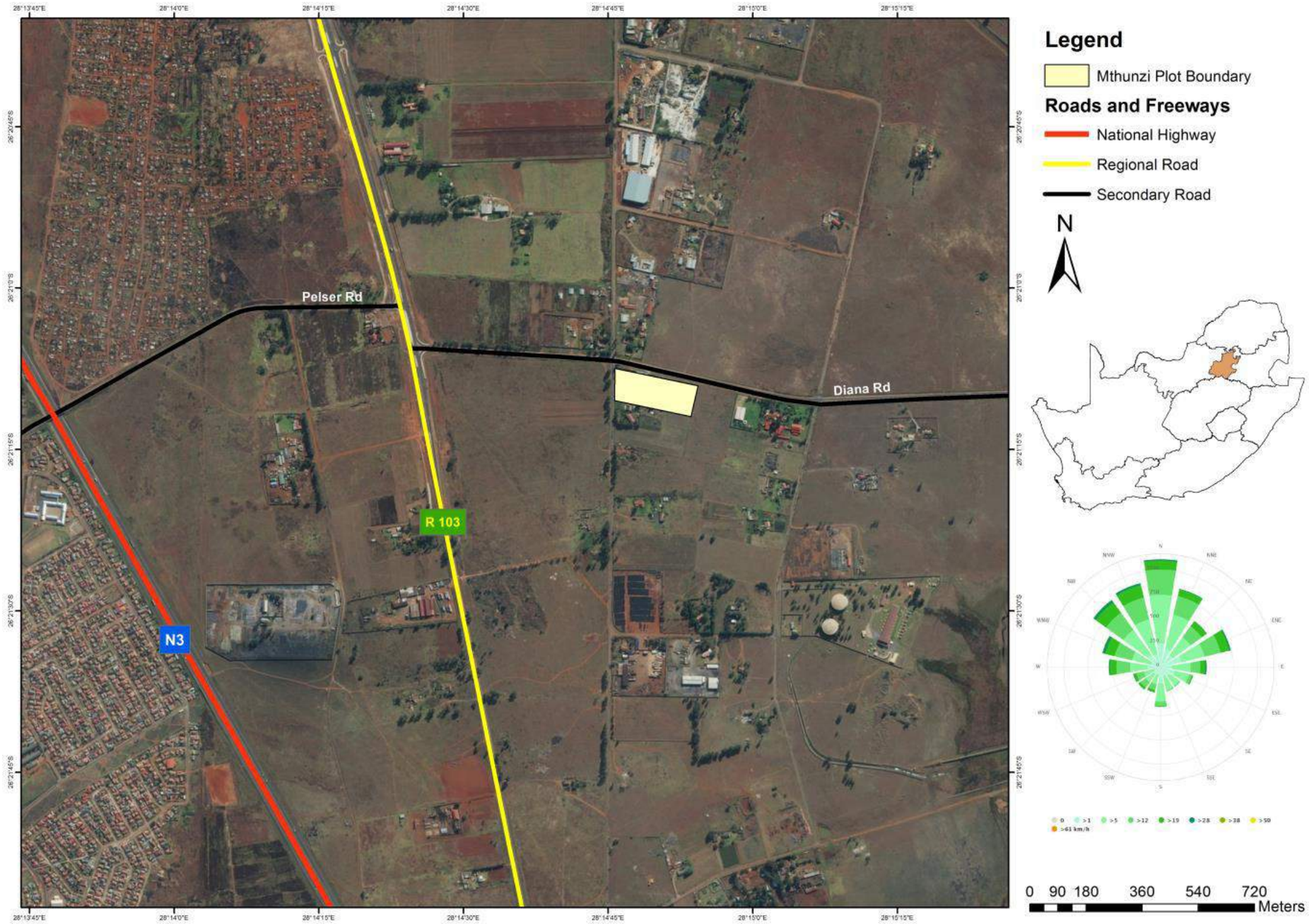


Figure 1a: Site location of the chicken facility and abattoir outside Mapleton, in Ekurhuleni.

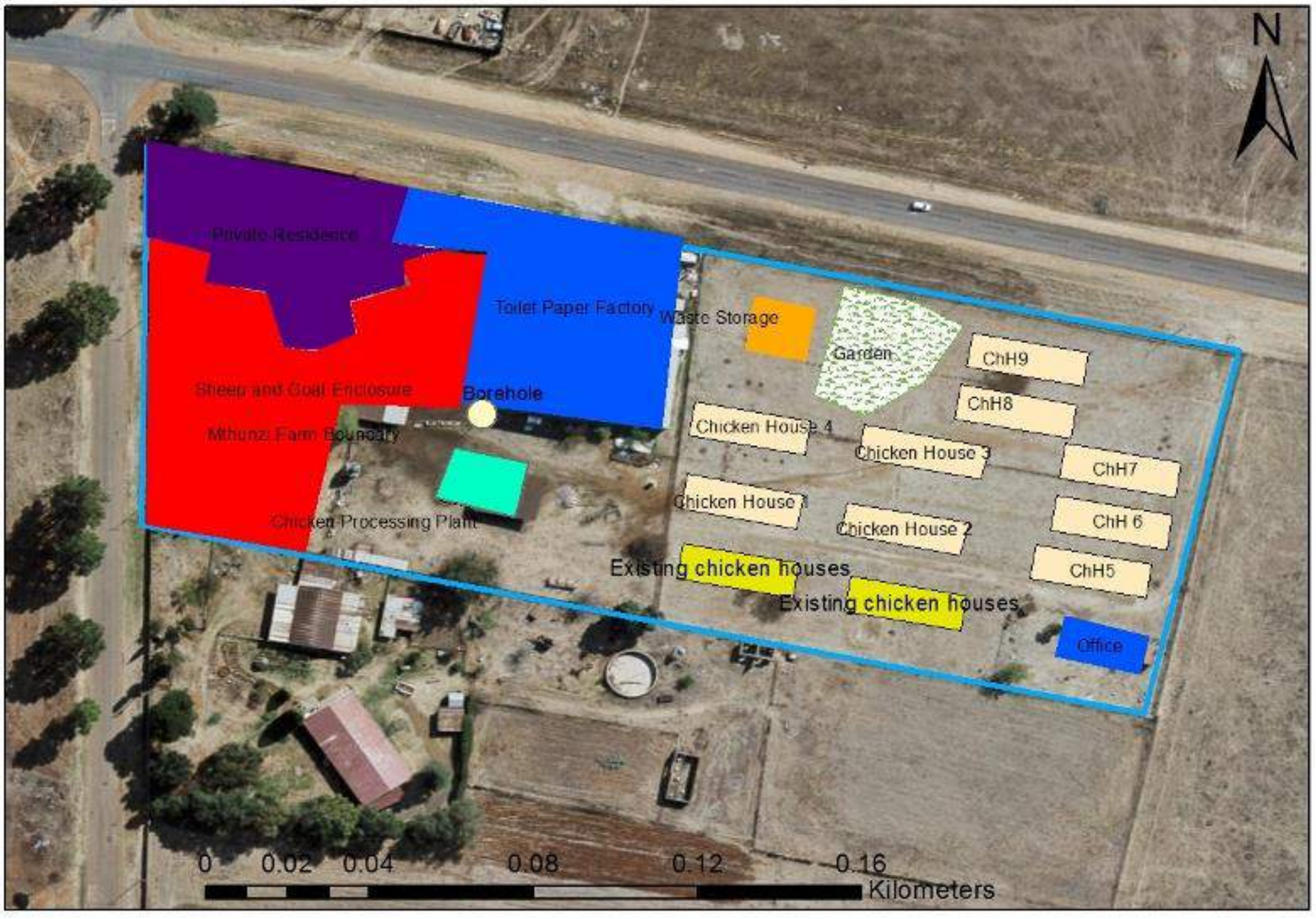


Figure 2b: **Site layout of the chicken facility and abattoir, showing the two existing chicken houses (grey roofs) and the proposed location of the addition nine chicken houses, processing plant, garden and waste storage area.**

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

The Department of Environmental Affairs (DEA) commissioned the Council for Scientific and Industrial Research (CSIR) to manage the "Special Needs and Skills Development Programme" which is aimed at providing *pro bono* Environmental Assessments. Including BAs for people who are classified as special needs clients/applicants, specifically Small, Medium and Micro Enterprises (SMMEs), Community Trusts, individuals or Government Programmes. The CSIR has identified the Mthunzi chicken supplier as a special needs client and has agreed to assist them with acquiring Environmental Authorization EA for the project on a *pro bono* basis. The programme covers the cost of the BA, Ecological specialist study undertaken, site visits conducted and human resources required to conduct the BA. As this project is being undertaken under the Department of Environmental Affairs Special Needs and Skills Development Programme, the applicant does not have the means to acquire different location alternatives. It should also be emphasized that this project comprises an extension of the existing chicken broiler facilities on site. As a result, no location alternatives for this proposed project are available. However, there were a number of other alternatives considered including the following: **1. Site alternative** As mentioned above, the client is receiving *pro bono* environmental services from the CSIR through the Department of Environmental Affairs Special Needs and Skills Development Programme, and does not have the financial means to lease or acquire any alternative land.

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:

	Size of the activity:
Proposed activity ***(Total environmental (landscaping, parking, etc.) and the building footprint)***	Two chicken houses are currently operational on the site and the applicant proposes an additional nine broiler houses, an abattoir (i.e. processing plant) and associated infrastructure. The site is 2.57 ha.
Alternatives:	
Alternative 1 (if any)	N/A
Alternative 2 (if any)	
	Ha/ m^2

or, for linear activities:

	Length of the activity:
Proposed activity	N/A
Alternatives:	
Alternative 1 (if any)	N/A
Alternative 2 (if any)	
	m/km

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

	Size of the site/servitude:
Proposed activity (area of site)	2.57ha
Alternatives:	
Alternative 1 (if any)	N/A
Alternative 2 (if any)	

Ha/m^2

5. SITE ACCESS

Proposal

Does ready access to the site exist, or is access directly from an existing road? YES
If NO, what is the distance over which a new access road will be built

Describe the type of access road planned:

N/A

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

Describe the type of access road planned:

N/A

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

Describe the type of access road planned:

N/A

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).

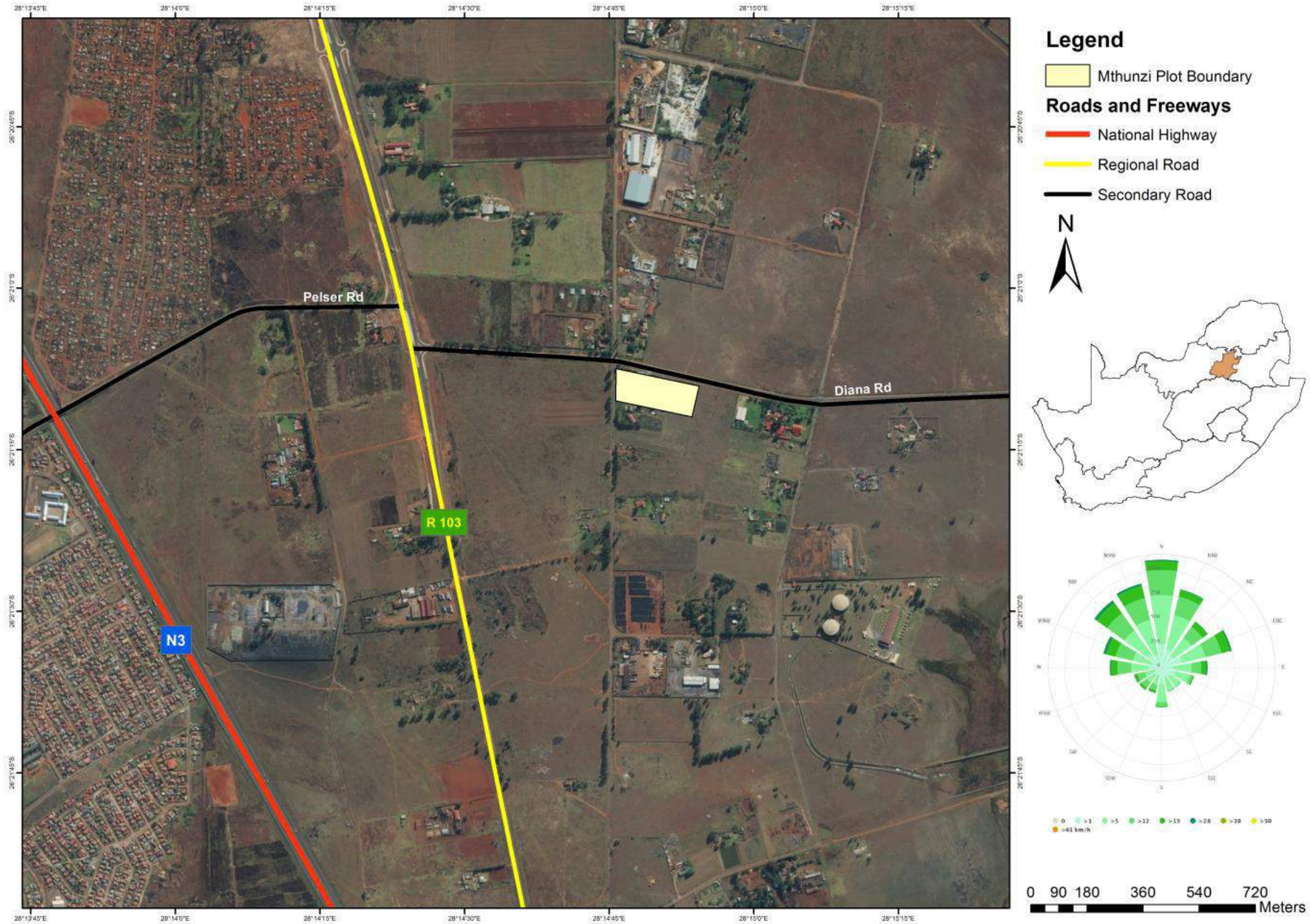


Figure 2: **Access roads to the site - the N3, R101, Diana Road and Pelser Road serve as access roads to the site.**

Section A 6-8 has been duplicated	**0**	Number of times

(only complete when applicable)

6. LAYOUT OR ROUTE PLAN

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

- the layout plan is printed in colour and is overlaid with a sensitivity map (if applicable);
- layout plan is of acceptable paper size and scale, e.g.
  - **A4 size for activities with development footprint of 10sqm to 5 hectares;**
  - A3 size for activities with development footprint of > 5 hectares to 20 hectares;
  - A2 size for activities with development footprint of >20 hectares to 50 hectares);
  - A1 size for activities with development footprint of >50 hectares);
- The following should serve as a guide for scale issues on the layout plan:
  - A0 = 1: 500
  - A1 = 1: 1000
  - A2 = 1: 2000
  - A3 = 1: 4000
  - **A4 = 1: 8000 (±10 000)**
- shapefiles of the activity must be included in the electronic submission on the CD's;
- the property boundaries and Surveyor General numbers of all the properties within 50m of the site;
- the exact position of each element of the activity as well as any other structures on the site;
- the position of services, including electricity supply cables (indicate above or underground), water supply pipelines, boreholes, sewage pipelines, septic tanks, 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 chicken, 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.

Note from CSIR: Refer to Appendix A and C for the proposed project layout plan overlaid on a locality map**.** Refer to Appendix G, the Ecological Specialist Report (CSIR, 2018 Review NSS, 2018), for additional maps indicating the location of sensitive features on site.

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.

Note from CSIR: Refer to Appendix B for site photographs in the eight major compass directions. Photographs indicating sensitive features on site can be found in the Ecological Specialist Report (CSIR, 2018 Review NSS,2018) attached as Appendix G.

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.

Note from CSIR: refer to Appendix C for a facility illustration.

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 | **0** | 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 alterative 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 | **0** | 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 | **N/A** | (complete only when appropriate for above)

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

1. PROPERTY DESCRIPTION

Property description: (Including Physical Address and Farm name, portion etc.)	Plot 62, Mapleton, Ekurhuleni District, Gauteng.

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°21’ 10.8”S	28°14’ 51.2”E

In the case of linear activities:

Alternative:	**Latitude (S):**	**Longitude (E):**
o Starting point of the activity		
o Middle point of the activity		
o 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	**N/A**

The 21 digit Surveyor General code of each cadastral land parcel

PROPOSAL																					
Alt. 1																					
Alt. 2																					
etc.																					

The proposed project is not surveyed as such no Surveyor General code are not available please refer to the Plot 62, Mapleton, Ekurhuleni District, Gauteng.

3. GRADIENT OF THE SITE

Indicate the general gradient of the site.

Flat **X**	

4. LOCATION IN LANDSCAPE

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

	Undulating plain/low hills	

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)	NO
Dolomite, sinkhole or doline areas	NO
Seasonally wet soils (often close to water bodies)	NO
Unstable rocky slopes or steep slopes with loose soil	NO
Dispersive soils (soils that dissolve in water)	NO
Soils with high clay content (clay fraction more than 40%)	NO
Any other unstable soil or geological feature	NO
An area sensitive to erosion	NO

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

b) are any caves located on the site(s) NO

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

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

c) are any caves located within a 300m radius of the site(s) NO

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

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

d) are any sinkholes located within a 300m radius of the site(s) NO

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

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

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

6. AGRICULTURE

Does the site have high potential agriculture as contemplated in the Gauteng Agricultural Potential Atlas (GAPA 4)?	NO

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

7. GROUNDCOVER

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

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

	Natural veld with scattered aliens % =35			
		Paved surface (hard landscaping) % =5	Building or other structure % =45	Bare soil % =15

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.

Note from CSIR: For evidence of the above, please see Ecological Specialist study, attached to this report as **Appendix G.**

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

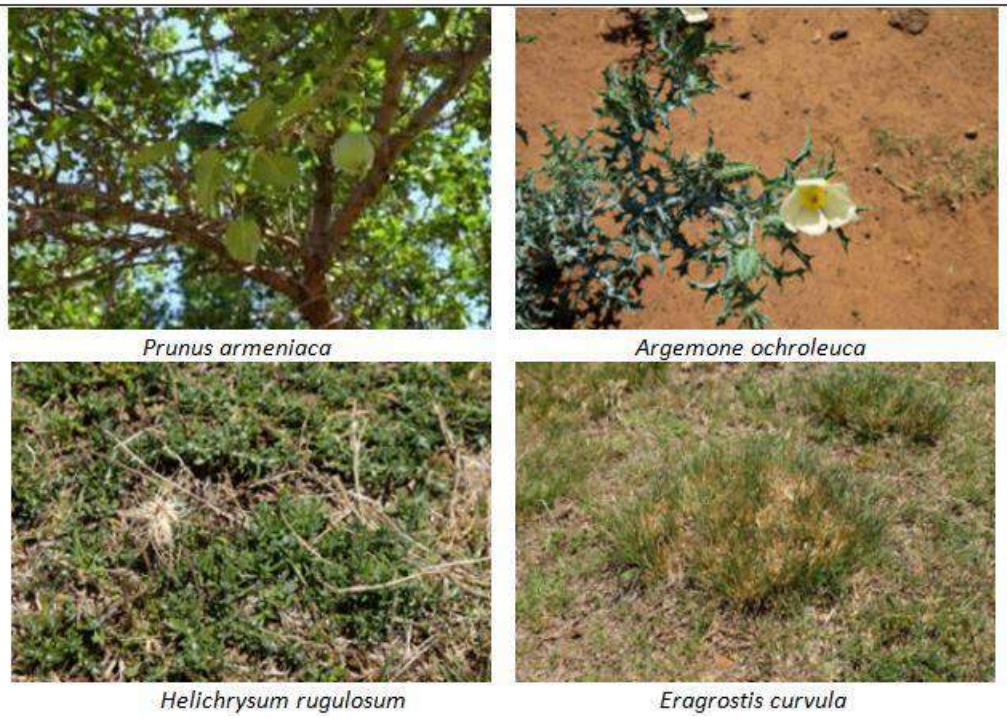
If YES, specify and explain:

Based on the results of the Ecological study conducted by CSIR, 2018 (See Appendix G) the following observations have been made in relation to flora and fauna species:

Flora:

According to the specialist report the development site was duly transformed, with little to no natural vegetation left on site. The vegetation was far removed from the reference state of the Carletonville Dolomite Grassland vegetation unit. The vegetation structure on site can be classified as a transformed vegetation unit, with alien invasive plants (see figures below).

Figure 3: Flora found on site



Fauna:

According to the specialist the area is located in the threatened ecosystem as such bird, reptile, frog, butterfly, odonatan and scorpion species are considered likely to occur. The site is of Low sensitivity - please refer to appendix G for more clarity.

Figure 4: **A sensitivity map of the study site with the proposed chicken houses .**

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 [redacted]

If YES, specify and explain:

The transformed vegetation unit is dominated by grasses, namely *Eragrostis curvula* and *Haplacarpha scaposa*, with herbaceous plants in between, namely *Helichrysum rugulosum* - see Figure 5 below.

Figure 5: List of threatened and nationally protected bird species recorded in QDS 2628AC. Data Source: Taylor, et al. 2015.

Scientific Name	Common Name	Red List Status	No of Observations of QDS (Rep Rate %)	Likelihood of Occurrence (LoO)[1]
Lioptilus nigricapillus	Blackcap, Bush	Vulnerable	0.39	3
Phalacrocorax capensis	Cormorant, Cape	Endangered	0.06	3
Falco biarmicus	Falcon, Lanner	Vulnerable	1.22	3
Falco vespertinus	Falcon, Red-footed	Near Threatened	0.50	3
Phoenicopterus ruber	Flamingo, Greater	Near Threatened	3.56	3
Phoenicopterus minor	Flamingo, Lesser	Near Threatened	0.33	3
Circus maurus	Harrier, Black	Endangered	0.06	3
Circus macrourus	Harrier, Pallid	Near Threatened	0.06	3
Alcedo semitorquata	Kingfisher, Half-collared	Near Threatened	0.11	3
Eupodotis caerulescens	Korhaan, Blue	Least Concern	0.06	3
Eupodotis senegalensis	Korhaan, White-bellied	Vulnerable	0.95	3
Mirafra cheniana	Lark, Melodious	Least Concern	0.56	3
Rostratula benghalensis	Painted-snipe, Greater	Vulnerable	0.56	3
Anthus crenatus	Pipit, African Rock	Near Threatened	0.17	3
Glareola nordmanni	Pratincole, Black-winged	Near Threatened	0.50	3
Coracias garrulus	Roller, European	Near Threatened	0.22	3
Sagittarius serpentarius	Secretary bird,	Vulnerable	2.89	3
Ciconia nigra	Stork, Black	Near Threatened	0.06	3
Sterna caspia	Tern, Caspian	Vulnerable	0.22	3
Gyps coprotheres	Vulture, Cape	Endangered	0.06	3

Are there any special or sensitive habitats or other natural features present on the site? If YES, specify and explain:	YES	[redacted]

[1] Likelihood of Occurrence: LoO; 1 = High, 2=Moderate, 3=Low

Vegetation:

According to the specialist report (Appendix G), the study area is situated in the Grassland Biome of Southern Africa. Summer rainfall combined with dry winters and frost, with marked diurnal temperature variations, are unfavourable to tree growth. Grasslands mainly comprise of grasses and plants with perennial underground storage organs, such as bulbs and tubers, but less trees. The Grassland Biome consists of various different vegetation types.

Figure 6: Trees found on Mthunzi's development site. Photo credit: Rirhandzu Marivate (2017)

During the site visit it was observed that the developments site was duly transformed, with little to no natural vegetation left on site. The vegetation was far removed from the reference state of the Carletonville Dolomite Grassland vegetation unit. The vegetation structure on site can be classified as a transformed vegetation unit, with alien invasive plants.

Figure 7: Photographs of the transformed habitats within Mthunzi's project site. Photo credit: Rirhandzu Marivate (2017).

Figure 8: **A map illustrating the broad-scale habitat association/units identified in the study site for land use in 2003 and 2018.**

Was a specialist consulted to assist with completing this section	YES		
If yes complete specialist details			
Name of the specialist:	CSIR EMS		
Qualification(s) of the specialist:	Rirhandzu Marivate BSc. Hons. Ecology, Environment and Conservation Internal reviews by: Minnelise Levendal MSc Botany University of Stellenbosch Paul Lochner M.Phil Environmental Science UCT Independent peer review by: Susan Abell, Natural Scientific Services (NSS)		
Postal address:	P O Box Stellenbosch		
Postal code:	7599		
Telephone:	021 888 2495	Cell:	
E-mail:	MLevendal@csir.co.za RMarivate@csir.co.za	Fax:	021 888 2693
Are any further specialist studies recommended by the specialist?			NO
If YES, specify:			
If YES, is such a report(s) attached?			
If YES list the specialist reports attached below			

Signature of specialist:	See note below	Date:	

Note from CSIR: Please see the Specialist Declaration as per Appendix 6 of the NEMA EIA Regulations 2014) on Page vi of the Ecological Specialist Report, attached as Appendix G. An independent review of the specialist study was also conducted by Susan Abell (Pr.Sci.Nat) of NSS.

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

8. LAND USE CHARACTER OF SURROUNDING AREA

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

	3. Nature conservation area	
7. Agriculture		

34. Small Holdings

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

NORTH

34	**34**	**7 34**	**34**	**34**
34	**7 34**	**7 34**	**7 34**	**34**
3	**34**	**Site**	**7 34**	**34**
34	**34**	**34**	**34**	**34**
34	**34**	**34**	**34**	**34**

WEST EAST

SOUTH

Note from CSIR: The proposed development is surrounded by small holdings with some mixed agricultural practices. The site is located approximately 300m east of the northern part of the Onderstepoort Nature Reserve. The density of these small holdings is very low and the dwellings are fairly spaced apart. Please see locality and aerial maps for an indication of the density of the small holdings.

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

If yes indicate the type of reports below

AN ECOLOGICAL STUDY FOR THE MTHUNZI CHICKEN SUPPLIER, Mapleton, GAUTENG
Appendix G.

9. SOCIO-ECONOMIC CONTEXT

The social and environmental impacts of a project often filter their way out into the neighboring communities and towns. Therefore, a proper project demographic baseline should incorporate at least the municipal, nearby towns and neighbors of the proposed project. This baseline study will include a brief overview of the socio-economic conditions of the Gauteng Province, concentrated on the Ekurhuleni Municipality and the valorous area specifically. The project falls within Ward 44 of Ekurhuleni Municipality. Households and communities within Ward 44 should therefore be provided preference when implementing socio-economic policies and mitigation measures. The location of the site within Ward 44 is shown Figure 9.

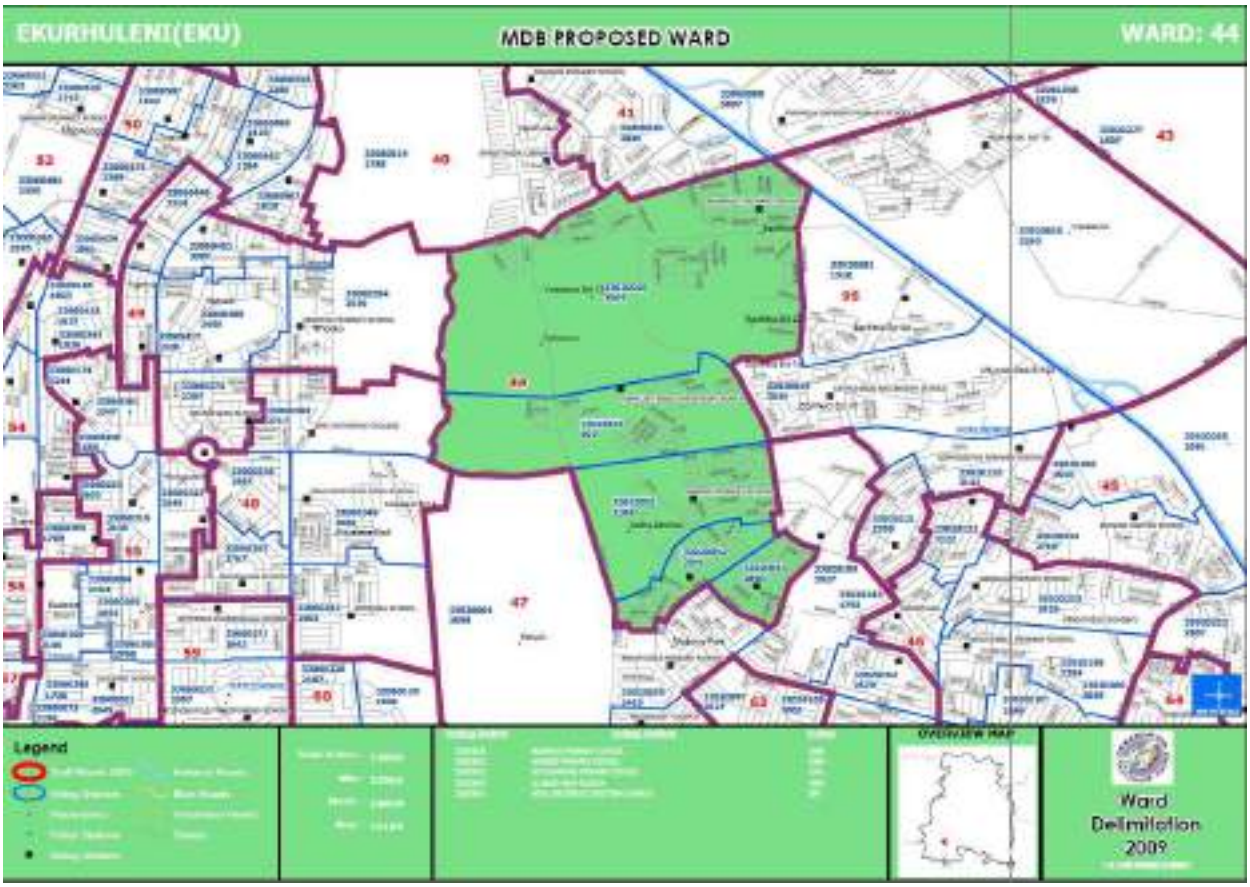


Figure 9: Location of the site (star) within Ekurhuleni Municipality Ward 44

According to Stats-SA, Ekurhuleni Metropolitan Municipality occupies 1 975 km^2 of the land area in the province of Gauteng. The name Ekurhuleni means 'place of peace' in Tsonga and the municipality is one of three metropolitan municipalities within Gauteng. Ekurhuleni is also home to South Africa's largest airport, OR Tambo International Airport, which is located in the Kempton Park area.

Ekurhuleni is highly urbanised, with 99,4% of the population living in urban settlements ranging from informal settlements to elite urban residential suburbs. A number of large urbanised townships, such as Katlehong and Tokoza, also occupy the landscape. The proposed chicken facility is located in Vosloorus in Ekurhuleni, within the province of Gauteng. (GPS coordinates: 26.3524 S, 28.1962 E). The total population of Vosloorus is 163 216 with a population density of 5084 persons/$km^{2.}$ According to the figure below the population of Vosloorus is dominated by the IsiZulu speaking persons with 46.8%

Figure 10: Population for Vosloorus

Language	Percentage
Afrikaans	0,8%
English	3%
IsiNdebele	1,5%
IsiXhosa	8,2%
IsiZulu	46,8%
Sepedi	7,3%
Sesotho	18%
Setswana	4,4%
Sign Language	0,6%
SiSwati	1,4%
Tshivenda	1,2%
Xitsonga	6%
Other	0,8%

Figure 11: Education:

Group	Percentage
No Schooling	2,9%
Some Primary	7,3%
Completed Primary	3,1%
Some Secondary	36,2%
Matric	37,6%
Higher Education	13%

According to Stats SA, 37.6% of the population completed Matric, 36,2% completed secondary school and 13% of the population completed higher education. Generally, the levels of education in the Region are low. Linked to the low education levels is the employment rate of the region which will be discussed in the following section.

Figure 12: Employment:

Income	Percentage
No income	16,9%
R1 - R4,800	3,6%
R4,801 - R9,600	5,4%
R9,601 - R19,600	12%
R19,601 - R38,200	15,7%
R38,201 - R76,400	16,7%
R76,401 - R153,800	14,8%
R153,801 - R307,600	10,1%
R307,601 - R614,400	3,9%
R614,001 - R1,228,800	0,5%
R1,228,801 - R2,457,600	0,2%
R2,457,601+	0,1%

The economy in the City of Ekurhuleni is diverse with the main economic sectors being government, manufacturing, service and retail. At a national context, the five biggest economies in South Africa are Johannesburg, Cape Town, Tshwane, eThekwini and Ekurhuleni. The City of Tshwane falls within the Gauteng province which accounts for 35% of the national total for personal income. Stats SA figures for annual income are provided below. According to the figure below, the 16.9% of the population are with no income, whereas approximately 47.2% (16.7% + 15.7% + 14.8%) are lower-middle class and earn between R19 601 to R153 800 per annum.

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? If YES, explain:	NO

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

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

No archaeological sites or material of significance was recorded during the survey. A paleontological desktop study was conducted by Rossouw (2017) that concluded:

It is recommended that the development may proceed without a phase 1 impact study, provided that any activity that will require > 1m deep x 1m2 excavations into unweathered sedimentary bedrock within the proposed footprint will require once off monitoring by a professional palaeontologist during the construction phase of the development in case of chance exposure of stromatolite fossil remains, while such excavations are still open ". No further mitigation prior to construction is recommended in terms of the archaeological and paleontological components of Section 35 for the proposed development to proceed.

In terms of the built environment of the area (Section 34), no standing structures older than 60 years occur within the study areas. In terms of Section 36 of the Act no burial sites were recorded. If any graves are located in future they should ideally be preserved in-situ or alternatively relocated according to existing legislation. No public monuments are located within or close to the study area. The area is rural in character and the proposed project is in line with the current land use and will not impact negatively on significant cultural landscapes or views capes. During the public participation process conducted for the project no heritage concerns was raised.

Due to the lack of significant heritage resources in the study area the impact of the proposed project on heritage resources is considered low and it is recommended that the proposed project can commence on the condition that the following recommendations are implemented as part of the EMPr and based on approval from SAHRA

Will any building or structure older than 60 years be affected in any way?	NO
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	NO

Note from CSIR: **A heritage study (by Mr. J. van der Walt, dated November 2017) was submitted to South African Heritage Resources Agency (SAHRA) via the SAHRIS portal - See Appendix F**

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 / NO
If yes, has any comments been received from the local authority?	NO

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

Please see Appendix E for future comments

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

The Draft BAR is only released now and will be submitted to the local authority for comment.

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

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

Please see Appendix E for detailed comments on release on BID and project announcement

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

4. GENERAL PUBLIC PARTICIPATION REQUIREMENTS

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

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

5. APPENDICES FOR PUBLIC PARTICIPATION

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

Appendix E.1	Proof of site notice
Appendix E.2	Written notices issued as required in terms of the regulations
Appendix E.3	Proof of newspaper advertisements
Appendix E.4	Communications to and from interested and affected parties
Appendix E.5	Minutes of any public and/or stakeholder meetings – no public meetings have been undertaken
Appendix E.6	Comments and Responses Report
Appendix E.7	Comments from I&APs on Basic Assessment (BA) Report – N/A at this stage of the process
Appendix E.8	Comments from I&APs on amendments to the BA Report – N/A at this stage of the process
Appendix E.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 alterative 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	**0**	times	(complete only when appropriate)

Section D Alternative No.	N/A	(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
If yes, what estimated quantity will be produced per month?	Limited quantity of construction waste will be generated. Quantity currently unknown.

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

The anticipate waste generated from construction is not expected to be high as 2 of the chicken houses are already in existence. Solid waste from construction will be stored in a demarcated area on site and will be disposed of at a registered landfill site. It will be recommended to the applicant that recycling be a priority in order to minimize construction waste so that waste is sorted into recyclable and waste that is non-recyclable.

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

Waste will be disposed at the registered Municipal landfill site. Refer to Appendix E regarding the agreement between the municipality and the applicant to dispose of the waste.

Will the activity produce solid waste during its operational phase?	YES
If yes, what estimated quantity will be produced per month?	

There are currently 2 existing chicken houses with the aim of adding an additional 9 houses. Currently the 2 houses produce 1.5 tons of waste per month therefore an addition of 9 broiler houses will produce approximately 5 tons of waste per month. Total amount of waste will be approximately 7 tons.

In addition, there will be domestic waste generated by approximately 18 employees.

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

Initially, the waste will remain untreated and sold for animal feed and to vegetable farmers. A number of the bags of waste will be used as garden manure on the farm immediately once available. At a later stage of the activities, the applicant proposes to add additives and dry a portion of the waste for use as cattle and sheep feed at another location. As a result of the low quantities of waste produced, it is anticipated that the activity will not trigger a Waste Management License. Domestic waste will be collected at a central location and disposed of at the local Municipality Landfill.

For abattoir waste, pipes will be built to connect the abattoir to a septic tank system. This tank will be constructed according to the GDARD Guidelines Manual for the Management of Abattoirs where it is recommended that the soil in which the septic tank is placed has the ability to drain effectively. The tank will have a solids trap, were waste is separated into liquids and solids. A licensed contractor will collect waste from the septic tank for disposal at a registered land fill site.

EKURHULENI METROPOLITAN MUNICIPALITY

Nº 11651

ENVIRONMENTAL DEVELOPMENT
WASTE MANAGEMENT SERVICES DIRECTORATE
APPLICATION FOR AD HOC BULK CONTAINER SERVICE

I MR. J HLUNGWANE in the capacity of OWNER

herewith apply on behalf of SELF for the rendering

of a bulk refuse container service of 6M³ m³ at the promulated tariff

on the property situated on the stand 62 suburb MAPLETON

from PERMANENT and, in the case of a business

(permanent container) undertake to inform you in writing when the service must be DELIVERY DATE TO BE COMMUNICATED discontinued.

Address where container should be delivered PLOT 62 BOUNDARY

ROAD, MAPLETON, BOKSBURG Tel No 0713129327

Cost of bulk container per lift R 1178.52 (V.A.T. excluded) irrespective R1343.51.

of the volume of refuse in the container. During the contract period the container can be emptied on request for the same amount as indicated above.

Account number 2202479730

DELIVERY CONDITIONS AND INDEMNITY.

MR. J. HLUNGWANE accept liability for the loss or damage to such

container and indemnifies the Ekurhuleni Metropolitan Municipality or any of its employees

against any claim for damages which may arise as a result of the delivery/removal of bulk

refuse containers or other waste from stand 62 and agree to the conditions as

detailed on the reverse side of this application.

SIGNATURE

WITNESS FOR THE MUNICIPALITY

DATE 21 AUGUST 2017

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?	NO

Applicant is currently obtaining details of contact person as well as written confirmation from this registered landfill site and this will be included with submission of final BAR should it be available.

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.

Can any part of the solid waste be classified as hazardous in terms of the relevant legislation?	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?	NO

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:

During the construction phase, waste will be separated into recyclable and non-recyclable materials and various marked bins will be placed on site to facilitate the separation of waste. The applicant will ensure that there are sufficient waste bins to handle the amount of waste produced on site. The containers will be emptied regularly to avoid over filling and rodents on the site. Waste will be disposed of at the Akasia registered landfill site.

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

If yes, what estimated quantity will be produced per month?	Unable to determine the exact quantities as yet. Effluent waste to be generated from cleaning the chicken houses with a biodegradable sanitizer as well as effluent from blood from the abattoir. The estimated effluent waste for 9 broiler houses is 2. 2m³ of blood and 2.4m³ of liquid effluent.
If yes, has the municipality confirmed that sufficient capacity exist for treating / disposing of the liquid effluent to be generated by this activity(ies)?	[redacted] NO

Will the activity produce any effluent that will be treated and/or disposed of on site? Yes [redacted]
If yes, what estimated quantity will be produced per month?

Unable to determine the exact quantities as yet. Effluent waste from cleaning the chicken houses with a biodegradable sanitizer as well as effluent from blood from the abattoir. The estimation for nine broiler houses the estimate is 2. 2m³ of blood and 2.4m³ of liquid effluent.

If yes describe the nature of the effluent and how it will be disposed.

The abattoir will generate liquid effluent and the chicken houses will generate liquid effluent from when they are sanitized during cleaning with a biodegradable sanitizer. A licensed contractor will clean the broiler houses every 6 weeks with water and a biodegradable sanitizer. This sanitizer will be of a low toxicity. The contractor will also collect chicken manure.

Current industry standard for chicken houses is to allow the liquid effluent to flow out of broiler houses and soak in the soil. As the sanitizer will be biodegradable, there is minimal soil contamination. The site is not located near any water course therefore no risk of impact on water sources.

The abattoir will have connection pipes to a septic tank which will be not less than 10m away. The GDARD Guidelines Manual for Management of Abattoirs notes this as one of the methods of waste disposal. The soil will drain effectively and conform to authority standards. The septic tank will have solids trap where the liquids are separated from the solids. A licensed contractor will collect waste from the septic tank and dispose of in the municipal waste stream.

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? [redacted] NO

If yes, provide the particulars of the facility:

Facility name: [redacted]
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:

The sanitizer that will be used to clean broiler house will be biodegradable. Majority for the effluent will be from liquid effluent from the broiler houses. The biodegradable nature of the cleaning agent means that the product will have minimal impact on the environment.

Liquid effluent (domestic sewage)

Will the activity produce domestic effluent that will be disposed of in a municipal sewage system?	YES
If yes, what estimated quantity will be produced per month?	There will be approximately 18 employees when the entire facility is fully operational. Employees will not be present at the same time, there will be alternating shifts.
If yes, has the municipality confirmed that sufficient capacity exist for treating / disposing of the domestic effluent to be generated by this activity(ies)?	NO
Will the activity produce any effluent that will be treated and/or disposed of on site?	NO

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

Emissions into the atmosphere

Will the activity release emissions into the atmosphere?	NO
If yes, is it controlled by any legislation of any sphere of government?	NO

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

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

The odours which will be produced by the chicken and abattoir facility do not require an Air Emissions License as per NEM:AQA. The DBAR will be sent to the Air Quality directorate for comment.

2. WATER USE

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

Municipal		Groundwater	

The applicant proposes the use of ground water extracted from boreholes and stored in tanks on site in combination with municipal sources.

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: Approximately 6000. liters a month

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
If yes, list the permits required

For the activities the applicant will be required to apply for a Water Use License under the National Water Act (Act 36 of 1998 – NWA) for the following activities:
Section 21
(a) Taking water from a water source (Abstraction from an onsite borehole)
(b) Storage of water (Storage of borehole water)
(g) Disposing of waste in a manner which may be detrimentally impact on a water resource

If yes, have you applied for the water use permit(s)? NO
If yes, have you received approval(s)? (attached in appropriate appendix)

A water use license will be applied for prior to commencement of activities.

3. POWER SUPPLY

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

The proposed development will be serviced by Eskom from the City of Ekurhuleni.

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

4. ENERGY EFFICIENCY

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

Should the projects application for funding be approved, there would be a consideration of the extensive use of solar power for electrifying the chicken facility. This electricity would be used for lighting and the powering of water pumps.
This would aid self-efficiency in allowing the farm to carry on with operations even during load shedding from Eskom.

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

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 issues/comments that were raised by Interested and Affected Parties following the release of the Background Information Document and prior to the release of the Draft Basic Assessment Report can be seen in the comments and responses report which is attached as Appendix E4.

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):

The issues/comments that were raised by Interested and Affected Parties following the release of the Background Information Document and prior to the release of the Draft Basic Assessment Report and the response given by the EAP can be seen in the comments and responses report which is attached as Appendix E4.

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

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

APPROACH TO THE BASIC ASSESSMENT

1) METHODOLOGY OF IMPACT ASSESSMENT

According to the DEA IEM Series guideline on "Impact Significance" (2002), there are a number of quantitative and qualitative methods that can be used to identify the significance of impacts resulting from a development. The process of determining impact significance should ideally involve a process of determining the acceptability of a predicted impact to society. Making this process explicit and open to public comment and input would be an improvement of the EIA/BA process. The CSIR's approach to determining significance is generally as follows:

Use of expert opinion by the specialists ("professional judgement"), based on their experience, a site visit and analysis, and use of existing guidelines and strategic planning documents and conservation mapping (e.g. SANBI biodiversity databases);

Review of specialist assessment by all stakeholders including authorities such as nature conservation officials, as part of the report review process (i.e. if a nature conservation official disagreed with the significance rating, then we could negotiate the rating); and

Our approach is more a qualitative approach - we do not have a formal matrix calculation of significance as is sometimes done.

2) SPECIALIST CRITERIA FOR IMPACT ASSESSMENT

The following methodology has been provided by the CSIR to the specialist who conducted the
Assessment of Potential Impacts

The assessment of impact significance is based on the following conventions:

Nature of Impact - this reviews the type of effect that a proposed activity will have on the environment and should include "what will be affected and how?"

Spatial Extent - this should indicate whether the impact will be:
Site specific;
Local (<2 km from site);
Regional (within 30 km of site); or
National.

Duration - The timeframe during which (lifetime of) the impact will be experienced:
Temporary (less than 1 year);
Short term (1 to 6 years);
Moderate term (6 to 15 years);
Long term (the impact will cease after the operational life of the activity); or
Permanent (mitigation will not occur in such a way or in such a time span that the impact can be considered transient).

Intensity - it should be established whether the impact is destructive or innocuous and should be described as either:
High (severe alteration of natural systems, patterns or processes such that they temporarily or permanently cease);
Moderate (notable alteration of natural systems, patterns or processes; where the environment continues to function but in a modified manner); or
Low (negligible or no alteration of natural systems, patterns or processes); can be easily avoided by implementing appropriate mitigation measures, and will not have an influence on decision-making.

Probability - this considers the likelihood of the impact occurring and should be described as:
Improbable (little or no chance of occurring);
Probable (<50% chance of occurring);
Highly probable (50 – 90% chance of occurring); or
Definite (>90% chance of occurring).

Reversibility - this considers the degree to which the adverse environmental impacts are reversible or irreversible. For example, an impact will be described as low should the impact have little chance of being rectified to correct environmental impacts. On the other hand, an impact such as the nuisance factor caused by noise impacts from wind turbines can be considered to be highly reversible at the end of the project lifespan. The assessment of the reversibility of potential impacts is based on the following terms:
High - impacts on the environment at the end of the operational life cycle are highly reversible;
Moderate - impacts on the environment at the end of the operational life cycle are reasonably reversible;
Low - impacts on the environment at the end of the operational life cycle are slightly reversible; or
Non-reversible - impacts on the environment at the end of the operational life cycle are not reversible and are consequently permanent.

Irreplaceability - this reviews the extent to which an environmental resource is replaceable or irreplaceable. For example, if the proposed project will be undertaken on land that is already transformed and degraded, this will

yield a low irreplaceability score. The assessment of the degree to which the impact causes irreplaceable loss of resources is based on the following terms:

High irreplaceability of resources (this is the least favourable assessment for the environment);
Moderate irreplaceability of resources;
Low irreplaceability of resources; or
Resources are replaceable (this is the most favourable assessment for the environment).

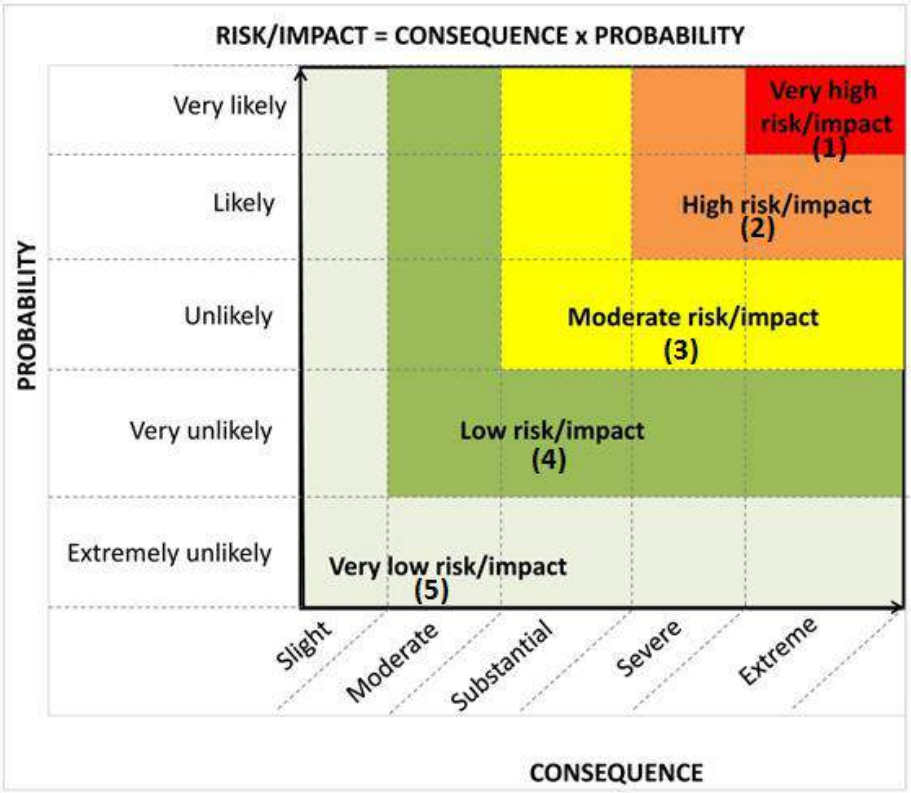


Figure 2-1: Guide to assessing risk/impact significance as a result of consequence and probability.

The status of the impacts and degree of confidence with respect to the assessment of the significance is stated as follows:

Status of the impact: A description as to whether the impact will be:

Positive (environment overall benefits from impact);
Negative (environment overall adversely affected); or
Neutral (environment overall not affected).

Degree of confidence in predictions: The degree of confidence in the predictions, based on the availability of information and specialist knowledge. This should be assessed as:

High;
Moderate; or
Low.

Based on the above considerations, the specialist provides an overall evaluation of the significance of the potential impact, which should be described as follows:

Low to very low: the impact may result in minor alterations of the environment and can be reduced or avoided by implementing the appropriate mitigation measures, and will only have an influence on the decision-making if not mitigated;
Moderate: the impact will result in moderate alteration of the environment and can be reduced or avoided by

implementing the appropriate mitigation measures, and will only have an influence on the decision-making if not mitigated; or

High: Where it could have a "no-go" implication for the project unless mitigation or re-design is practically achievable.

Furthermore, the following must be considered:

Impacts should be described both before and after the proposed mitigation and management measures have been implemented.

All impacts should be evaluated for the construction, operation and decommissioning phases of the project, where relevant.

The impact evaluation should take into consideration the cumulative effects associated with this and other facilities which are either developed or in the process of being developed in the region, if relevant.

Management Actions:

Where negative impacts are identified, mitigatory measures will be identified to avoid or reduce negative impacts. Where no mitigatory measures are possible this will be stated.

Where positive impacts are identified, augmentation measures will be identified to potentially enhance these.

Quantifiable standards for measuring and monitoring mitigatory measures and enhancements will be set. This will include a programme for monitoring and reviewing the recommendations to ensure their ongoing effectiveness.

Monitoring:

Specialists should recommend monitoring requirements to assess the effectiveness of mitigation actions, indicating what actions are required, by whom, and the timing and frequency thereof.

Cumulative Impact:

Consideration is given to the extent of any accumulative impact that may occur due to the proposed development. Such impacts are evaluated with an assessment of similar developments already in the environment. Such impacts will be either positive or negative, and will be graded as being of negligible, low, Moderate or high impact.

Mitigation:

The objective of mitigation is to firstly avoid and minimise impacts where possible and where these cannot be completely avoided, to compensate for the negative impacts of the development on the receiving environment and to maximise re-vegetation and rehabilitation of disturbed areas. For each impact identified, appropriate mitigation measures to reduce or otherwise avoid the potentially negative impacts are suggested. All impacts are assessed without mitigation and with the mitigation measures as suggested.

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.

Note from the CSIR: Feasible alternatives (i.e. location, activity and property alternatives) do not exist for the proposed project as this is the only land parcel that the owners were able to acquire, and it would not be economically feasible for the business to find and or purchase new property.

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.

Note from the CSIR: Feasible site alternatives (i.e. location and property alternatives) do not exist for the proposed project. The No-Go alternative will be considered.

Figure 13: Identified impacts for proposed activities extracted from the Ecology and Heritage Specialist Studies

Potential Impacts on Ecology	Significance	
	Without mitigation	**With mitigation**
Construction		
1. Loss of transformed terrestrial vegetation and faunal habitat	*Low*	*Low*
2. Increase in occurrence and spread of alien plant species	*Low*	*Low*
3. Increased dust and erosion from construction activities	*Low*	*Low*
4. Sensory disturbance on fauna and flora from construction activities	*Low*	*Low*
Operation		
5. Sensory disturbance on fauna and flora from noise and lights from chicken facility	*Low*	*Low*
6. Contamination of environment from poor waste and chemical management	*Medium*	*Low*
7. Increase in prevalence of pests from poor hygiene and chicken waste management	*Medium*	*Low*
8. Increase of diseases from poor chicken waste management and prevalence of pests on native fauna	*Low*	*Low*
Decommissioning		
9. Decommissioning and removal of buildings on the flora and fauna on site	*Medium*	*Low*

Nature: During the construction phase activities resulting in disturbance of surfaces and/or sub-surfaces may destroy, damage, alter, or remove from its original position archaeological material or objects.

	Without mitigation	**With mitigation (Preservation/ excavation of site)**
Extent	Local (1)	Local (1)
Duration	Permanent (5)	Permanent (5)
Magnitude	Low (2)	Low (2)
Probability	Not probable (2)	Not probable (2)
Significance	**16 (Low)**	**16 (Low)**
Status (positive or negative)	Negative	Negative
Reversibility	Not reversible	Not reversible
Irreplaceable loss of resources?	No resources were recorded	No resources were recorded.
Can impacts be mitigated?	Yes, a chance find procedure should be implemented.	Yes

Mitigation:
Due to the lack of apparent significant archaeological resources no further mitigation is required prior to construction.

Cumulative impacts:
Since no heritage significant resources occur in the study area cumulative impacts are considered to be low.

Residual Impacts:
If sites are destroyed this results in the depletion of archaeological record of the area. However, if sites are recorded and preserved or mitigated this adds to the record of the area.

Table 2: IMPACT SUMMARY OF THE PROPOSAL OR PREFERRED ALTERNATIVE

Impacts during the Construction Phase

Impact Description	Mitigation	Spatial Extent	Intensity	Duration	Revers-ibility	Irreplace-ability	Probability	Significance		Status	Ranking of Impact	Confidence
								Without Mitigation	*With Mitigation*			
Impact of project footprint on transformed vegetation and faunal habitat												
From clearing of vegetation, increased vehicle activity, altered burning and proliferation of alien flora	Avoid unnecessary loss of vegetation and faunal habitats; relocate indigenous fauna to natural areas in the neighbouring vicinity; promote re-establishment of indigenous vegetation in disturbed areas	Local (<2km)	Low	Long Term	High	Low	Probable	Low	Low	Negative	5	High
Impact of construction activities (including movement of vehicles) on occurrence and spread of alien plant species												
The proposed project may increase the existing occurrence alien grasses and herbaceous plants on site as a result of soil disturbance for foundations for the chicken house and waste storage site, as well as the introduction of alien seed with the movement of vehicles and materials	Minimize the introduction and proliferation of invasive alien species during construction by limiting and regulating access by potential vectors of alien flora and maintaining a tidy construction site	Local	Low	Temporary	High	Low	Probable	Low	Low	Negative	4	High
Impact of dust and erosion caused by construction activities on ecology on the site												
Construction activities are likely to increase bare ground, dust and the land's susceptibility to erosion	Minimise dust and erosion by implementing effective measures to control dust erosion, such as limiting vehicles, people and materials to the construction site.	Local	Low	Temporary	High	Low	Probable	Low	Low	Negative	4	High
Impact of sensory disturbance as a result of construction activities (incl. vehicles) on fauna												
The increase in noise and light pollution will be a sensory disturbance and may result in fauna such as rodents vacating the area, at least temporarily during construction phase.	Sensory disturbance can be minimized by reducing the duration of construction activities, reducing noise and light pollution that cause sensory disturbance on fauna.	Local	Low	Temporary	High	Low	Probable	Low	Low	Negative	4	High

Impacts during the Operational phase

Impact Description	Mitigation	Spatial Extent	Intensity	Duration	Revers-ibility	Irreplaceability	Probability	Significance		Status	Ranking of Impact	Confidence
								Without Mitigation	*With Mitigation*			
Impact on the fauna as a result of noise, lights and dust from the chicken houses leading to sensory disturbance												
Noise generated by the chickens, and lights turned on at night may have an impact on the fauna in the environment.	Minimise sensory disturbance of fauna by minimizing essential lighting, noise, and preventing unnecessary light and noise pollution, especially on nocturnal animals**.**	Local	Low	Long-term	High	Low	Probable	Low	Low	Negative	3	High
Impact of contaminants as a result of handling of chicken waste on leading to contaminating the surrounding environment												
Improper management and disposal of carcasses as well as access fodder, chemicals such as pesticides and any other operational waste may cause contamination of the local soils.	Environmental contamination can be avoided by ensuring that excrement, carcasses, feed, and other operational waste and hazardous materials are appropriately and effectively contained and disposed of without detriment to the environment.	Local	Low	Long-term	High	Low	Highly Probable	Medium	Low	Negative	4	High
Impact of animal pests as a result of inappropriate handling of chicken waste and poor hygiene conditions in handling the chickens leading to increased breeding of animal pest.												
Poor management of chicken excrement and excess fodder may increase breeding of invertebrate pests. Poor waste management and hygiene practices may also attract vertebrate pests. And may adversely affect the local/ indigenous fauna.	Ensure that effective pest control that also does not affect non-target animals by controlling access and proliferation of pests as far as possible.	Local	Low	Long-term	High	Low	Highly Probable	Low	Low	Negative	5	High
Impact of diseases as a result of poor chicken waste management and/or prevalence of pests leading to a change in population of native fauna												

Diseases could be transmitted either directly from chickens and their excrement, or indirectly from an increased prevalence of pests, which could in turn adversely affect the population dynamics of native fauna in the surrounding area.	Ensure that pests and other potential vectors are unable to enter areas where they might encounter production animals, carcasses, excrement or bedding, by thoroughly sealing these areas using effective, humane and environmentally-friendly means.	Local	Low	Long-term	High	Low	Probable	Medium	Low	Negative	4	High
Impact of organic waste and blood from inappropriate handling of chickens carcasses and by-products in the abattoir operations												
Environmental contamination of the surrounding environment, soil and water, from organic waste and blood	Ensure that effective management and containment of chicken blood and organic waste are implemented as far as possible.	Local	Low	Long-term	High	Low	Probable	Medium	Low	Negative	4	High
Impact of fires on the surrounding environment as a result of accidents caused by human activities, vehicles and built infrastructure												
Altered burning could occur from, human activity and operations of vehicles and on site built infrastructure	Avoid and minimise fires on site.	Local	Low	Short-term	High	Low	Probable	Low	Low	Negative	4	High
Impacts on archaeological artefacts and palaeontological material												
Destruction of palaeontological material	If any archaeological material, palaeontological material or human burials are uncovered during the course of development then work in the immediate area should be halted. The find would need to be reported to the heritage authorities and may require inspection by an appropriate specialist. Such heritage is the property of the state and may require excavation and curation in an approved institution.	Site- Specific	Moderate-low	Permanent	Low	High	Probable (25-50% chance)	Moderate	Very Low (Negative)	Negative	4	High
Destruction of archaeological artefacts	If any archaeological material, palaeontological material or human burials are uncovered during the course of development then work in the immediate area should be halted. The find would need to be	Site-Specific	Moderate-low	Permanent	Low	High	Probable (25-50% chance)	Moderate	Very Low (Negative)	Negative	4	High

	reported to the heritage authorities and may require inspection by an appropriate specialist. Such heritage is the property of the state and may require excavation and curation in an approved institution.											

Impacts during the Decommissioning phase

Impact Description	Mitigation	Spatial Extent	Intensity	Duration	Reversibility	Irreplaceability	Probability	Significance		Status	Ranking of Impact	Confidence
								Without Mitigation	*With Mitigation*			
Impact of decommissioning and removal of facilities on fauna and flora on site												
Decommissioning could lead to increased dust and potential erosion if land is left bare, and could lead to sensory disturbance of fauna.	Promote the re-establishment of indigenous vegetation in disturbed areas and minimize introduction and spread of invasive alien vegetation.	Local (<2km)	Low	Temporary	High	Low	Probable	Medium	Low	Positive	4	High

For alternative:

N/A

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.

From an environmental point of view, the activity is considered viable and no fatal flaw exists. It is recommended that all mitigation measures be implemented to reduce the anticipated impacts.

Note from the CSIR: Feasible site alternatives (i.e. location and property alternatives) do not exist for the proposed project. The No-Go alternative will be considered.

3. SPATIAL DEVELOPMENT TOOLS

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

The Spatial Development Framework (SDF) is the legislated component of the municipality's Integrated Development Plan (IDP) that prescribes development strategies and policy guidelines to restructure and reengineer the urban and rural form. The MSDF is a visual representation of the 'development vision' and 'interventions' required to achieve the development objectives of the Growth and Development Strategy (GDS) and Integrated Development Plan (IDP) of the Ekurhuleni Municipality. Further to providing the objectives reflecting the desired urban form of Ekurhuleni, the Spatial Development Framework (see Figure below) also puts forward policies and strategies for achieving these objectives.

The site for the project falls within an area designated as being for agriculure in the current SDF (dated 2015). The proposed development is therefore compatible with the SDF.

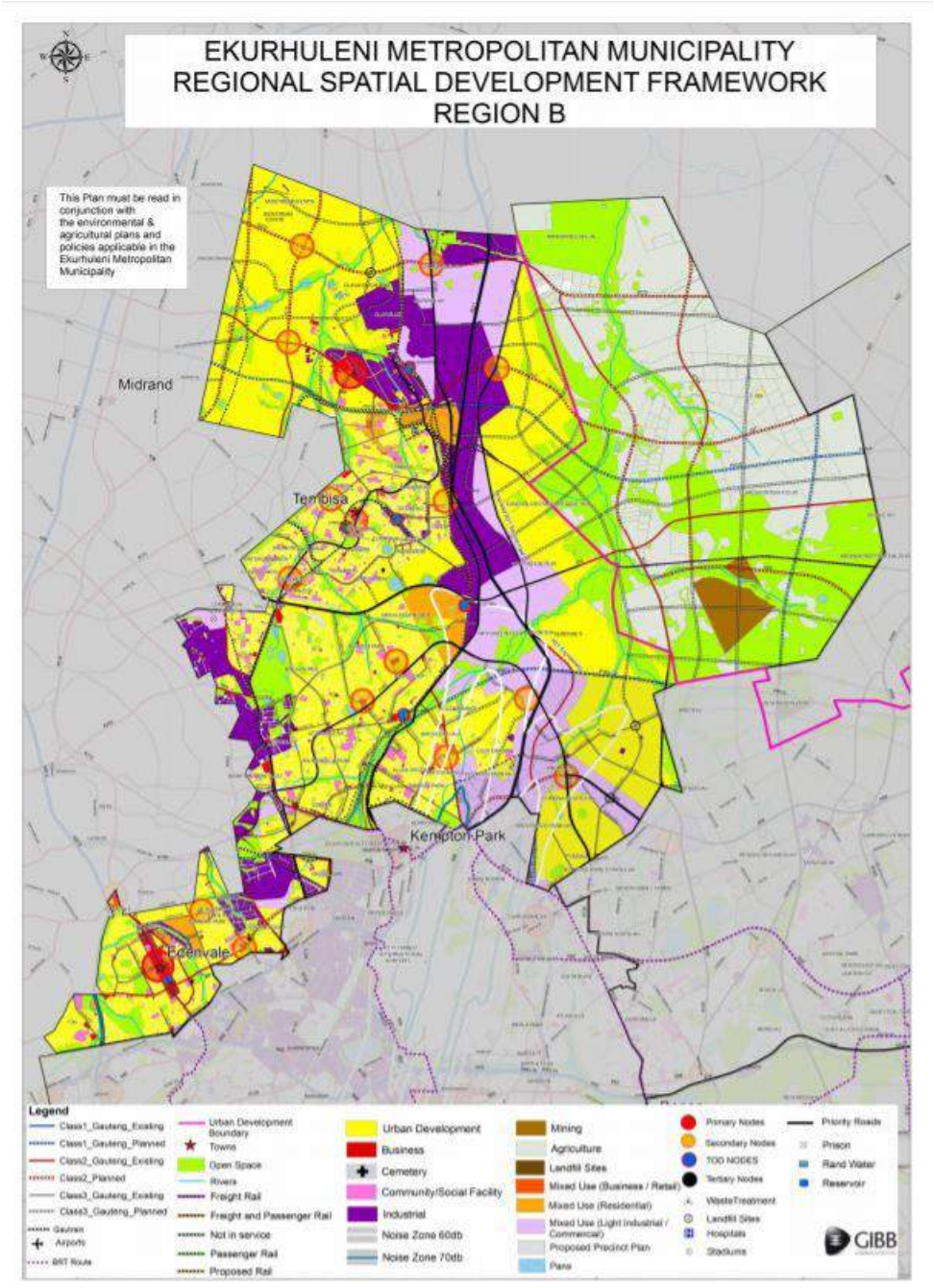


Figure 14: EkurhulenI Local Municipality Spatial Development Framework 2015

4. 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	NO

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

N/A

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:

All mitigation measures found in Table 2 of Section E above should be implemented. All other mitigation and management measures found in the EMPr should be adhered to. The activity will not have a highly significant impact on the environment.

In summary:

- Adhere to GDARD Guideline Manual for Management of Abattoirs
- Adhere to Waste Norms and Standards for handling of chicken manure
- Acquire all additional permitting required for the proposed activities
- The development should be limited to the proposed footprint.
- The use of existing roads should be used to limit disturbance
- Indigenous vegetation should be retained where possible
- By law, remove and dispose of Category 1b alien species on site. All Category 2 species that remain on site must require a permit.
- No alien invasive plants should be used for landscaping in the in the area
- Noncompliance with regard to health and safety at abattoir should be reported to competent authority
- Ensure that excrement, carcasses, feed, and other operational waste and hazardous materials are appropriately and effectively contained and disposed of without detriment to the environment.
- Storm water management on site should be fast and efficient disposal of water into existing drainage systems should be marinated
- Applicant to ensure no contamination of groundwater
- Detect and control pest infestations before they become a problem through frequent and careful cleaning, monitoring and control.
- The monitoring of the construction site must be carried out by a qualified Environmental Compliance Officer (ECO) with proven expertise in the field so as to ensure compliance to the Environmental Management Programme (EMPr)
- All mitigation measures listed in the BAR as well as the EMPr must be implemented and adhered to.

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

NEED AND DESIRABILITY OF THE PROPOSED PROJECT		
Questions (Notice 792, NEMA, 2012)		**Answer**
PART I: NEED		
1.	Is the land use associated with the activity being applied for considered within the timeframe intended by the existing approved SDF agreed to be the relevant environmental authority?	Yes. The proposed project land use (Agricultural) is aligned with the Ekurhuleni Municipality SDF 2016 where this has been identified as a means for rural development through agricultural activities.
2.	Should the development, or if applicable, expansion of the town/area concerned in terms of this land use occurs here at this point in time?	Yes, the proposed project falls within an area which currently consists of small holdings. This development will create employment opportunities in the area.
3.	Does the community/area need the activity and the associated land use concerned? This refers to the strategic as well as local level.	Yes, the production of chickens will have a positive impact on the surrounding community as this will contrite towards food security in the region. In addition, the project will aid with boosting employment in the area and local economic development which is a national priority.
4.	Are the necessary services with adequate capacity currently available (at the time of application) or must additional capacity be created to cater for the development?	Yes. The road networks are fully intact and the project will not have a major impact on road congestion. Thus, additional capacity does not need to be created for the development. Water from a borehole will be used.
5.	Is this development provided for in the infrastructure planning of the municipality, and if not what will the implication be on the infrastructure planning of the municipality (priority and placement of the services and opportunity cost)?	The development is not provided for in the infrastructure planning of the municipality as it is a small development of local importance. Thus, the proposed project will not have any implications for the infrastructure planning, as no services and/or infrastructure needs to be upgraded or created to cater for this development. The current capacity of the infrastructure in the area will suffice for the proposed development.
6.	Is the project part of a national programme to address an issue of national concern or importance?	This project addresses the national challenge of food security in South Africa. The current food security challenge in South Africa consists of two dimensions: the first tries to maintain and increase South Africa's ability to meet its national food requirements, and the second seeks to eliminate inequalities and poverty amongst households that is made apparent by inadequate and unstable food production, lack of purchasing power, poor nutritional status and weak institutional support networks and disaster management systems.
PART II: DESIRABILITY		
1.	Is the development the best practicable	Yes. This site does not have high crop agricultural

NEED AND DESIRABILITY OF THE PROPOSED PROJECT		
Questions (Notice 792, NEMA, 2012)		**Answer**
	environmental option for this land/site?	potential according to the Gauteng Agricultural Potential Atlas (GAPA 4), which makes the site ideal for pork and small scale vegetable production.
2.	Would the approval of this application compromise the integrity of the existing approved and credible IDP and SDF as agreed to by the relevant authorities?	No. The proposed project aligns itself with the Tshwane Vision 2055 outlined in the IDP. The following strategic objectives are sought to be achieved and are aligned with the objectives of the proposed project: • Promote shared economic growth and job creation • Improve financial sustainability • Continue institutional development, transformation and innovation
3.	Would the approval of this application compromise the integrity of the existing environmental management priorities for the area (e.g. as defined in EMFs), and if so, can it be justified in terms of sustainability considerations?	No, the integrity of the existing environmental management priorities for the area will not be compromised by this development. The City of Tshwane Municipality has been identified by the Environmental Management Framework for the whole of Gauteng (GPEMF) in 2014 as one of seven "hubs" for agricultural development. The following three indicators were used to decide on the hub-boundaries: Land capability = high potential agricultural land; High intensity of existing agriculture; and Location and adjacency constraints. The objectives of implementing the Gauteng agricultural hubs were: • Prioritise agriculture as the preferred land-use within a confined and pre-defined fixed-boundary area; • Focused farm-support and allocation of government resources; • Creating hubs of preferred agricultural commodities based on crop suitability and market requirements; and • Fulfilling and meeting the requirements of the Gauteng Growth and Development Strategy.
4.	Do location factors favour this land use at this place? (this relates to the contextualization of the proposed land use on this site within its broader context).	Yes, the proposed project falls within an area which currently consists of small holdings. This development will create employment opportunities in the area.
5.	How will the activity of the land use associated with the activity being applied for, impact on sensitive natural and cultural areas (built and rural/natural environment)?	The development of the proposed development associated infrastructure measuring around 1.5 ha in size will exert an impact on the environment; but based on the findings of the Ecological Impact Assessment (Appendix G), and as per the ecologist

NEED AND DESIRABILITY OF THE PROPOSED PROJECT		
Questions (Notice 792, NEMA, 2012)		**Answer**
		recommendation and the locality of the site, the impacts associated with this proposed development can be mitigated to an acceptable level (Low, Low-Medium).
6.	How will the development impact on people's health and well-being? (E.g. In terms of noise, odours, visual character and sense of place, etc.)?	See Section E of this Report with regards to the Impact Assessment.
7.	Will the proposed activity or the land use associated with the activity being applied for, result in unacceptable opportunity costs?	No.
8.	Will the proposed land use result in unacceptable cumulative impacts?	No. Please see Section E for a description of the potential cumulative impacts.

10. THE PERIOD FOR WHICH THE ENVIRONMENTAL AUTHORISATION IS REQUIRED

(consider when the activity is expected to be concluded)

The Environmental Authorisation (EA) is required for a minimum of 50 years. Ideally EA should be granted indefinitely as this project does not plan on closure.

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 (Appendix H)

SECTION F: APPENDICES

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) – **Attached**
APPENDIX B:	Photographs – **Attached**
APPENDIX C:	Facility illustration(s) – **Attached**
APPENDIX D:	Route position information – **N/A**
APPENDIX E:	Public Participation information – **Attached** • E1 – Proof of site notice • E2 – Written notices issued as required in terms of the regulations • E3 – Proof of newspaper advertisements • E4 –Communications to and from interested and affected parties • E5 – Minutes of any public and/or stakeholder meetings – no public meetings have been undertaken • E6 - Comments and Responses Report • E7 –Comments from I&APs on Basic Assessment (BA) Report – N/A at this stage of the process • E8 –Comments from I&APs on amendments to the BA Report – N/A at this stage of the process • E9 – Copy of the register of I&APs
APPENDIX F:	• F1: SAHRA information – **SAHRIS confirmation** • Water Use Authorization – **Awaiting response from municipality** • Service Letters from municipality – **Acknowledgment received from municipality. Awaiting official response.**
APPENDIX G:	Specialist report- **Attached** **HERITAGE and ECOLOGY studies**
APPENDIX H:	EMPr- **Attached**
APPENDIX I:	Other information • I1: CV's of the project team (EAPs who prepared the report) • I2: Application for exemption from application fee

CHECKLIST

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

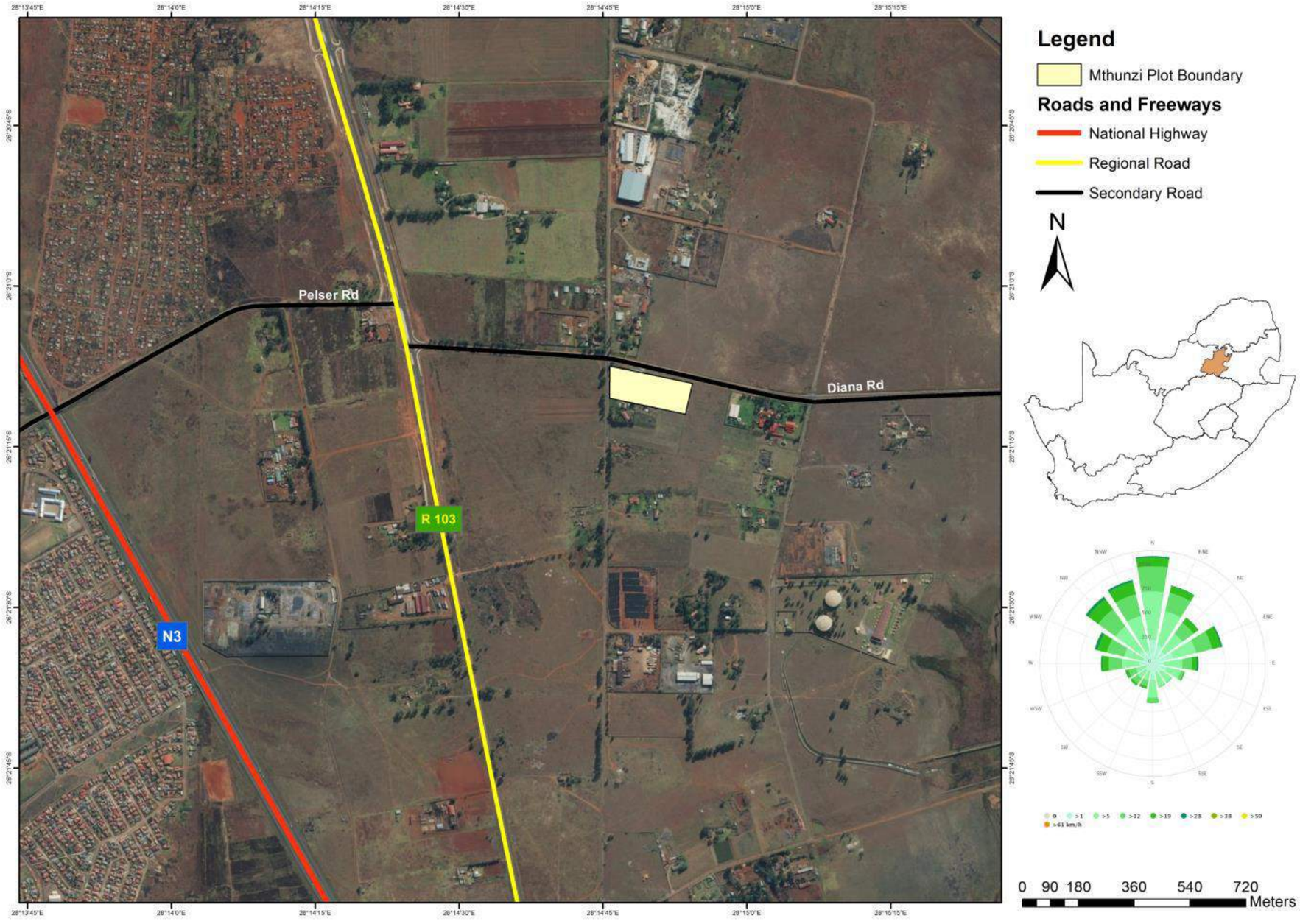
- Where requested, supporting documentation has been attached;
- All relevant sections of the form have been completed.

BASIC ASSESSMENT REPORT

APPENDIX A: SITE PLAN(S)

contents

Figure 1. Locality map of the proposed extension of the chicken broiler facility.

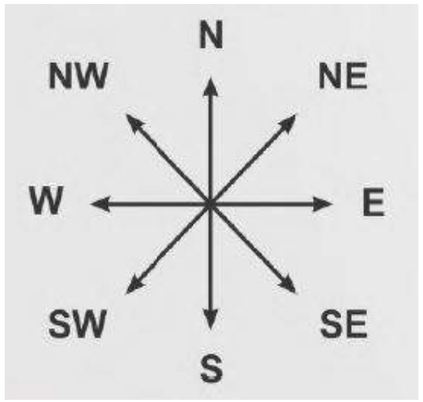


BASIC ASSESSMENT REPORT

APPENDIX B: PHOTOGRAPHS

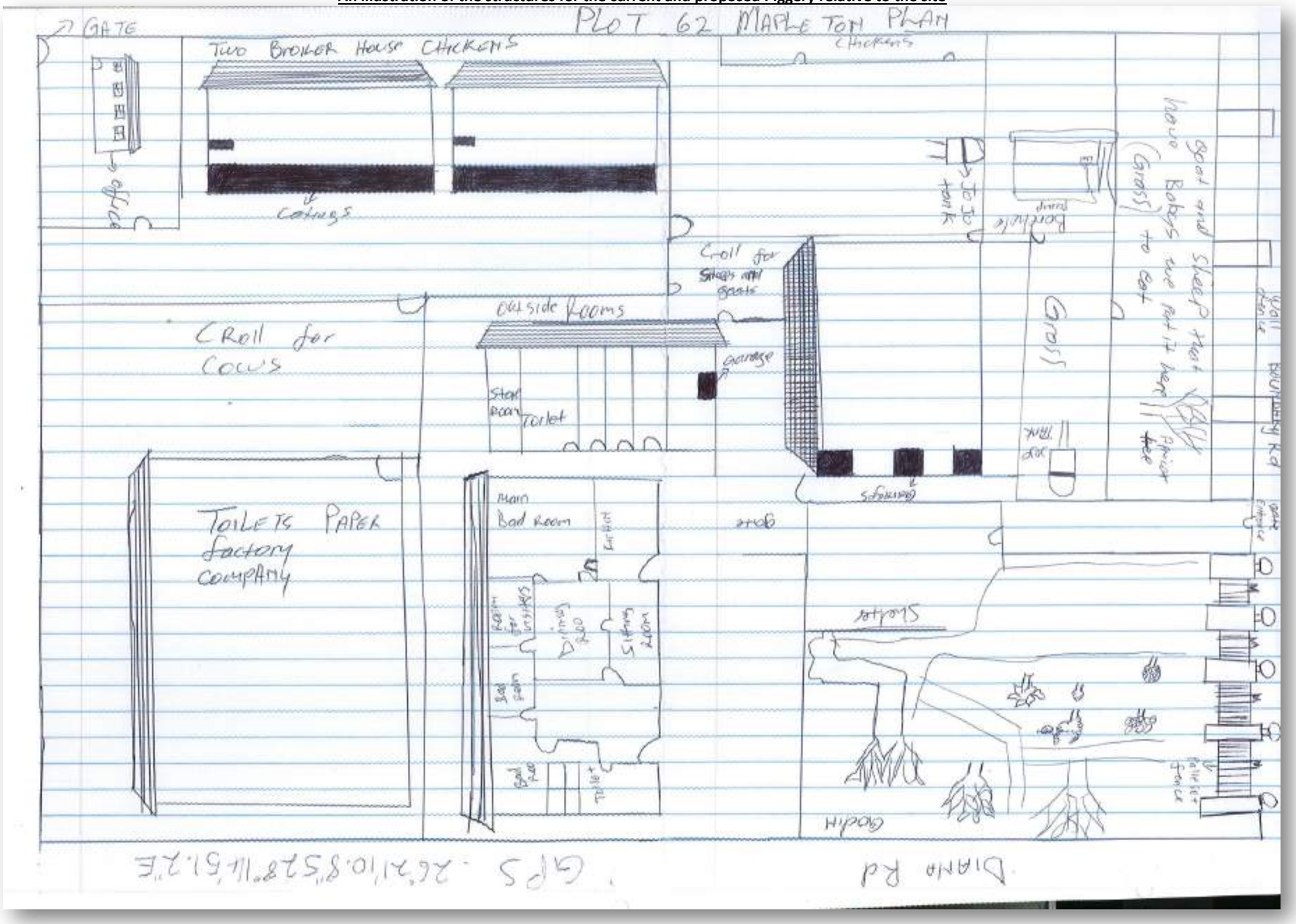
contents

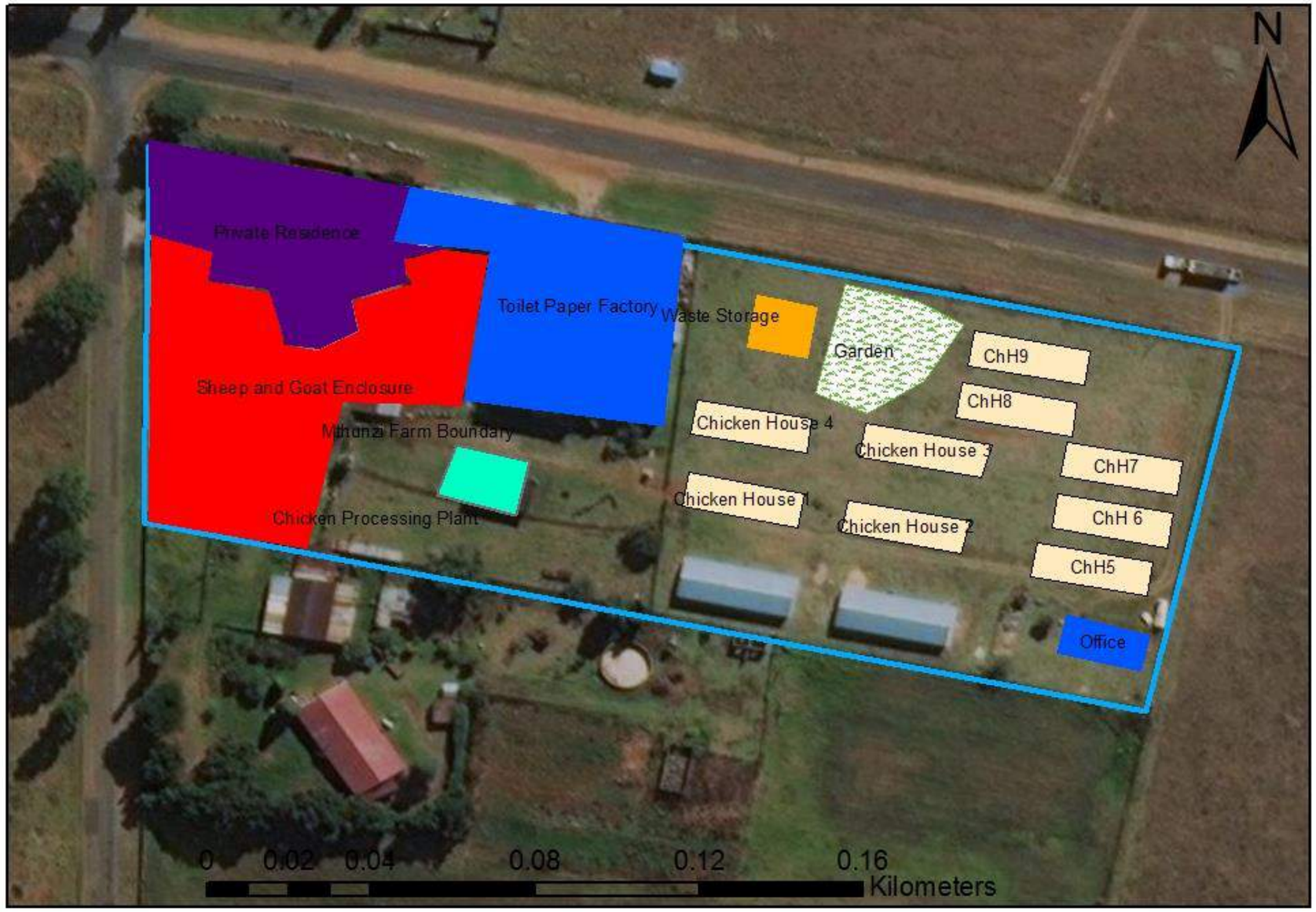
Site Photographs taken in the eight major compass directions



contents

An illustration of the structures for the current and proposed Piggery relative to the site




N
Private Residence
Toilet Paper Factory
Waste Storage
Garden
ChH9
ChH8
Sheep and Goat Enclosure
Chicken House 4
Chicken House 3
ChH7
Mthonzi Farm Boundary
Chicken House 1
Chicken House 2
ChH 6
Chicken Processing Plant
ChH5
Office
0
0.02
0.04
0.08
0.12
0.16
Kilometers

BASIC ASSESSMENT REPORT

APPENDIX E: PUBLIC PARTICIPATION

contents

Appendix E1: Proof of Site Notice

English and Isizulu Site notices placed at the entrance of the proposed expansion site


Indawo ye-Mthunzi Chicken Supplier
Project (e-Goli)
ISAZISO NGOQHUBO LOKUHLOLA SISEKELO


Indawo ye-Mthunzi Chicken Supplier
Project (e-Goli)
PERSEEL
PLOT 62
MAPLETON

Contents of the English Site notice

Mthunzi Chicken Supplier
Project Site (Gauteng)

NOTICE OF A BASIC ASSESSMENT (BA) PROCESS

Notice is hereby given, in terms of the Environmental Impact Assessment (EIA) Regulations, under sub-regulation 41(1) and sub-regulation 41(4), published in Government Gazette No 40772 of 7 April 2017, of the National Environmental Management Act, 1998 (Act No 107 of 1998), that **Mthunzi Chicken Supplier**, proposes to **develop an abattoir and expand their existing broiler chicken enterprise** on **plot 62, Mapleton**, in the **Ekurhuleni, Gauteng**.

The Council for Scientific and Industrial Research (CSIR), as the independent Environmental Assessment Practitioner, will manage the required Basic Assessment process for the proposed project. The project will be registered with the Gauteng Department of Agriculture & Rural Development (GDARD). The need for a Basic Assessment is triggered by the following activities listed in Government Notice Regulations (GNR) 326 of 7 April 2017:

Government Notice	Listed Activity Number
GNR 327, 7 April 2017	3 (i)
GNR 327, 7 April 2017	40 (ii)

To obtain further information with regards to the project and Basic Assessment process, or to register as Interested and Affected Party (I&AP), please contact:

Ms. Rirhandzu Marivate
PO Box 320, Stellenbosch, 7599
Tel: 021 888 2432
Fax: 021 888 2693
Email: rmarivate@csir.co.za

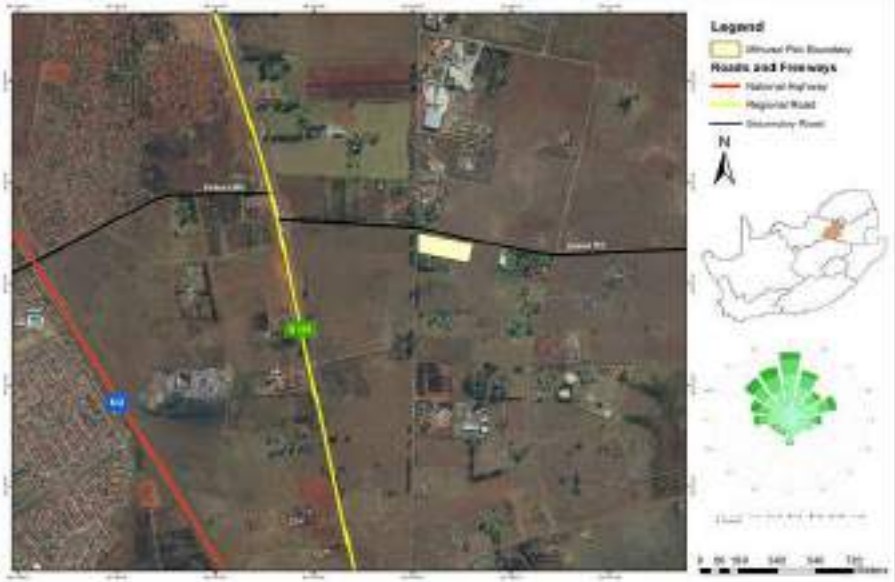


Figure 1:General Locality Map of the proposed extension of the chicken broiler facility

Contents of the Isizulu Site notice

Indawo ye-Mthunzi Chicken Supplier Project (e-Goli)

ISAZISO NGOQHUBO LOKUHLOLA SISEKELO

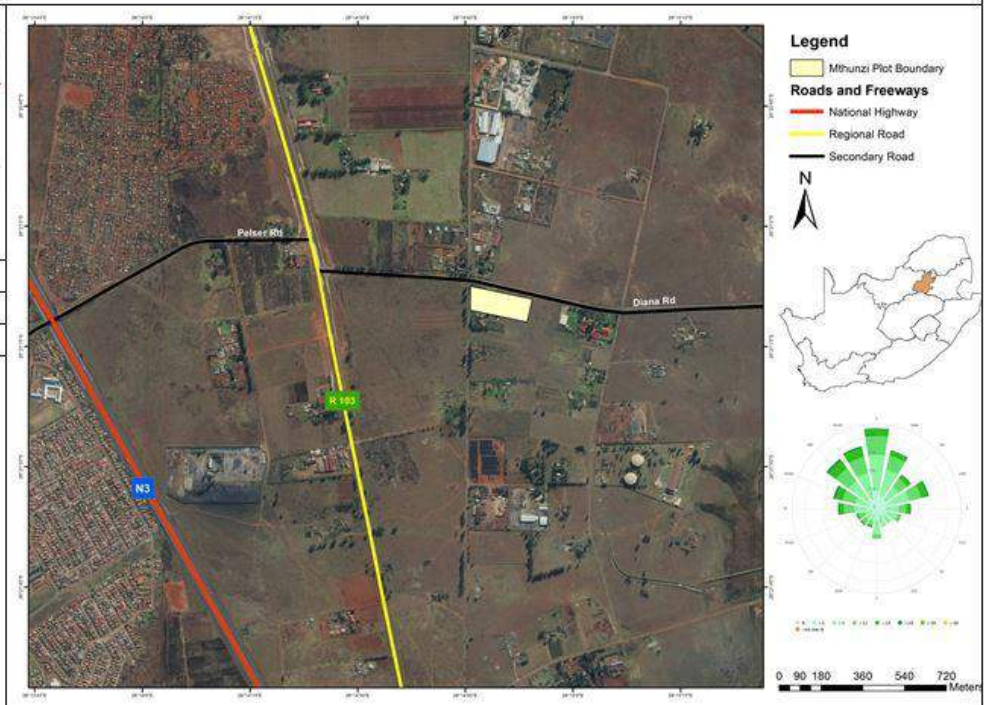
ISaziso sikhishwa ngokweMithethonqubo yokuHlola Umthelela kwezeMvelo (Environmental Impact Assessment (EIA), kwisigatshana somthethonqubo 41(1) kubengaphansi komuthethonqubo 41(4), enyatheliswe kwi Gazette Ka Hulumeni nombolo 40772 ka 7 April 2017, kumthetho i-National Environmental Management Act, 1998 (Act No 107 of 1998), ukuba i-**Mthunzi Chicken Supplier**, ihlongoze ukuqhuba ibhizinisi **lokukhulisa noku hlinza inzinkukhu (chicken broiler enterprise and abattoir)** endaweni yase **Mapleton, Boksburg** kumasipala wase-**Ekurhuleni, e-Goli.**

i-Council for Scientic and Industrial Research (i-CSIR), njenge Environmental Assessment Practitioner ezimele, izophatha imisebenzi ehambisana ne-Basic Assessment Process mayelana nalephrojekthi ephakamisiwe. Iphrojekthi izobhaliswe ne-Gauteng Department of Agriculture and Rural Development (GDARD). Isidingo se-Basic Assessment silethwa ilemisebenzi elandelayo ebaliwe kwimithethonqubo ye-Saziso sika Hulumeni 326 of 7 April 2017:

Isaziso sika Hulumeni	Inombolo yomsebenzi Obaliwe
GNR 327, 7 April 2017	3(i)
GNR 327, 7 April 2017	40(ii)

Ukuthola ulwazi ngalephrojekthi nokuhamba kwe-Basic Assessment, noma ufuna ukwaziwa njengo muntu othikamezekayo i-lephrojekthi, sicela uxhumane nathi kulemininingwane elandelayo:

Ms. Rirhandzu Marivate
PO Box 320, Stellenbosch, 7599
Tel: 021 888 2432
Fax: 021 888 2693
Email: rmarivate@csir.co.za



Isithombe 1: Indawo ye Sakhiwo 62 Mapleton Agricultural Holdings elisendaweni yase Boksburg, okuyilapho okuzoba qhutshwa kona ibizinisi ya izinkukhu.

Appendix E2: Written notices issued as required in terms of the regulations

Letter sent (11/08/17) to I&APs as part of Project Announcement

CSIR Implementation Unit
PO Box 320
Stellenbosch
7599
South Africa
Tel: +27 21 888 2432
Fax: +27 21 888 2693
Email: rmarivate@csir.co.za

11 August 2017

Dear Interested and/or Affected Party

PROPOSED EXPANSION OF COMMERCIAL CHICKEN BROILER FACILITY ON A 2.57 HECTARE FARM ON PLOT 62, MAPLETON, BOKSBURG, EKURHULENI METROPOLITAN, GAUTENG (CSIR/IU/021SE/IR/2017/0009/A)

The National Department of Environmental Affairs (DEA) and the Council for Scientific and Industrial Research (CSIR) have initiated the Special Needs and Skills Development Programme, whereby small-medium micro-enterprises and community trusts who are lacking financial means are provided with *pro-bono* environmental services to decrease the burden of the cost associated with starting a business. Mthunzi Chicken Supplier (Pty) Ltd has been identified as an eligible client for this service and is proposing to expand their chicken broiler facility, and develop a chicken abattoir. Mthunzi Chicken Supplier currently has 2 chicken houses that have a capacity of 5000 chickens in total. The expansion entails an addition of 4 more chicken houses that will hold a total of 10 000 chickens.

In terms of Government Notice Regulations (GNR) 326 of 7 April 2017of the National Environmental Management Act (Act 107 of 1998) published in Government Gazette 40772 on 7 April 2017, Environmental Authorisation from the Competent Authority, in this case the Gauteng Department of Agriculture & Rural Development (GDARD) is required prior to the undertaking of any activity triggered within GNR 324, 325 and/or 327. The need for a Basic Assessment process is required by the inclusion of the activities listed within GNR 327: Activity 3 (i) & 40 (ii). The CSIR, as the independent Environmental Assessment Practitioner (EAP), will be managing the Basic Assessment and Public Participation Process for this proposed project.

In line with the Environmental Impact Assessment requirements of 7 April 2017, Interested and Affected Parties (I&APs) must be notified and are requested to register for this project in order to receive future correspondence on this project and/or provide comments on issues of concern that will be considered during the Basic Assessment process. Please find enclosed with this letter a Background Information Document (BID) and a Comment and Registration form. You have until on or before **11 September 2017** to register and submit your comments for this project. To register and submit comments for the project please complete the Registration Form. Use the CSIR Reference Number above together with your full name, contact details (preferred method of notification, e.g., full postal or email address), fax/phone number(s) and an indication of any direct business, financial, personal or other interest you have in the application to the contact person listed below.
From this point onwards, all communication and documents will be in English.

Yours sincerely,

Ms. Rirhandzu Marivate
Postal address: PO Box 320, Stellenbosch, 7599, South Africa
Tel: 021 888 2432
Fax: 021 888 2693
E-mail: rmarivate@csir.co.za
Website: http://www.csir.co.za/ems/specialneeds/

Letter sent (06/09/17) to I&APs as part of Project Announcement

From: Karabo Mashabela
To:
BC bonginkosi.zulu@drdlr.gov.za; mashuduma@daff.gov.za; thokob@daff.gov.za; MohapiN@dwa.gov.za; MuthraparsadN@dwa.gov.za; steven.mukhola@gauteng.gov.za; karabo.mohatla@gauteng.gov.za; khalele.njoni@gauteng.gov.za; phuti.matlamela@gauteng.gov.za; albert.marumo@gauteng.gov.za; MusekeneM@dwa.gov.za; RakgothoT@dwa.gov.za; bethuel.netshiswinzhe@gauteng.gov.za; phindile.mbanjwa@gauteng.gov.za; maphata.ramphele@gauteng.gov.za; Zingisa.Smale@gauteng.gov.za; celiam@tshwane.gov.za; lelokop@tshwane.gov.za; shanellec@tswane.gov.za; minetteb@tswane.gov.za; rudzanim@tshwane.gov.za; mamphekoamos@yahoo.com; mokwena@gmail.com; tsakgwe@gmail.com; tumi.lehabe@wessa.co.za; adamp@ewt.org.za; ewt@ewt.org.za; Sfoya@geoscience.org.za; advocacy@birdlife.org.za; howard.hendricks@sanparks.org; Victoria Bota (HO); Khathutshelo Ramavhoya (HO)

Date: 11/08/2017 09:34

Subject: Notification of Release of BID for Basic Assessment for the expansion of a Chicken Broiler Facility on a 2.57 hectare farm on plot 62, Mapleton, Ekurhuleni District, Gauteng Province

Attachments: 2017 BID; Comments & Reg Form.docx; Letter to I&APs_BID.docx

Good morning,

You are hereby notified about the release of the Background Information Document (BID) regarding a Basic Assessment for the expansion of a Chicken Broiler Facility on a 2.57 hectare farm on plot 62, Mapleton, Ekurhuleni District, Gauteng.. Please find attached the BID, which has been released for 30 day review, and the Registration/ Comment Form. Please return on or before 09 October 2017.

Should the contents of this project not pertain to you, kindly forward the documents to the person in your department that is affected. Additionally, please forward their contact details to the CSIR Project Manager or ask the affected party to contact the CSIR Project Manager. Should you wish to be registered or de-registered from receiving any further information during the Basic Assessment and Public Participation Process, kindly contact the CSIR Project Manager. Correspondence in this regard should preferably be written, i.e. Email, Fax or Letter.

Contact via: Ms Karabo Mashabela
Email: *kmashabela1@csir.co.za*

Tel: 021 888 2482
Fax: 021 888 2693

Postal: PO Box 320
Stellenbosch
7599
South Africa

Regards,
Karabo

Postal List for mail sent :Project Announcement documents

Name & Signature of person responsible for post: _____

24 items – **Registered Post** (Mthunzi Chicken Supplier) Rirhandzu Marivate 021 8882 432 (11 August 2017)

Project Number: EMS0136/ 021SE

Gauteng Department of Agriculture and Rural Development Mr Lebogang Maile PO Box 8769 Johannesburg 2000	Gauteng Department of Agriculture and Rural Development Ms Thandeka Mbasa-Sigabi PO Box 8769 Johannesburg 2000	Gauteng Department of Agriculture and Rural Development Mokutu Nketu PO Box 8769 Johannesburg 2000
Gauteng Department of Agriculture and Rural Development Kholofelo Malomane PO Box 8769 Johannesburg 2000	City of Ekurhuleni Mr Hezekiel Nkosi Private Bag X1069 Germiston 1400	The Endangered Wildlife Trust Stephanie Aken Private Bag X11 Modderfontein 1609
Gauteng Department of Agriculture and Rural Development Karabo Mohatla PO Box 8769 Johannesburg 2000	Gauteng Department of Agriculture and Rural Development Steven Mukhola PO Box 8769 Johannesburg 2000	Gauteng Department of Agriculture and Rural Development Phuti Matlamela PO Box 8769 Johannesburg 2000
Department of Economic Development Mr Lebogang Maile Private Bag X091 Marshalltown 2107	Department of Economic Development Ms Phindile Mbaniwa Private Bag X091 Marshalltown 2107	Department of Water and Sanitation Ms M Musekene Private Bag X313 Pretoria 0001
National Department of Agriculture, Forestry and Fisheries Thoko Buthelezi Private Bag X120 Pretoria 0001	National Department of Environmental Affairs Mmatlala Rabothata Fedsure Building Private Bag X447 315 Pretorius Street Pretoria 0002	National Department of Rural Development and Land Reform Una-Bonginkosi Zulu Fedsure Building Private Bag X447 315 Pretorius Street Pretoria 0002
South African Poultry Association Kevin Lovell PO Box 1202 Honeydew 2040	National Department of Agriculture, Forestry and Fisheries Mashudu Marubini Private Bag X138 Pretoria 0001	South African Heritage Resources Agency (SAHRA) Mr Dumisani Sibayi PO Box 4637 Cape Town 8000

The Endangered Wildlife Trust, Carla van Rooyen Private Bag X11, Modderfontein, 1609, Johannesburg	The Endangered Wildlife Trust, Dr H Davies-Mostert Private Bag X11, Modderfontein, 1609, Johannesburg	GDARD waste management Zingisa Smale PO Box 8769, Johannesburg, 2000
Birdlife Simon Gear PO Box 515 Randburg, 2194	South African National Parks (SANParks) Dr Howard Hendricks PO Box 787, Pretoria, 0001	ARC-Onderstepoort Veterinary Institute (ARC-OVI) Jackson Maeta Private Bag X 05, Onderspoort,0110
South African National Biodiversity Institute (SANBI) – Invasive plants Michael Cheek Durban 4000	Council for Geoscience Private Bag x112, Pretoria 0001	

Name & Signature of person responsible for post: F. Hewlett

24 items – **Registered Post** (Mthunzi Chicken Supplier) Rirhandzu Marivate 021 8882 432 (11 August 2017)

Project Number: EMS0136/ 021SE

Gauteng Department of Agriculture and Rural Development Mr Lebogang Maile PO Box 8769 Johannesburg 2000	Gauteng Department of Agriculture and Rural Development Ms Thandeka Mbasa-Sigabi PO Box 8769 Johannesburg 2000	Gauteng Department of Agriculture and Rural Development Mokutu Nketu PO Box 8769 Johannesburg 2000
Gauteng Department of Agriculture and Rural Development Kholofelo Malomane PO Box 8769 Johannesburg 2000	City of Ekurhuleni Mr Hezekiel Nkosi Private Bag X1069 Germiston 1400	The Endangered Wildlife Trust Stephanie Aken Private Bag X11 Modderfontein 1609
Gauteng Department of Agriculture and Rural Development Karabo Mohatla PO Box 8769 Johannesburg 2000	Gauteng Department of Agriculture and Rural Development Steven Mukhola PO Box 8769 Johannesburg 2000	Gauteng Department of Agriculture and Rural Development Phuti Matlamela PO Box 8769 Johannesburg 2000
Department of Economic Development Mr Lebogang Maile Private Bag X091 Marshalltown 2107	Department of Economic Development Ms Phindile Mbanjwa Private Bag X091 Marshalltown 2107	Department of Water and Sanitation Ms M Musekene Private Bag X313 Pretoria 0001
National Department of Agriculture, Forestry and Fisheries Thoko Buthelezi Private Bag X120 Pretoria 0001	National Department of Environmnetal Affairs Mmatlala Rabothata Fedsure Building Private Bag X447 315 Pretorius Street Pretoria 0002	National Department of Rural Development and Land Reform Una-Bonginkosi Zulu Fedsure Building Private Bag X447 315 Pretorius Street Pretoria 0002
South African Poultry Association Kevin Lovell PO Box 1202 Honeydew 2040	National Department of Agriculture, Forestry and Fisheries Mashudu Marubini Private Bag X138 Pretoria 0001	South African Heritage Resources Agency (SAHRA) Mr Dumisani Sibayi PO Box 4637 Cape Town 8000

AgriLand Anneliza Collett Private Bag X120 Pretoria 0001	Grasslands Society of South Africa Feyni Du Toit P.O. Box 41 Hilton 3245	City of Ekurhuleni Dr Imogen Mashazi Private Bag X1069 Germiston 1400
Mthunzi Chicken Supplier (Pty) Ltd Mr Zakhele Hlungwane 82 Monareng Street Vosloorus Boksburg 1475	National Agricultural Council Ndumiso Mazibuko Private Bag X 935 PRETORIA 0001	Department of Water and Sanitation Ms T Rakgotho Private Bag X313 Pretoria 0001

Appendix E3: Proof of newspaper advertisements

Contents of the Newspaper advertisement in English published in the Ekurhuleni News on 11/08/17

Notice of Basic Assessment for the expansion of a Chicken Broiler Facility on a 2.57 hectare farm on plot 62, Mapleton, in Boksburg, Ekurhuleni District, Gauteng.

CSIR Reference No: CSIR/IU/021SE/IR/2017/0009/A

Notice is given of a Basic Assessment (BA) process being undertaken on behalf of Mthunzi Chicken Supplier (the Project Applicant) for the **proposed the development of a poultry abattoir and expansion of their existing chicken broiler facility, Bokspurg, in Ekurhuleni District, Gauteng.**

In terms of the NEMA EIA Regulations published in Government Notice Regulation (GNR) 327 and 324 on 4 April 2017 Government Gazette Number 40772, a BA process is required as the project triggers the following listed activities: *GNR 327 Activity 3(i) and Activity 40.* The Council for Scientific and Industrial Research (CSIR) is the Environmental Assessment Practitioner (EAP) who will be managing the process.

You are invited to register as an Interested and/or Affected Party (I&AP) and/or to provide any written comments on the BA process. To obtain further information, to comment and/or to register as an I&AP, please site the CSIR Reference Number and provide your full name, full postal address, phone numbers, email address and state your area of interest and/or concern to: **Ms. Rirhandzu Marivate, CSIR, PO Box 320, Stellenbosch 7599, Phone: (021) 888 2432, Fax: (021) 888 2693 or Email: rmarivate@csir.co.za**. You have until on or before **11 September 2017** to do so (30 days from the date of this publication - including weekends, but excluding public holidays).

<u>Newspaper advertisement in English published in Ekurhuleni on 11 August 2017</u>

011 045 3643 | 081 278 6052 |081 768 2014 10-17/08/ 2017 Ekurhuleni News website: www.ekurhulenews.co.za | facebook: Ekurhuleni News 3

Botshepi Talent Promotions

Cedrick Moloko is originally from Limpopo but came to Johannesburg at the age of 15. Cedrick resides in Daveyton, Barcelona, he is the owner of Botshepi Talent Promotions (BTP) that was founded in January 2017. The aim of BTP is to recruit the young talents in the community with the aim of keeping them out of the streets, because he believes that this project will assist these youngsters to inspire change in their communities and also to alleviate drug abuse, which he believes is one of the biggest challenges in the country.

Fifi Boroko

BTP is lead by Cedrick Moloko, Sbusiso Mguni, Lerato Matabola and Goodman Sambo. The team believes that not only will youngsters be participating in a project for change but also get an opportunity to explore their individual talents, which is most likely to take their lives to the next level in the future. Cedrick mentioned that his relationship with the youngsters along with his team members is growing and impressively so, as they understand and respect one another.

On Saturday the 29 July BTP held a fashion show at Sazakhele Primary School in Barcelona Ext 32. The purpose of the fashion show was to motivate youngsters and to remind them about their talents. BTP invited parents to witness their children's work. Moloko said the event went well despite the limited time they had to use the premises. He further compared the fashion show to the first event that they hosted. He excitedly described the fashion show as epic as the attendance was on a greater level.

One of the team members of BTP, Goodman Sambo, who also resides in Barcelona is the head of the Drama department since June 2017, however Sambo wasn't always head of this department, he came on board in April 2017 as one of the youngsters who participate in the project. Sambo has always had a keen interest in the Performing Arts; before joining BTP he worked in the marketing department in a programme named Youth in Admission Programme that focuses on event management. Steven, who is one of the youngsters participating in BTP said that he joined the program two months ago, and he is happy to be a part of this programme. He believes that it keeps him away from negative activities.

Notice of Basic Assessment for the expansion of a Chicken Broiler Facility on a 2.57 hectare farm on plot 62, Mapleton, in Boksburg, Ekurhuleni District, Gauteng.

CSIR Reference No: [illegible]

Notice is given of a Basic Assessment (BA) process being undertaken on behalf of Mthunzi Chicken Supplier (the Project Applicant) for the **proposed development of a poultry abattoir and expansion of their existing chicken broiler facility, Boksburg, in Ekurhuleni District, Gauteng.**

In terms of the NEMA EIA Regulations published in Government Notice Regulation (GNR) 327 and 324 on 4 April 2017 Government Gazette Number 40772, a BA process is required as the project triggers the following listed activities: GNR 327 Activity 2(i) and Activity 40(i). The Council for Scientific and Industrial Research (CSIR) is the Environmental Assessment Practitioner (EAP) who will be managing the process.

You are invited to register as an Interested and/or Affected Party (I&AP) and/or to provide any written comments on the BA process. To obtain further information, to comment and/or to register as an I&AP, please cite the CSIR Reference Number and provide your full name, full postal address, phone numbers, email address and state your area of interest and/or concern to: **Ms. Rirhandzu Marivate, CSIR, PO Box 320, Stellenbosch 7599, Phone: (021) 888 2432, Fax: (021) 888 2693 or Email: rmarivate@csir.co.za.** You have until on or before 11 September 2017 to do so (30 days from the date of this publication - including weekends, but excluding public holidays).

CSIR

PHYSICAL ADDRESS
233 ELAND STREET
DAWN PARK X7
BOKSBURG

CONTACT US
TELL: 011 045 3643
FOR ADVERTISING
081 278 6052
081 768 2014

CONTACT US DIGITALY

Ekurhuleni News
Press Council

Appendix E4: Communications to and from interested and affected parties Comments from Ekurhuleni Municipalities

(In response to Project Announcement documents)

Emailed: Comments from Ekurhuleni Municipality Ms Cecilia Rakgoale

Kindly register this Environmental Resource Management Department as interested and affected party on behalf of the municipality and forward a hard copy and 3cds to:

Attention: Mr Stewart Green

Environmental Resource Management Department

Division Head: Legislative Compliance

Cnr Hendrick Potgieter and Van Riebeeck Avenue

Edenvale

Office no. 201/205/214 First Floor

Email: cecilia.rakgoale@ekurhuleni.gov.za or Lillian.kwakwa@ekurhuleni.gov.za

Tel: (011) 999 3316/3171

Regards,

Cecilia Rakgoale

Environmental Assessment Practitioner

Legislative Compliance Division

Environmental Resource Management Department

Ekurhuleni Metropolitan Municipality

Tel: (011) 999 3316

Cell: 084 492 3655

Fax: (086) 506 8177

Email: Cecilia.rakgoale@ekurhuleni.gov.za

Emailed: Comments from Mr Johan Stoop Neighbour dated 25 August 2018

Good day my name is Johan Stoop and I am the owner of plot 63 next to plot 62. I believe my neighbour is in the proses of building a chicken abattoir on his premises.

I have a few concerns,

1) How is the waste water from the abattoir going to be disposed of, ranch drains cannot be used because the ground water in the area is used by residents as drinking water as they are dependent on boreholes. Contamination of our ground water is a big concern.

2) How is the feathers and other solid waste going to be disposed of?

3) The flies how are they going to be controlled.

4) Un pleasant smells and odours is of great concern.

Then there is another big concern, this development has not been advertised by the owner on the property boundary's as required by law for 90 days and as the cut off date for comments and to registration objections is on 11 September. I got the info from the DA councillor for this ward.

Please register me for all further communication and development of this project.

I also would like a copy of the environmental impact study that must be done.

Regards

Johan Stoop

To: Whom it may concern.

Good day my name is Johan Stoop and I am the owner of plot 63 next to plot 62. I believe my neighbour is in the proses of building a chicken abattoir on his premisis.

I have a few concerns.

1) How is the waste water from the abattoir going to be disposed of, reach drains can not be used because the ground water in the area is used by residents as drinking water as they are dependant on boreholes. Contamination of our ground water is a big concern.

2) How is the feathers and other solid waste goin to be disposed of?

3) The flies how are they going to be controlled.

4) Un pleasant smells and odors is of great concern.

Then there is a nother big concern, this development has not been advertised by the owner on the propperty boundary's as required by law for 30 days and so the cut off date for comments and to registrate objections is on 11 September. I got the info from the DA councillor for this ward.

Please register me for all futher communication and development of this project.

I also would like a copyy of the environmental impact study that must be done.

Regards

Johan Stoop

Sent from my Samsung Galaxy smartphone

Comments from Maxwell Buthelezi City of Ekurhuleni Environmental health practitioner

Comments from SAHRA: Dated 03 October 2017

Basic Assessment for the expansion of a Chicken Broiler Facility on a 2.57 hectare farm on plot 62, Mapleton, Ekurhuleni District, Gauteng.

CSIR EMS Reference Number: CSIR/IU/021SE/IR/2017/0009/A

COMMENT AND REGISTRATION FORM **(AUGUST 2017)**

Name: MAXWELL BUTHELEZI	**Telephone:** 011 999 5238 / 5371
Organisation: City of Ekurhuleni (EH)	**Fax:**
Position: Environmental Health practitioner	**Email:** Maxwell.Buthelezi@ekurhuleni.gov.za /
Physical address: 19934 Bierman road, Vosloorus Extension 29	**Postal address:** terence.Munyai@ekurhuleni.gov.za

Please indicate if you would like to register as an Interested and Affected Party (I&AP). Registration is required in order to receive further correspondence during the Basic Assessment Process. Please tick the appropriate box.	
YES	X
NO	

Please indicate if you have any interest (business, financial, personal or other) in the application for Environmental Authorisation:

No

Please describe any issues or concerns you may have regarding the proposed project, which you think should be considered during the Basic Assessment Process.

Management of chicken manure and bad odour
Disposal of dead chickens
Management of flies
Rodents Control
Compliance with chapter 14 of Ekurhuleni Municipality public health by-laws and all relevant legislations.

Please provide details of any other individuals or organisations that should be registered as I&APs:

Gauteng Department of Agriculture & Rural Development
011 240 2710/akanyang.ngakane@gauteng.gov.za (Abattoir licensing)

Please complete this Comment and Registration Form by (11 September 2017) and submit it to:

Ms. Rirhandzu Marivate
P O Box 320,
Stellenbosch, 7599
Tel: 021 888 2432
Fax: 021 888 2693
E-mail: rmarivate@csir.co.za

CSIR

Basic Assessment for the expansion of a Chicken Broiler Facility in Mapleton, Boksburg

Our Ref: 11499

an agency of the Department of Arts and Culture

T: +27 21 462 4502 | F: +27 21 462 4509 | E: info@sahra.org.za
South African Heritage Resources Agency | 111 Harrington Street | Cape Town
P.O. Box 4637 | Cape Town | 8001
www.sahra.org.za

Enquiries: Andrew Salomon
Tel: 021 462 4502
Email: asalomon@sahra.org.za
CaseID: 11499

Date: Tuesday October 03, 2017
Page No: 1

Letter

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

Attention: Mr Zakhele Hlungwane
Mthunzi Chicken Supplier (Pty) Ltd

Mthunzi Chicken Supplier (Pty) Ltd is a family owned business located on Plot 62, Diana Road, Mapleton, in Ekurhuleni (Cor-ordinates: 26°21' 10.8"S; 28°14' 51.2"E), which is 2.57 hectares in size . Mthunzi Chicken Supplier currently has infrastructure that can accommodate 5 000 broiler chickens, and plans to expand to more chicken broiler houses that will accommodate an additional 10 000 chickens.

Thank you for your notification regarding this development.

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

The quickest process to follow for the archaeological component is to contract an accredited specialist (see the web site of the Association of Southern African Professional Archaeologists www.asapa.org.za) to provide a Phase 1 Archaeological Impact Assessment Report. This must be done before any large development takes place.

The Phase 1 Impact Assessment Report will identify the archaeological sites and assess their significance. It should also make recommendations (as indicated in section 38) about the process to be followed. For example, there may need to be a mitigation phase (Phase 2) where the specialist will collect or excavate material and date the site. At the end of the process the heritage authority may give permission for destruction of the sites.

Where bedrock is to be affected, or where there are coastal sediments, or marine or river terraces and in potentially fossiliferous superficial deposits, a Palaeontological Desk Top study must be undertaken to assess

Basic Assessment for the expansion of a Chicken Broiler Facility in Mapleton, Boksburg

Our Ref: 11499

an agency of the Department of Arts and Culture

T: +27 21 462 4502 | F: +27 21 462 4509 | E: info@sahra.org.za
South African Heritage Resources Agency | 111 Harrington Street, Cape Town
P.O. Box 4637 | Cape Town | 8001
www.sahra.org.za

Enquiries: Andrew Salomon
Tel: 021 462 4502
Email: asalomon@sahra.org.za
CaseID: 11499

Date: Tuesday October 03, 2017
Page No: 2

whether or not the development will impact upon palaeontological resources - or at least a letter of exemption from a Palaeontologist is needed to indicate that this is unnecessary. If the area is deemed sensitive, a full Phase 1 Palaeontological Impact Assessment will be required and if necessary a Phase 2 rescue operation might be necessary. **Please note that a nationwide fossil sensitivity map is now available on SAHRIS to assist applicants with determining the fossil sensitivity of a study area .**

If the property is very small or disturbed and there is no significant site the heritage specialist may choose to send a letter to the heritage authority motivating for exemption from having to undertake further heritage assessments.

Any other heritage resources that may be impacted such as built structures over 60 years old, sites of cultural significance associated with oral histories, burial grounds and graves, graves of victims of conflict, and cultural landscapes or viewscapes must also be assessed.

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

Yours faithfully

Andrew Salomon
Heritage Officer: Archaeology
South African Heritage Resources Agency

Phillip Hine
Acting Manager: Archaeology, Palaeontology and Meteorites Unit
South African Heritage Resources Agency

Basic Assessment for the expansion of a Chicken Broiler Facility in Mapleton, Boksburg

Our Ref: 11499

an agency of the Department of Arts and Culture

T: +27 21 462 4502 | F: +27 21 462 4509 | E: info@sahra.org.za
South African Heritage Resources Agency | 111 Harrington Street | Cape Town
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Enquiries: Andrew Salomon
Tel: 021 462 4502
Email: asalomon@sahra.org.za
CaseID: 11499

Date: Tuesday October 03, 2017
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ADMIN:
Direct URL to case: http://www.sahra.org.za/node/406698

Appendix E5: Minutes of any public and/or stakeholder meetings – Not Applicable

Appendix E6: Comments and Responses Report

***Please note that the comments are taken in verbatim from the comments provided by Interested and Affected Parties**

Comments received following the project announcement on 11 August 2017 (prior to the release of the Background Information Document)

ISSUES RAISED	COMMENTATOR	DATE	RESPONSE
Good day my name is Johan Stoop and I am the owner of plot 63 next to plot 62. I believe my neighbour is in the proses of building a chicken abattoir on his premises. I have a few concerns, 1) How is the waste water from the abattoir going to be disposed of, ranch drains cannot be used because the ground water in the area is used by residents as drinking water as they are dependent on boreholes. Contamination of our ground water is a big concern. 2) How is the feathers and other solid waste	Johan Stoop	Email: zs6jws13@gmail.com 25 August 2017	Thank you very much for the comments. All the impacts were addressed in the EMPR and your concerns were forwarded to the specialist and it has been address it in the specialist assessment. 1. There will be a waste storage tank on site to store additional waste as most of the waste will be used as a fertiliser for the garden. The chicken feathers will be burned in incineration

ISSUES RAISED	COMMENTATOR	DATE	RESPONSE
going to be disposed of? 3) The flies how are they going to be controlled. 4) Un pleasant smells and odours is of great concern. Then there is another big concern, this development has not been advertised by the owner on the property boundaries as required by law for 90 days and as the cut-off date for comments and to registration objections is on 11 September. I got the info from the DA councillor for this ward. Please register me for all further communication and development of this project. I also would like a copy of the environmental impact study that must be done. Regards			plants, buried in landfills or recycled into low quality animal feed 3. The feed spills and standing water will be cleaned daily. All the dead chickens will be collected and stored in a bin which will be emptied daily and disposed of at the incinerator. 4. The construction and operation of the abattoir will be in accordance to the GDARD guidelines management of an abattoir. The management of unpleasant odours has been addressed in the EMPR and it follows GDARD best practice guidelines. An electronic copy of the draft BAR will be emailed to Mr Johan Stoop to provide him with the opportunity to comment on the Draft BAR during the 30 day public commending period.

ISSUES RAISED	COMMENTATOR	DATE	RESPONSE
Johan Stoop			
Kindly register this Environmental Resource Management Department as interested and affected party on behalf of the municipality and forward a hard copy and 3cds to: Attention: Mr Stewart Green Environmental Resource Management Department Division Head: Legislative Compliance Cnr Hendrick Potgieter and Van Riebeeck Avenue Edenvale Office no. 201/205/214 First Floor Email: cecilia.rakgoale@ekurhuleni.gov.za or Lillian.kwakwa@ekurhuleni.gov.za Tel: (011) 999 3316/3171 Regards, Cecilia Rakgoale	*Cecilia Rakgoale* *Environmental Assessment Practitioner* *Legislative Compliance Division* *Environmental Resource Management Department* *Ekurhuleni Metropolitan Municipality* *Tel: (011) 999 3316*	12 August 2017	Thank you for the comment. We have registered Mr Stewart Green on the project database and an electronic copy of the Draft Basic Assessment Report will be forwarded to him as part of the notification of the release of the Draft BAR for public comment.

ISSUES RAISED	COMMENTATOR	DATE	RESPONSE
Environmental Assessment Practitioner Legislative Compliance Division Environmental Resource Management Department Ekurhuleni Metropolitan Municipality Tel: (011) 999 3316 Cell: 084 492 3655 Fax: (086) 506 8177 Email: Cecilia.rakgoale@ekurhuleni.gov.za			
	Maxwell Buthelezi City of Ekurhuleni Environmental health practitioner 19934 Bierman road, Vosloorus Extension 29	12 August 2017	Thank you for the comments. The comments have been addressed in the DBAr and the management actions have been included in EMPr.

ISSUES RAISED	COMMENTATOR	DATE	RESPONSE
Management of the chicken manure and bad odour.			A contamination plan and waste disposal regime has also been included in the EMPr which highlights how these impacts can be mitigated
Disposal of dead chickens			Chicken carcases will be collected daily or even when necessary, denatured (with relevant environmentally friendly chemicals) and disposed of according to the relevant municipal and GDARD guidelines. The development of mortality pits will be designed and lined with impermeable substances in accordance with advice from international best practice norms in order to prevent ground water contamination. The applicant will also seek guidance from relevant authorities' e.g. DAFF on best practice or consult their guidelines and norms and standards as applicable.

ISSUES RAISED	COMMENTATOR	DATE	RESPONSE
Management of fires			Safe storage on the premises for flammable materials will be designed. If artificial burning is considered necessary, the applicant will implement a fire management plan with emergency fire procedures. an effective fire break will be maintained between the facility and the surrounding natural environment. The workers will be educated about the fire management plan and emergency procedures with regular training and notices provided. Portable fire extinguishers and fire water hydrants (i.e. appropriate firefighting equipment) will be provided at the terminal as required. Mobile fire-fighting equipment will be provided. Fires are unlikely to occur and can be extinguished with and portable fire extinguishers. Rodents will be controlled by applying appropriate Rodent/pest control measures
Rodents control			
Compliance with chapter 4 of Ekurhuleni municipality public health by-laws and relevant legislation			

ISSUES RAISED	COMMENTATOR	DATE	RESPONSE

Appendix E7: Comments from I&APs on Basic Assessment (BA) Report - N/A at this stage of the BA process

ISSUES RAISED	COMMENTATOR	DATE	RESPONSE

Appendix E8: Copy of the register of I&APs

Company/organization	Name	Physical Address	Phone	Postal	Cell	Email	BID + letter 1 + comment form
NATIONAL							
Department of Environmental Affairs-National	Mmatlala Rabothata					mrabothata@environment.gov.za	email+post
Department of Environmental Affairs-National	Sibusisiwe Hlela					SHlela@environment.gov.za	email
Department of Environmental Affairs-National	Takalani Nemarude					tnemarude@environment.gov.za	email
Department of Rural Development and Land Reform	Bonginkosi Zulu					bonginkosi.zulu@drdlr.gov.za	email+post
Department of Agriculture, Forestry and Fisheries	Mashudu Marubini					mashuduma@daff.gov.za	email+post
Department of Agriculture, Forestry and Fisheries	Hettie Buys					HettieB@daff.gov.za	email+post
Department of Agriculture, Forestry and Fisheries (AgriLand and Liaison Officer)	Ms Thoko Buthelezi					thokob@daff.gov.za	email+post
National Department of Water Affairs	Ms Ndileka K mohapi					MohapiN@dwa.gov.za	email + post
National Department of Water Affairs	Namisha Muthraparsad					MuthraparsadN@dwa.gov.za	email + post
PROVINCIAL							
Department of Agriculture and Rural Development	Steven Mukhola					steven.mukhola@gauteng.gov.za	email+post
Department of Agriculture and Rural Development	Karabo Mohatla					karabo.mohatla@gauteng.gov.za	email+post
Department of Agriculture and Rural Development	Phuti Matlamela					phuti.matlamela@gauteng.gov.za	email+post

Company/organization	Name	Physical Address	Phone	Postal	Cell	Email	BID + letter 1 + comment form
Department of Health	Albert Marumo						email+post
Department of Water and Sanitation	Ms M Musekene					MusekeneM@dwa.gov.za	email+post
Department of Water and Sanitation	Ms T Rakgotho					RakgothoT@dwa.gov.za	email+post
Gauteng Department of Infrastructure Development	Bethuel Netshiswinzhe						email+post
Gauteng Department of Economic Development	Phindile Mbanjwa					Phindile.Mbanjwa@gauteng.gov.za	email+post
Gauteng Department of Agriculture and Rural Development	Akanyang Ngakane		011 240 2710			Akanyang.ngakane@gauteng.gov.za	
LOCAL MUNICIPALITY							
City of Ekurhuleni	Mr Stewart Green Cecilia Rakgoale	Cnr Hendrick Potgieter and Van Riebeeck Avenue Edenvale	011 999 3316/3171			Email: cecilia.rakgoale@ekurhuleni.gov.za or Lillian.kwakwa@ekurhuleni.gov.za	Email
City of Ekurhuleni	Maxwell Buthelezi		011 999 5238/5371			*Maxwell.Buthelezi@ekurhuleni.gov.za* Terence.munyai@ekurhuleni.gov.za	Email
Ward Councillor (Ward 45)	Janet Semple					jsemple@gpl.gov.za	Email
City of Ekurhuleni: City Manager	Dr Imogen Mashazi					city.manager@ekurhuleni.gov.za	
City of Ekurhuleni: Environmental Resource Management and Development	Mr Hezekiel Nkosi					hezekiel.nkosi@ekurhuleni.gov.za	
City of Ekurhuleni: Economic Development	Caiphus Chauke					caiphus.chauke@ekurhuleni.gov.za	

Company/organization	Name	Physical Address	Phone	Postal	Cell	Email	BID + letter 1 + comment form
City of Ekurhuleni: City Planning and Development	Motubatse Motubatse					motubatse.motubatse@ekurhuleni.gov.za	
City of Ekurhuleni: Water and Sanitation	Mduduzi Shabangu					mduduzi.shabangu@ekurhuleni.gov.za	
City of Ekurhuleni: Health and Social Development	Dr Gilbert Motlatla					gilbert.motlatla@ekurhuleni.gov.za	
City of Ekurhuleni: Enterprise Programme Management	Andile Mahlalutye					andile.mahlalutye@ekurhuleni.gov.za	
City of Ekurhuleni	Sterwart Green					sterwart.green@ekurhuleni.gov.za	
WARD COUNCILLORS							
CLIENT & NEIGHBOURS							
Client	Zakhele Hlungwane	82 Monareng Street, Vosloorus, 1475			'071 312 9327/ 082 321 4640	mthunzi.chickensupply@gmail.com	email
Neighbours	Johan Stoop				'084 749 4997	zs6jws13@gmail.com	Email
Neighbours	Karel Steyn	plot 65 Mablon			083 266 0168		
Neighbours	Vinnie Steyn	plot 65 Mablon			'011 901 1223		

BASIC ASSESSMENT REPORT

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

contents

Appendix 1: Water Use Licence application

Appendix 2: Waste Management Services

EKURHULENI METROPOLITAN MUNICIPALITY
№ 11651

ENVIRONMENTAL DEVELOPMENT
WASTE MANAGEMENT SERVICES DIRECTORATE
APPLICATION FOR AD HOC BULK CONTAINER SERVICE

I MR. J. HLUNGWANE in the capacity of OWNER
herewith apply on behalf of SELF for the rendering
of a bulk refuse container service of 6M³ m³ at the prescribed tariff
on the property situated on the stand 62 suburb MAPLETON
from PERMANENT and in the case of a business
(permanent contained) undertake to inform you in writing when the service must be
discontinued.
Address where container should be delivered PLOT 62 BOUNDARY
ROAD, MAPLETON, BOKSBURG Tel. No 0713129327
Cost of bulk container per lift R 1178.52 (V.A.T. excluded) irrespective
of the volume of refuse in the container. During the contract period the container can be
emptied on request for the same amount as indicated above. R1343.51
Account number 2202479730

DELIVERY CONDITIONS AND INDEMNITY.

MR. J. HLUNGWANE accept liability for the loss or damage to such
container and indemnifies the Ekurhuleni Metropolitan Municipality or any of its employees
against any claim for damages which may arise as a result of the delivery/removal of bulk
refuse containers or other waste from stand 62 and agree to the conditions as
detailed on the reverse side of this application.

SIGNATURE

WITNESS FOR THE MUNICIPALITY

DATE 21 AUGUST 2017

Appendix 4: Confirmation of Services by the municipality

Appendix 5: Provincial Heritage Resources Authority Gauteng Letter: Specialist Report attached in Appendix

Basic Assessment of the Proposed Expansion of a Chicken Broiler Facility on a 2.57 hectare farm on plot 62, Mapleton, Ekurhuleni District, Gauteng.

ECOLOGICAL STUDY

FINAL VERSION

October 2018

Prepared for:
Mthunzi Chicken Supplier (Pty) Ltd

Prepared by:
CSIR
P O Box 320, Stellenbosch, 7599
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Fax: +27 21 888 2473
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Authors:
Rirhandzu Marivate, Minnelise Levendal and Paul Lochner

EXECUTIVE SUMMARY

The Council for Scientific and Industrial Research (CSIR) conducted a terrestrial ecology study for the proposed expansion of a small-scale chicken broiler facility for Mthunzi Chicken Supplier (Pty) Ltd on Plot 62, Diana Road, Mapleton, Boksburg in Gauteng Province. The property of approximately 2.57 hectares is zoned for agriculture. On site, there are two existing vacant chicken houses (that can accommodate a total of 5000 broiler chickens), a toilet paper factory, private residence and a livestock enclosure. Mthunzi Chicken Supplier proposes to expand their facility on the property to a total of 20 000 chickens. The expansion will consist of constructing six new chicken houses accommodating an additional 15 000 chickens, an abattoir, waste storage facility and a vegetable garden. The total project footprint will be approximately 2 700 m² (i.e. 0.27 hectares).

The site falls within the Carletonville Dolomite Grassland vegetation type and the Critically Endangered Klipriver Highveld Grassland Ecosystem. Desktop research and a field investigation in November 2017 indicated that the site has been subjected to previous and current human and agricultural activities with little remaining natural vegetation. The plot was classified as a transformed vegetation unit, which consists of transformed grasses and herbaceous plants, with numerous exotic trees. Indigenous grasses and herbaceous plants found on site including *Eragrostis curvula, Haplocarpha scaposa, Helichrysum rugulosum* and *Asclepias fruticosa*. Additionally, the vegetation contains alien invasive plant species that are considered to be Category 1 (in the Alien and Invasive Species Regulations published in Government Gazette No. 37886, 1 August 2014) under the National Environmental Management: Biodiversity Act (Act 10 of 2004). These comprise of *Argemone ochroleuca, Cestrum aurantiacum, Cirsium vulgare, Solanum mauritianum* and *Solanum sisymbriifolium* and are required by law to be removed. The development site is situated within close proximity to a number of conservation important areas, including rivers, wetlands and habitats for conservation important species. However, the development site itself does not fall within any Ecological Support Areas (ESAs) or Critical Biodiversity Areas (CBAs); or include any NFEPA features.

Due to the transformation of the site, the ecological sensitivity is considered to be Low. Additionally, given the transformed nature of the site and that the neighbouring area is agricultural, potentially occurring Conservation Important fauna species were rated as being unlikely to occur on site.

The Table below gives a summary of the potential impacts of the proposed project on the ecology and biodiversity of the site, with and without mitigation measures.

Tale S1. Summary of impact significance, without and with mitigation

Potential Impacts on Ecology	Significance	
	Without mitigation	**With mitigation**
Construction phase		
1. Loss of transformed terrestrial vegetation and faunal habitat	*Low*	*Low*
2. Increase in occurrence and spread of alien plant species	*Low*	*Low*
3. Increased dust and erosion from construction activities	*Low*	*Low*
4. Sensory disturbance on fauna and flora from construction activities	*Low*	*Low*
Operation phase		
5. Sensory disturbance on fauna and flora from noise and lights from chicken facility	*Low*	*Low*
6. Contamination of environment from poor waste and chemical management	*Medium*	*Low*
7. Increase in prevalence of pests from poor hygiene and chicken waste management	*Medium*	*Low*
8. Increase of diseases from poor chicken waste management and prevalence of pests on native fauna	*Low*	*Low*
9. Contamination of environment from organic waste and blood from abattoir operations	*Medium*	*Low*
10. Altered burning patterns and accidental fires from human activities on site	*Low*	*Low*
Decommissioning phase		
11. Decommissioning and removal of buildings on the flora and fauna on site	*Medium*	*Low*

If the developer continues with the development, they will be required to remove the Category 1b alien invasive species onsite as per the Alien and Invasive Species Regulations (2014). The development of the chicken broiler facility with the implementation of the mitigation measures recommended in this report is predicted to result in an impact on ecology of low significance. Based on the site visit and the information that was available to date, it is the opinion of the CSIR that there are no fatal flaws to the project from an ecological perspective. If the recommended mitigation measures are implemented, the specialists have no objection to the project going forward.

Declaration

I, Rirhandzu Marivate, as the appointed independent specialist, in terms of the 2014 EIA Regulations, hereby declare that I:

- I act as the independent specialist in this application;
- I performed 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;
- regard the information contained in this report as it relates to my specialist input/study to be true and correct, and do not have and will not have any financial interest in the undertaking of the activity, other than remuneration for work performed in terms of the NEMA, the Environmental Impact Assessment Regulations, 2014 and any specific environmental management Act;
- 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 have no vested interest in the proposed activity proceeding;
- 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 have ensured that information containing all relevant facts in respect of the specialist input/study was distributed or made available to interested and affected parties and the public and that participation by interested and affected parties was facilitated in such a manner that all interested and affected parties were provided with a reasonable opportunity to participate and to provide comments on the specialist input/study;
- I have ensured that the comments of all interested and affected parties on the specialist input/study were considered, recorded and submitted to the competent authority in respect of the application;
- all the particulars furnished by me in this specialist input/study are true and correct; and
- I realise that a false declaration is an offence in terms of regulation 48 and is punishable in terms of section 24F of the Act.

Rirhandzu Marivate
SACNASP Reg. No. 100147/14 **31/10/2018**
(Environmental Science) **Date**

Requirements of Appendix 6 - GN R326 (7 April 2017)	Addressed in the Specialist Report
1. (1) A specialist report prepared in terms of these Regulations must contain- a) details of- i. the specialist who prepared the report; and ii. the expertise of that specialist to compile a specialist report including a curriculum vitae;	Page 4 & Appendix 5
b) a declaration that the specialist is independent in a form as may be specified by the competent authority;	Page 4
c) an indication of the scope of, and the purpose for which, the report was prepared;	Section 2
(cA) an indication of the quality and age of base data used for the specialist report;	Section 2
(cB) a description of existing impacts on the site, cumulative impacts of the proposed development and levels of acceptable change;	Section 6
d) the duration, date and season of the site investigation and the relevance of the season to the outcome of the assessment;	Section 2
e) a description of the methodology adopted in preparing the report or carrying out the specialised process inclusive of equipment and modelling used;	Section 3
f) details of an assessment of the specific identified sensitivity of the site related to the proposed activity or activities and its associated structures and infrastructure, inclusive of a site plan identifying alternatives;	Section 8
g) an identification of any areas to be avoided, including buffers;	Section 8
h) a map superimposing the activity including the associated structures and infrastructure on the environmental sensitivities of the site including areas to be avoided, including buffers;	Figure 18
i) a description of any assumptions made and any uncertainties or gaps in knowledge;	Section 3
j) a description of the findings and potential implications of such findings on the impact of the proposed activity or activities;	Section 9
k) any mitigation measures for inclusion in the EMPr;	Section 9
l) any conditions for inclusion in the environmental authorisation;	Section 10
m) any monitoring requirements for inclusion in the EMPr or environmental authorisation;	Section 9
n) a reasoned opinion- i. whether the proposed activity, activities or portions thereof should be authorised; (iA) regarding the acceptability of the proposed activity and activities; and ii. if the opinion is that the proposed activity, activities or portions thereof should be authorised, any avoidance, management and mitigation measures that should be included in the EMPr, and where applicable, the closure plan;	Section 10
o) a description of any consultation process that was undertaken during the course of preparing the specialist report;	Section 4
p) a summary and copies of any comments received during any consultation process and where applicable all responses thereto; and	N/A
q) any other information requested by the competent authority.	N/A
2. Where a government notice gazetted by the Minister provides for any protocol of minimum information requirement to be applied to a specialist report, the requirements as indicated in such notice will apply	N/A

CONTENTS

Appendix 1 **Plant species recorded in QDS 2628AC**

Appendix 2 **Fauna (excluding birds) that have been recorded in QDS 2628AC**

Appendix 3 **Birds that have been recorded in pentad (SABAP2 2018)**

Appendix 4 **Approach and terminology used for the impact assessment**

Appendix 5 **Curriculum Vitae of Rirhandzu Marivate**

GLOSSARY

Alien vegetation	Plants that do not occur naturally within the area but have been introduced either intentionally or unintentionally. Vegetation species that originate from outside of the borders of the biome -usually international in origin.
Biome	A broad ecological unit representing major life zones of large natural areas – defined mainly by vegetation structure and climate.
Critical Biodiversity Area	A CBA is an area considered important for the survival of threatened species and includes valuable ecosystems such as wetlands, untransformed vegetation and ridges. CBAs are required to meet biodiversity targets for ecosystems, species and ecological processes as identifies in a systematic biodiversity plan.
Ecological Support Area	An ESA provides connectivity and important ecological processes between CBAs and is therefore important in terms of habitat conservation.
Important Bird and Biodiversity Area	The IBA Programme identifies and works to conserve a network of sites critical for the long-term survival of bird species that: are globally threatened, have a restricted range, are restricted to specific biomes/vegetation types or sites that have significant populations.
Indigenous Vegetation	Vegetation occurring naturally within a defined area.
Red List species	Organisms that fall into the Extinct in the Wild (EW), Critically Endangered (CR), Endangered (EN), Vulnerable (VU) categories of threat status.
Species of Conservation Concern	All RDL (Red Data List) including IUCN (International Union for the Conservation of Nature) listed species as well as protected species of relevance to the project.
Critically Endangered species (CR):	Any indigenous species facing an extremely high risk of extinction in the wild in the immediate future
Endangered species (EN)	Any indigenous species facing a high risk of extinction in the wild in the near future, although it is not a CN species.
Vulnerable species (VU)	Any indigenous species facing an extremely high risk of extinction in the wild in the medium-term future; although it is not a CN species or an EN species
Protected species (PS)	Any species which is of such high conservation value or national importance that it requires national protection under NEM:BA ToPs List. Species listed in this category will include, among others, species listed in terms of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES).

1. INTRODUCTION

The Council for Scientific and Industrial Research (CSIR) has been appointed by the National Department of Environmental Affairs (DEA) to manage the Special Needs and Skills Development Programme. This programme provides *pro-bono* environmental services to community trusts and emerging entrepreneurs with "special needs", i.e. they are from disadvantaged backgrounds without access to financial and other resources that enable them to meet the requirements of the National Environmental Management Act (NEMA), which can then prevent them from implementing projects to support their livelihoods. The programme undertakes Basic Assessments for projects that require this assistance in applying for Environmental Authorisation. This led to the CSIR undertaking this Basic Assessment for Mthunzi Chicken Supplier (Pty) Ltd (Mthunzi Chicken Supplier) as the applicant qualifies as a special needs applicant and can therefore be assisted under this programme.

This Ecological Assessment was prepared by Rirhandzu Marivate of the CSIR, Cand. Sci. Nat., to inform the Basic Assessment for the expansion of a chicken broiler facility located on Plot 62, Diana Road, Mapleton, in Ekurhuleni (Co-ordinates: 26°21' 10.8"S; 28°14' 51.2"E), which is 2.57 hectares in size (Figure 1). The study investigates and assesses the potential impacts of the proposed development on the ecology and biodiversity of the site and surrounding area.

Mthunzi Chicken Supplier's property is zoned for agriculture. Mthunzi Chicken Supplier currently has 2 empty chicken houses that can accommodate 5 000 broiler chickens and plans to expand by 6 more chicken broiler houses that will accommodate an additional 15 000 chickens (total of 20 000 chickens). Additionally, Mthunzi Chicken Supplier proposes a chicken processing unit or abattoir.

The existing chicken facility has a footprint of approximately 0.5 hectares and consists of the following:

- 2 x 225 m² chicken houses (2500 chickens each house)
- 1 x Borehole
- 1 x Toilet paper factory
- 1 x Farm house
- The site also has a small number of livestock which include goats, cattle and sheep.

Mthunzi Chicken Supplier proposes to construct the following additional facilities with a total footprint of 0.27 hectares:

- 6 x 225 m² chicken houses (2500 chickens each house)
- 1 x 170 m² waste storage site (chicken manure)
- 1 x 180 m² processing unit (abattoir)
- 1 x 1000 m² vegetable garden.

The focus of this study is to determine the baseline ecological conditions of the site and surrounds as well as the potential impact that the development may have on the ecology of the area. The location of the project south-east of Mapleton, Boksburg, in the Ekhurleni District Municipality is provided in Figure 1 and the layout of the proposed development is provided in Figure 2.1 and Figure 2.2.

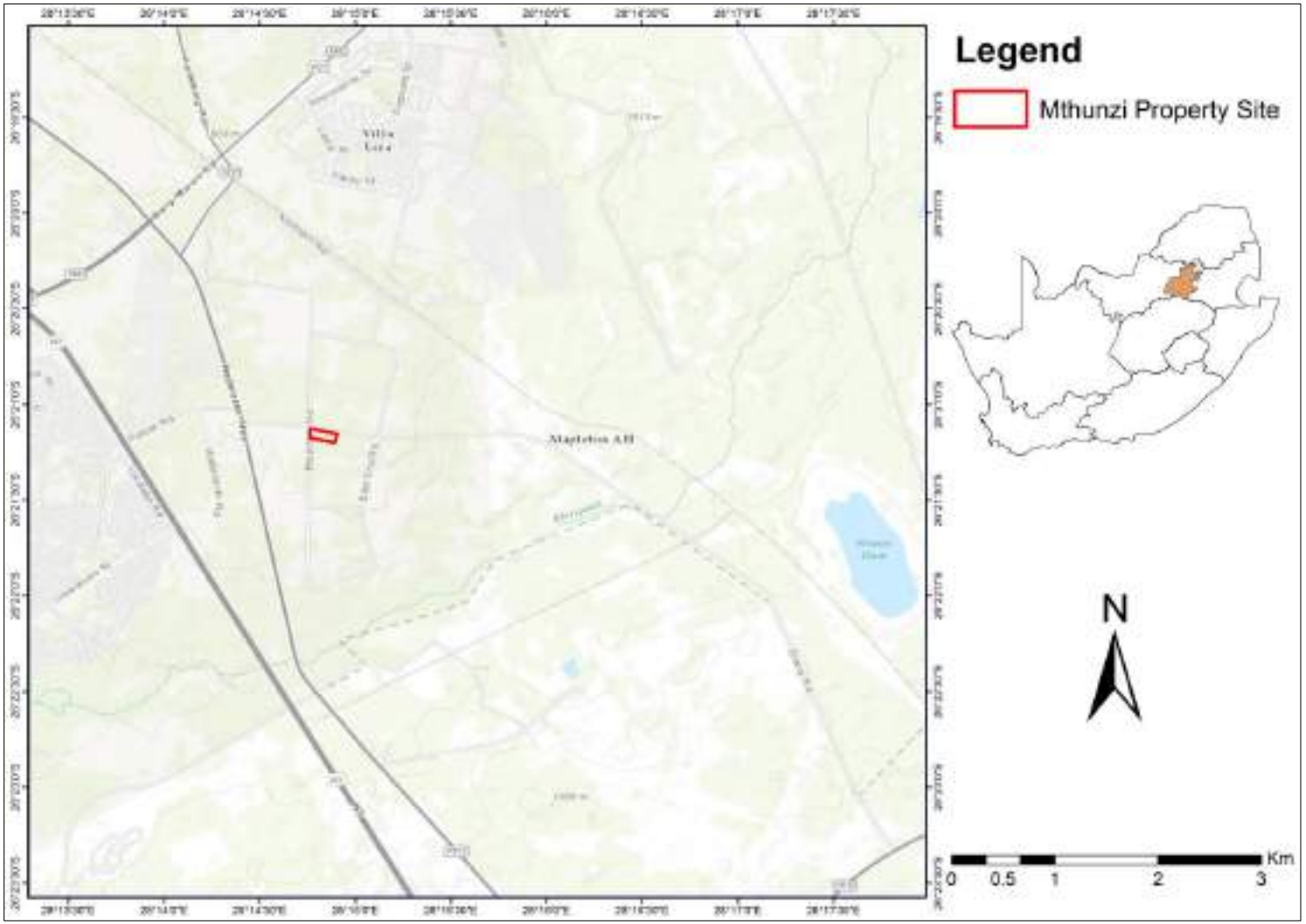

Figure 1: Location of Mthunzi development site, south-east of Mapleton, Boksburg, in the Ekurhuleni District Municipality, Gauteng Province. Source: Chief Surveyor General topographical map.

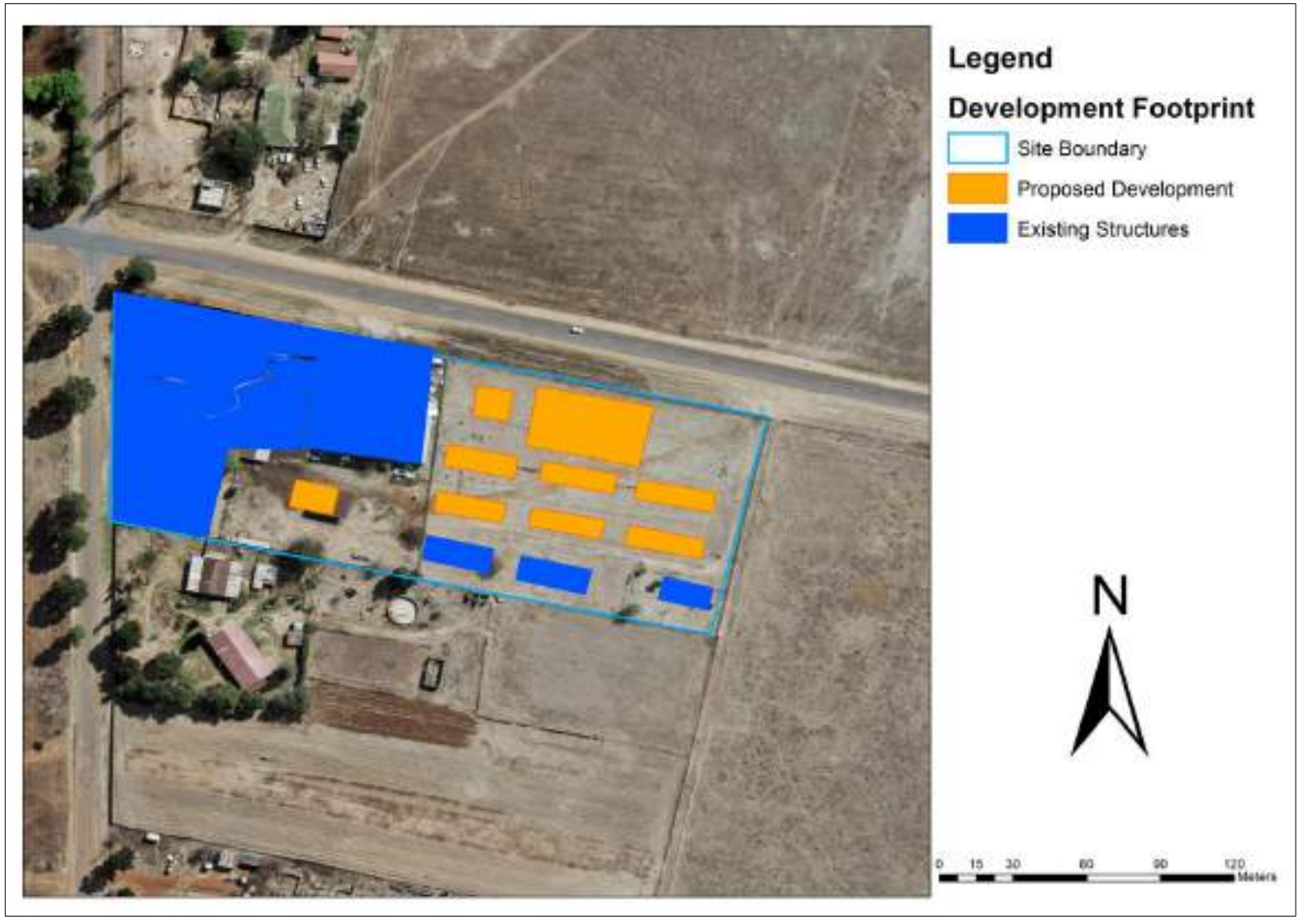

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Figure 2.1: Layout of existing and proposed development of chicken broiler facility. Source: Google Earth Imagery, 2018.

2. SCOPE OF THIS ECOLOGICAL STUDY

The objective of the study was to identify the potential impacts of the proposed expansion of the chicken layer facility on the ecology and biodiversity of the proposed site and surrounding habitat. The study investigated the terrestrial flora and fauna features which may be impacted by the proposed project as well as habitat diversity and quality on the study site using available datasets such as Red Data Species lists and Critical Biodiversity Areas. A site visit was then undertaken to verify the results of the environmental screening desktop analysis and recorded data on floral and faunal species present on the site.

The specific outcomes in terms of this ecology specialist report are:

- Determine the status and composition of faunal and floral habitats on the proposed site
- Identify any Species of Conservation Concern occurring on the study site.
- Identify sensitive landscapes including rocky ridges, wetlands, and any other ecologically important features, if present; and
- Identify and assess all potential ecological impacts that the proposed development may have on the study site, including Species of Conservation Concern
- Develop mitigation measures and management actions to be implemented in order to prevent or remediate these impacts.

These outcomes are provided at a level of detail appropriate to assessing the potential impacts of the proposed expansion of the chicken broiler facility on the receiving environment, as required under the EIA Regulations.

3. METHODOLOGY

This ecological assessment was conducted in the following steps:

1. A preliminary desktop study was done using publicly available datasets and satellite imagery (e.g. Google Earth). This preliminary screening was aimed at defining a baseline of the proposed site (e.g. biome, vegetation type, species of Conservation Concern), identifying any potential fatal flaws and determine the key features to ground-truth during the site visit. The following databases were consulted during the desktop study:
    - South African National Biodiversity Institute (SANBI) New Plants of Southern Africa (POSA) database (2017) obtained from Botanical Database of Southern Africa (BODATSA), which contains the National Herbarium Pretoria (PRE) Computerised Information System (PRECIS);
    - South African National Biodiversity Institute (SANBI) Threatened Species Programme (TSP, 2017);
    - Gauteng Conservation Plan Version 3.3 (C-Plan, 2011);
    - Mucina and Rutherford (2006);
    - National Biodiversity Assessment (NBA, 2011);

- Animal Demographic Unit, Virtual Museum (ADU, 2018), including online species distribution data within QDS 2628AC from:
    - MammalMAP (2018).
    - ReptileMAP (2018).
    - FrogMAP (2018).
    - LepiMap (2018) for butterflies.
    - OdonataMAP (2018) for dragonflies and damselflies.
    - ScorpionMAP (2018).
- Birdlife South Africa datasets and guidelines including sourcing frompentad 2615_2815 of the South African Bird Atlas Project (SABAP2, 2018).

2. The most recent Red Data List (International Union for Conservation of Nature, 2017), as well as regional red data information, the Gauteng Red List and Orange List Plant Species (GDARD, 2017) and Pretoria National Herbarium Computer Information Systems (PRECIS, 2009) was consulted.

3. A site visit was then undertaken in accordance with GDARD Biodiversity Study Guidelines (2014) on the 07 November 2017, aiming at verifying the desktop study results. Several Vegetation sampling points were performed on site as illustrated in Figure 3.

Please refer to Appendix 4 of this report for the methodologies relating to the impact assessment and development of mitigation measures.

Figure 2.2: Vegetation sampling points from survey conducted on 7 November 2017

4. ASSUMPTIONS AND LIMITATIONS

The following assumptions and limitations are applicable to this study:

- The ecological assessment was conducted within the boundaries of the proposed project area, and excluded the neighbouring and adjacent properties. These were, however, considered as part of the desktop assessment;
- Most of the floral and faunal communities have been considered and assessed accurately; however, some aspects may have been unknowingly overlooked due to the dynamic nature of ecosystems.
- The increased level of surrounding anthropogenic activities and the nature and behaviour of most faunal taxa may have affected the number of species that were observed during the site visit. The site observations were also supplemented by information obtained from literature/desktop study where necessary.

- The data presented in this report are based on a single site visit, undertaken in summer on 07 November 2017 by Rirhandzu Marivate and Babalwa Mqokeli of the CSIR.
- Due to the limited time spent on site and the date of the site visit, the apparent lack of detection of species on site does not mean that the species is not present at the site. Another site visit at a different time of the year e.g. during or following the summer rains could lead to the identification of other faunal and floral species and result in additional observations for the site.
- A more accurate assessment would require that assessments take place in all seasons of the year. However, on-site data was supplemented with all available desktop data. Nonetheless, the data available is considered sufficient for the purposes of this assessment.
- No formal stakeholder consultation process was undertaken as part of this study, apart from consulting with the project developer / land owner as well as the public participation process undertaken as part of the formal Basic Assessment process (CSIR, 2018: CSIR Report Reference: CSIR/IU/021SE/IR/2017/0009/A).
- Due to the limited time spent on site and the seasonal timing of the site visit, the lack of detection of a species on site does not mean that the species is not present at the site. Furthermore, targeted searching for list of taxa compiled during desktop assessment was not done. Another site visit at a different time of the year (e.g. during or following the summer rains) could lead to the identification of other faunal and floral species and result in additional observations for the site. Nonetheless, the site work conducted is considered sufficient for the purposes of this assessment.

5. DESKTOP ASSESSMENT FINDINGS

5.1. Baseline of the proposed site

This section provides an overview of the climate, soils, topography and vegetation of the site.

5.1.1. Climate

The study site is situated in a summer rainfall region with a mean annual rainfall of approximately 593 mm (Mucina & Rutherford, 2006), as shown in Figure 3. Eighty percent of the rainfall occurs from October to April. The average midday temperatures range from 16.6°C in June to 26.3°C in January. During winter, the temperature drops to 0.2°C on average during the night. Winters are dry with frequent frost that occurs from mid-April to September. Summers are hot with temperatures that are often above 30°C (Figure 4).

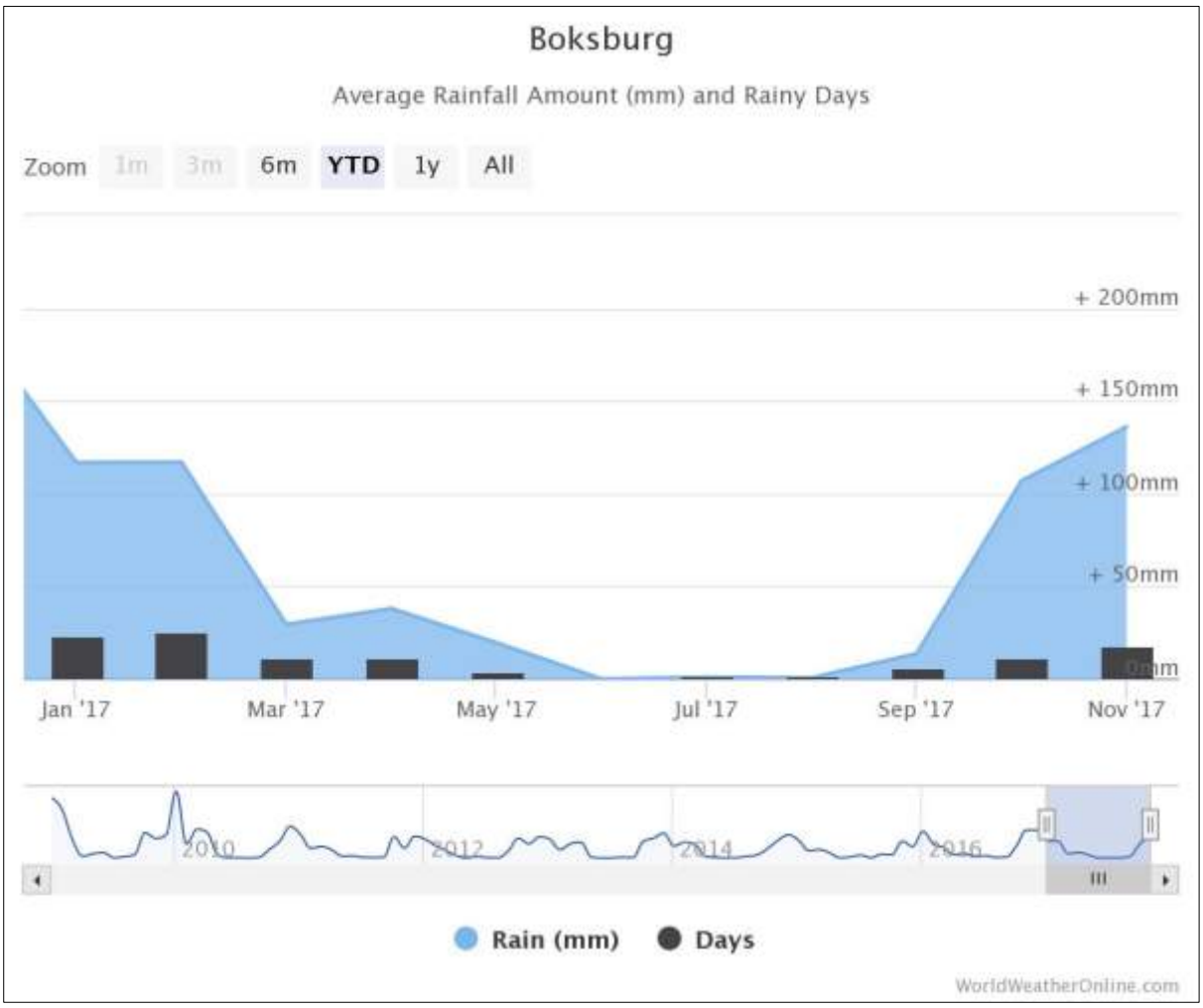

Figure 3: Average rainfall in mm. Source: World Weather Online, 2018.

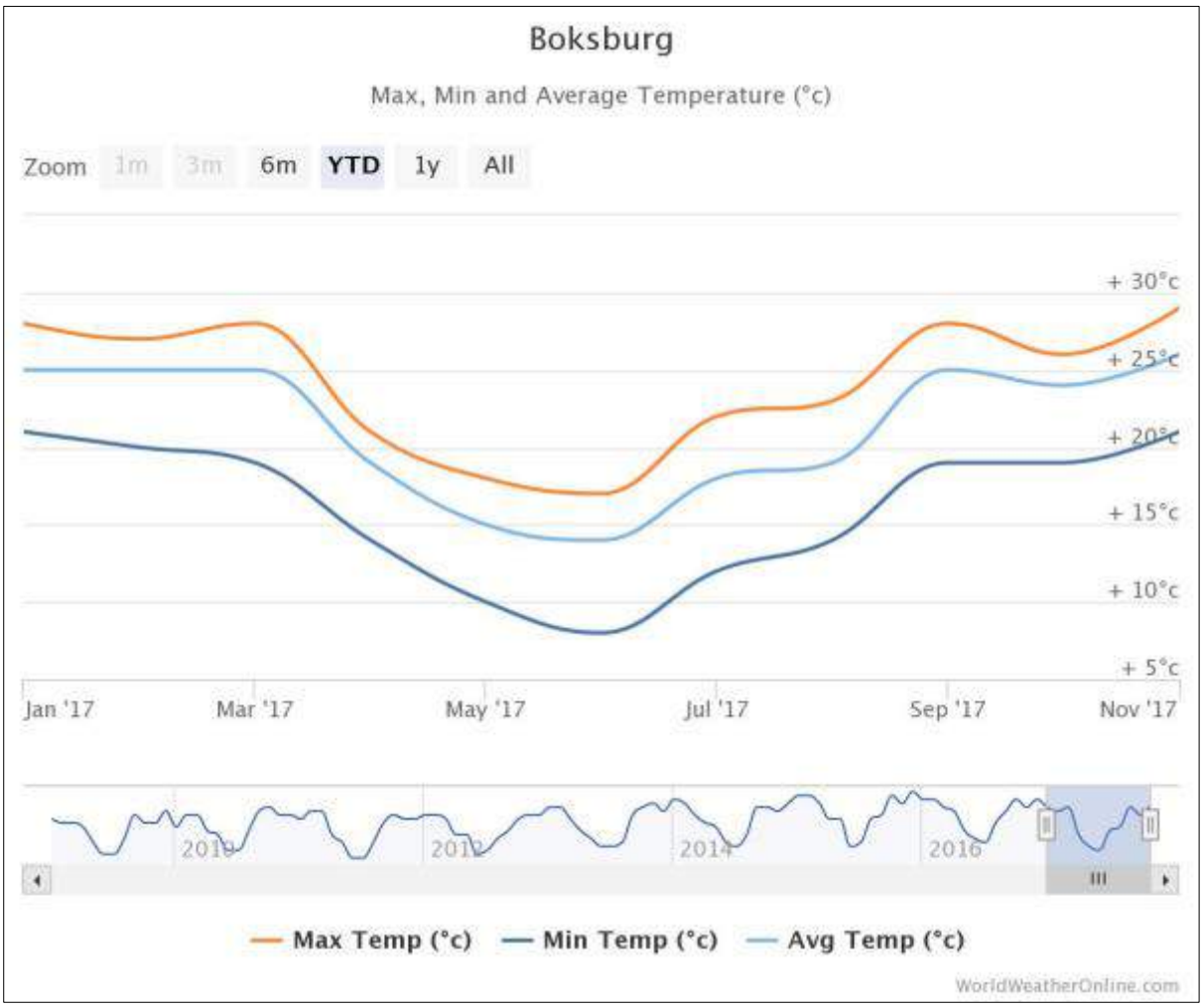

Figure 4: Average temperature in degree Celsius, Source: World Weather Online, 2018.

5.1.2. Hydrology

The sub-surface hydrology of the region is characterised and dominated by dolomite of the Chuniespoort Group (Transvaal Supergroup) and tillites of the Dwyka Group (Karoo Supergroup), both of which carry water (Barnard, 2000). Various geological structures, such as the faults, fissures and fracture zones, and contact zones of intrusion such as dykes and sills dictate the occurrence of groundwater. The region is dominated by Karst, Intergranular and Fractured Aquifers. The Karst Aquifer is the most important aquifer type in South Africa (Kafri, et al., 1985). These aquifers are infiltrated by rainwater containing weak carbonic acid that dissolves the dolomites resulting in caves and cavities that may facilitate the formation of sinkholes. Sinkholes are more likely if the water from these cavities is extracted through boreholes. Groundwater from the Dwyka Group in the area is generally suitable for any use, but the groundwater yield from aquifers in this formation is low. Mining activities in the area threaten groundwater quality from acid water pollution.

The Subsurface hydrology of the region consists of drainage systems and other water bodies. The development site falls within the Rietspruit catchment area and is located approximately 2km above the Rietspruit River. The Rietspruit originates south-west of Benoni and flows southwards to join the

Klipriver further south. These rivers are polluted from farming activities, human settlements and industrial activities (Barnard, 2000). The Reitspruit and the Klipriver join the Vaal Rive below the Vaal Dam, and therefore does not have major implications for the quality of drinking water in Gauteng, as Rand Water abstracts its water from the Vaal Dam (EMM, 2008). Lastly, there is a prevalence of a large number of pans in the region that are directly linked to the flat topography. Most pans found in the Ekurhuleni area are surrounded by urban areas or agriculture.

Geology, Soils and Topography

The Ekurhuleni region is situated on a transition zone between the formation of a large granite batholith on the western border to the formations of the Witwatersrand and Transvaal Supergroups that is dominated by dolomites overlain by younger sediments of the Karoo Supergroup (EMM Biodiversity Report, 2008). The geology of the area is dominated by dolomite and chert of the Malmani Subgroup, which falls under the Transvaal Supergroup and supports mostly shallow Mispah and Glenrosa soil forms typically found in the land type dominating the landscapes in the region. These formations are overlain by the sedimentary rocks of the Madzaringwe Formation of the Ecca group which falls under the Karoo Supergroup (Council of Geosciences, 2008). The soils are deep red to yellow and apedal and they occur sporadically, and are classified as freely draining and structureless soils. The topography of the site area has slightly undulating plains. (Figure 5).

5.1.3. Vegetation

The study area is situated in the Grassland Biome of Southern Africa. Summer rainfall combined with dry winters and frost, with marked diurnal temperature variations, are unfavourable to tree growth. Grasslands mainly comprise of grasses and plants with perennial underground storage organs, such as bulbs and tubers, but less trees. The Grassland Biome consists of various different vegetation types. According to the most recent vegetation map (Mucina & Rutherford, 2006), the site falls within the Carletonville Dolomite Grassland. The distribution of the grassland includes North-West (mainly) and Gauteng and marginally into the Free State Province, prominent in the region of Potchefstroom, Ventersdorp and Carletonville, extending westwards to the vicinity of Ottoshoop, but also occurring as far east as Centurion and Bapsfontein in Gauteng Province at altitudes ranging from 1 360–1 620 m to 1 500–1 560 m. The vegetation has species rich grasslands forming a complex mosaic pattern dominated by many species (Figure 6). Table 1 lists the dominant plant species in the Carletonville Dolomite Grassland.

The Carletonville Dolomite Grassland is classified as Vulnerable with the national target to protect at 24% (Mucina & Rutherford, 2006). Only a small extend of the grassland is conserved statutorily (Sterkfontein Caves—part of the Cradle of Humankind World Heritage Site, Oog Van Malmanie, Abe Bailey, Boskop Dam, Schoonspruit, Krugersdorp, Olifantsvlei, Groenkloof) and in at least six private conservation areas. Almost a quarter is already transformed for cultivation, by urban sprawl or by mining activities as well as the building of the Boskop and Klerskraal DAMS. Erosion within this grassland is very low at 15% (Mucina & Rutherford, 2006).

Growth Form	**Dominant Species**
Low Shrubs	*Anthospermum rigidum subsp. pumilum, Indigofera comosa, Pygmaeothamnus zeyheri var. rogersii, Rhus magalismontana, Tylosema esculentum, Ziziphus zeyheriana.*
Graminoids	*Aristida congesta (d), Brachiaria serrata (d), Cynodon dactylon (d), Digitaria tricholaenoides (d), Diheteropogon amplectens (d), Eragrostis chloromelas (d), E. racemosa (d), Heteropogon contortus (d), Loudetia simplex (d), Schizachyrium sanguineum (d), Setaria sphacelata (d), Themeda triandra (d), Alloteropsis semialata subsp. eckloniana, Andropogon schirensis, Aristida canescens, A. diffusa, Bewsia biflora, Bulbostylis burchellii, Cymbopogon caesius, C. pospischilii, Elionurus muticus, Eragrostis curvula, E. gummiflua, E. plana, Eustachys paspaloides, Hyparrhenia hirta, Melinis nerviglumis, M. repens subsp. repens, Monocymbium ceresiiforme, Panicum coloratum, Pogonarthria squarrosa, Trichoneura grandiglumis, Triraphis andropogonoides, Tristachya leucothrix, T. rehmannii.*
Herbs	*Acalypha angustata, Barleria macrostegia, Chamaecrista mimosoides, Chamaesyce inaequilatera, Crabbea angustifolia, Dianthus mooiensis, Dicoma anomala, Helichrysum caespititium, H. miconiifolium, H. nudifolium var. nudifolium, Ipomoea ommaneyi, Justicia anagalloides, Kohautia amatymbica, Kyphocarpa angustifolia, Ophrestia oblongifolia, Pollichia campestris, Senecio coronatus, Vernonia oligocephala.*
Geoxylic Suffrutices	*Elephantorrhiza elephantina, Parinari capensis subsp. capensis.*
Geophytic Herbs	*Boophone disticha, Habenaria mossii.*
Succulent Shrub	*Delosperma davyi.*

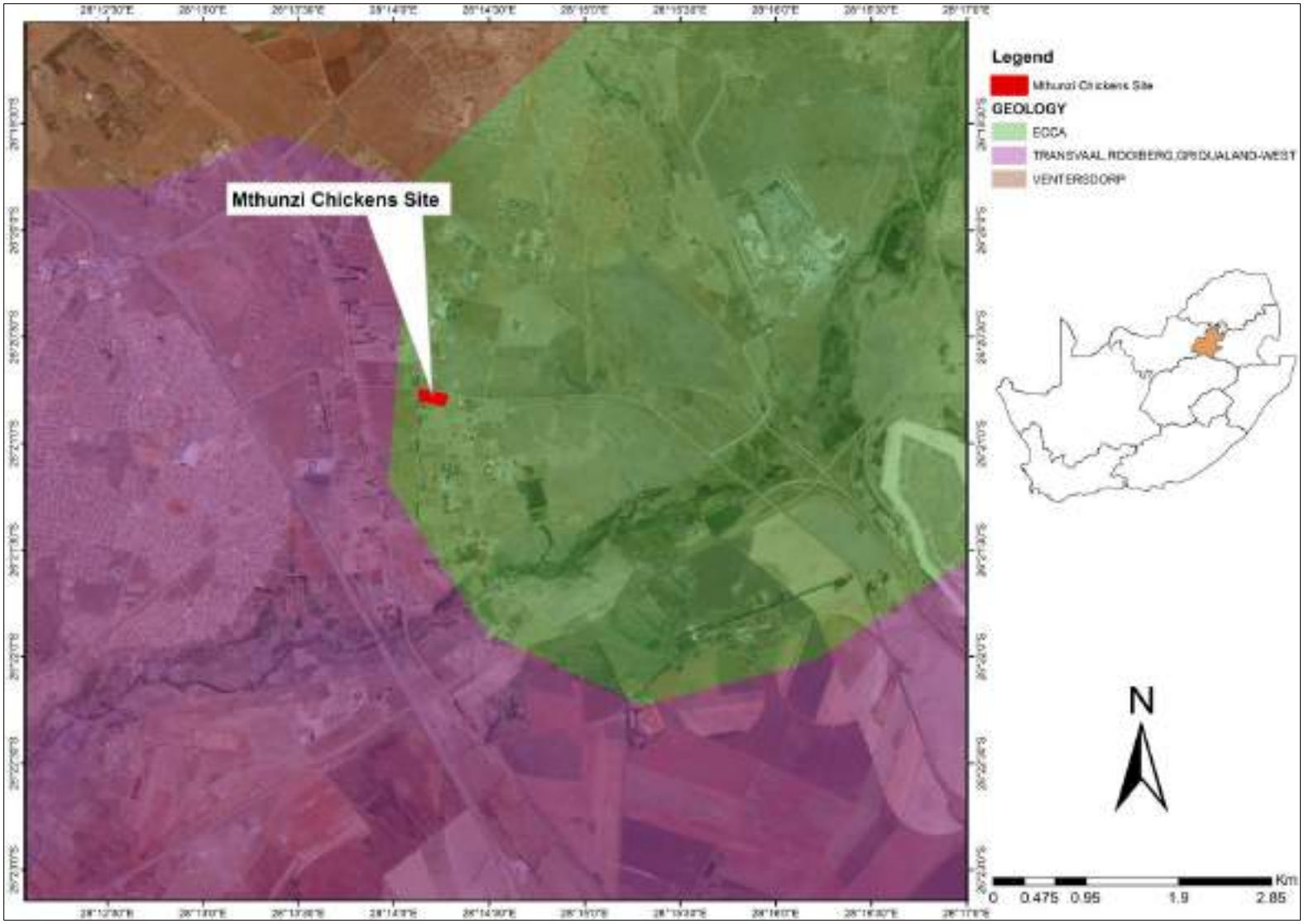

Figure 5: Underlying geology of where the site is located. Data source: Council of Geosciences, 2008.

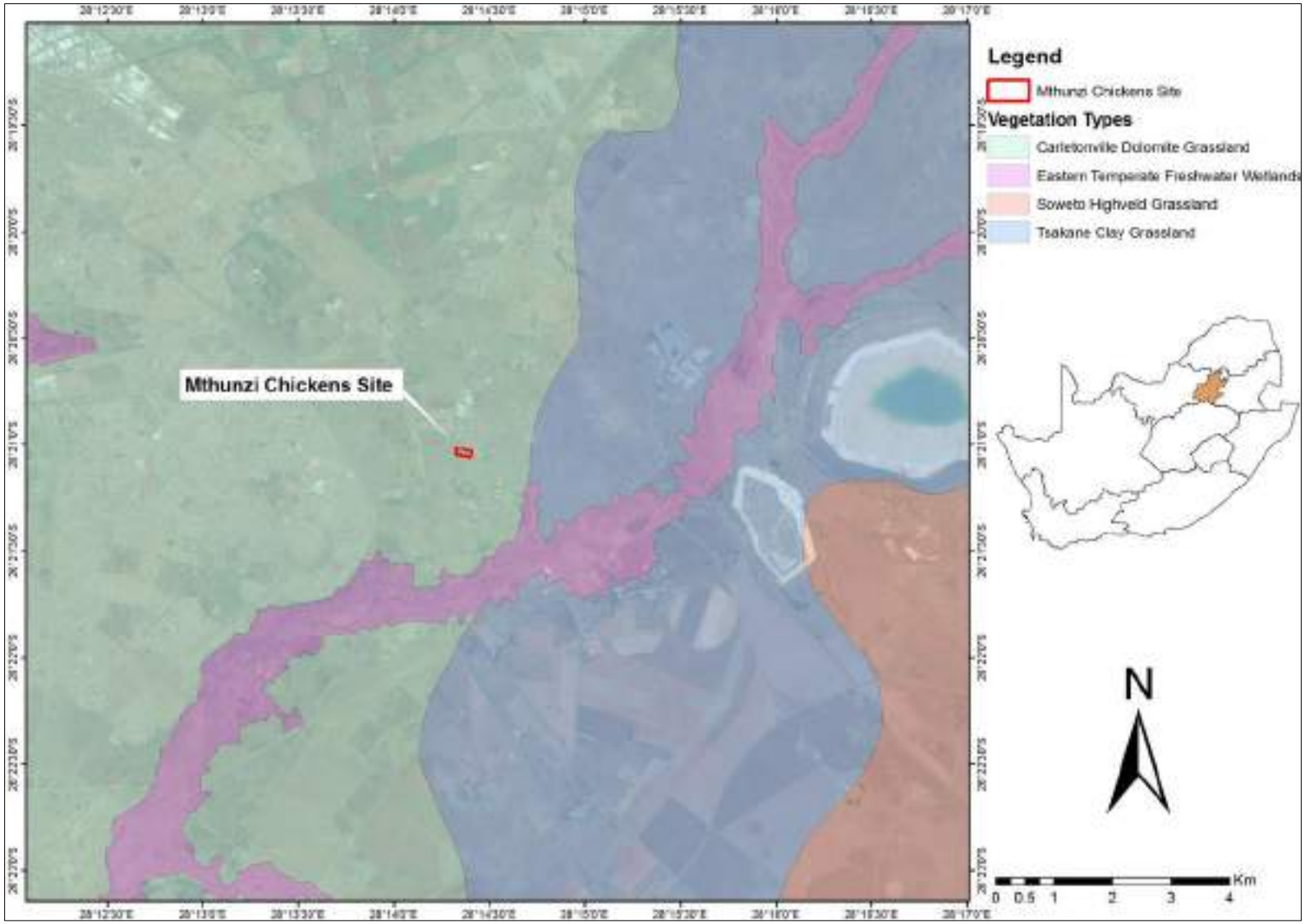

Figure 6: The development site falls within the Carletonville Dolomite Grassland vegetation type. Data source: SANBI, 2012; Mucina & Rutherford, 2006.

5.2. Literature review

5.2.1. Applicable Legislation

The following legislative requirements were considered during the assessment:

- National Environmental Management Act (Act 107 of 1998) (NEMA).
- National Environmental Management: Biodiversity Act (Act No.10 of 2004) (NEMBA) Regulations (Government Gazette 37885).
- Amended Regulations (Regulation 15) of the Conservation of Agricultural Resources Act (Act 43 of 1983) (CARA).
- NEMBA: Alien and Invasive Species Regulations (2014) (Government Gazette 37885).
- NEMBA: Threatened or Protected Species Regulations (2015) (Government Gazette 38600).
- NEMBA: National List of Ecosystems that are Threatened and in need of Protection (2011) (Government Gazette 34809).

The following documentation was also considered:

- GDARD Requirements for Biodiversity Assessment Version 3.3 (GDARD, 2014).
- Gauteng Conservation Plan Version 3.3 (C-Plan 3.3) (GDARD, 2011).
- Ekurhuleni Metropolitan Spatial Development Framework (Ekurhuleni MSDF, 2015).
- Ekurhuleni Metropolitan Municipality Biodiversity Report (EMM Biodiversity Report, 2008).

5.2.2. International Areas of conservation significance

- *Ramsar Site*. The Blesbokspruit Ramsar Site is situated approximately 30 km east of the proposed development site (Ramsar, 1995).
- *World Heritage Site.* There are no World Heritage Sites in the region.
- *Important Bird Area (IBA*).
    - Suikerbosrand Nature Reserve is an IBA and is fully protected. The nature reserve is located approximately 12 km south of the development site (Birdlife, 2015).
    - The Blesbokspruit Ramsar Site consists of the Marievale Bird Sanctuary, which is also considered part of the Blesbokspruit IBA. The IBA is roughly 14km away from the proposed development site (BirdLife, 2015).

5.2.3. Protected Areas

The proposed development site is situated approximately 8 km north from Suikerbosrand Nature Reserve, which is a Provincial nature reserve and a protected area. This reserve has extensive flora and fauna with over 200 species of birds found. The vegetation ranges from open grassland, wooded gorge, acacia woodland, marshland and rare Bankenveld grassland (www.gauteng.net).

Rondebult Bird Sanctuary is a Local Nature Reserve and a protected area located approximately 6.6 km north from the development site and consists of a number of pans and vleis. The local reserve hosts mostly water birds (www.birdlife.org.za).

Klipriviersberg Nature Reserve, a Provincial nature reserve and protected area id situated approximately 30 km north-west of the proposed development site Habitats in this reserve include shallow open water, reed beds and grassland, which collectively support a diversity of bird species. These include rare, threatened and Protected bird species such as the Crane, Black-winged Pratincole, Black-tailed Godwit, Slaty Egret, Yellow Wagtail, as well as Baird's, Pectoral and-breasted sandpipers (www.gauteng.net).

Figure 7 shows the location of the development site relative to the Protected Areas.

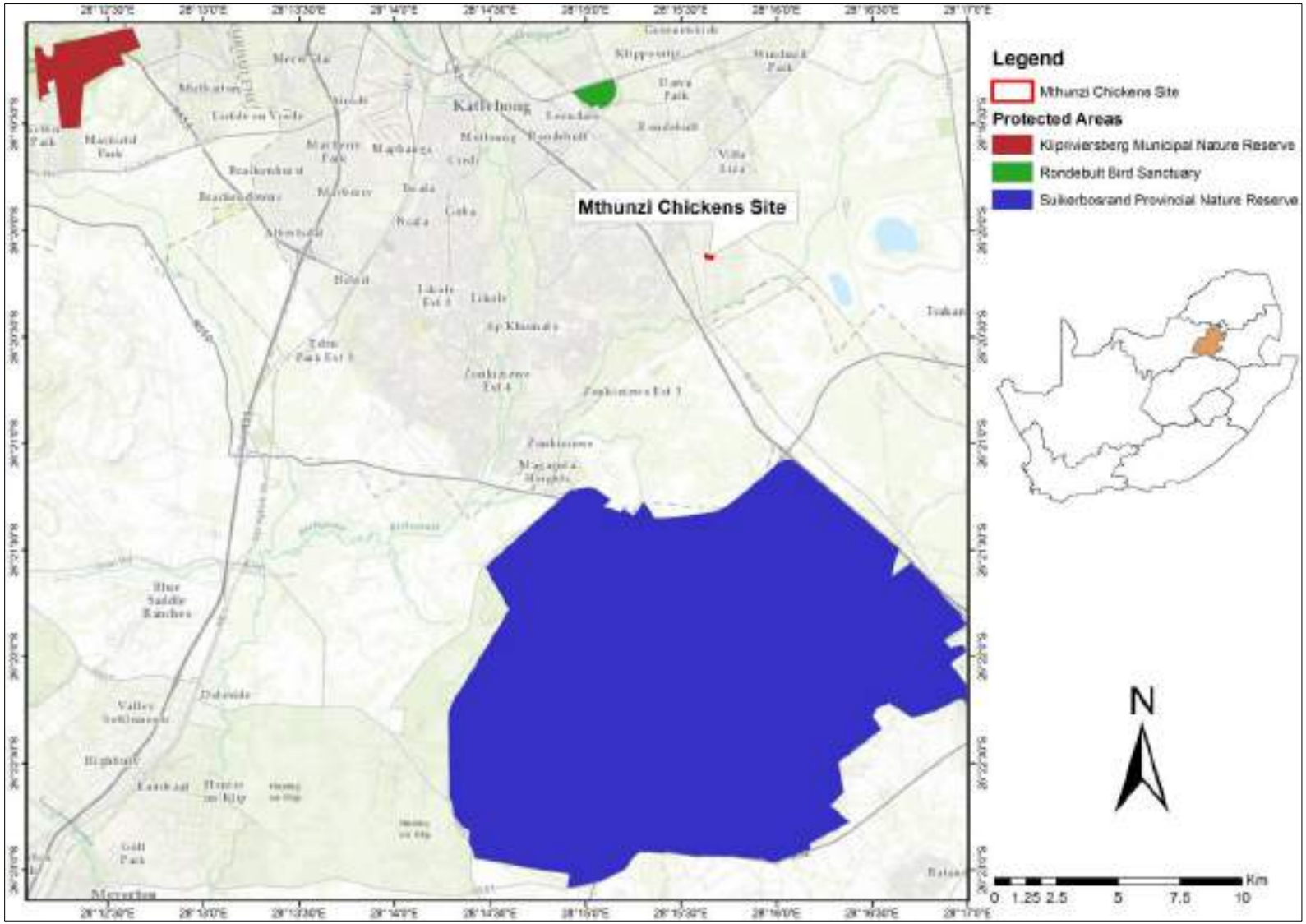

Figure 7: Proximity of Mthunzi project site relative to Protected Areas. Data source: SANParks, 2004.

5.2.4. Listed Terrestrial Priority Areas & Threatened Ecosystems

NEMBA provides for the listing of Threatened or Protected ecosystems. These ecosystems are grouped into Critically Endangered (CR), Endangered (EN), Vulnerable (VU) and Protected Ecosystems in accordance with the National Environmental Management: Biodiversity Act (Government Gazette 34809, Government Notice 1002, 9 December 2011). The purpose of listing threatened ecosystems is primarily to reduce the rate of ecosystem and species extinction. The project falls within Klipriver Highveld Grassland. The grassland ecosystem is found in Grasmere, Alberton and Springs (in QDS 2627BD, 2628AC, and 2628AD respectively). The Klipriver Highveld Grassland ecosystem is delineated by the Klipriver and associated wetlands and non-perennial rivers, together with the Klipriviersberg ridge system and associated drainage lines. The ecosystem is listed as an Endangered ecosystem as the remaining natural habitat is less than 62 % of its original extent (NEMBA, 2011) (Figure 8). Any remaining natural vegetation is thus considered to be of high conservation importance, with only 1% being protected in Klipriviersberg Nature Reserve and Rondebult Bird Sanctuary.

The key features of the Klipriver Highveld Grassland include:

- Red or Orange Listed plants for *example Cineraria longipes, Delosperma purpureum, Delosperma leendertziae* and *Trachyandra erythrorrhiza (This vegetation is not likely to occur on development site)*
- Red or Orange Listed birds for example African Marsh-Harrier African Grass-Owl Greater Flamingo, and Melodious Lark; *(All but the Melodious Lark are not likely to occur on the development site; as it prefers open areas with short grasses, which are present on site).*
- Red or Orange Listed or priority invertebrates for example the Roodepoort Copper Butterfly (not likely to occur), Marsh sylph *(not likely to occur), Orachrysops mijburghi (likely to occur)*, and Golden Starburst Baboon Spider *(likely to occur, no burrows were discovers on development site).*
- Six vegetation types including Andesite Mountain Bushveld, Carletonville Dolomite Grassland, Eastern Temperate Freshwater Wetlands, Gauteng Shale Mountain Bushveld, Soweto Highveld Grassland and Tsakane Clay Grassland*;(The development site falls within the Tsakane Clay Grassland)*
- Rivers, wetlands and pans are key features in the ecosystem including the Angelo Pan, Blesboklaagte, Bloubospruit, Elsburgspruit, Hugenote Spruit, Klipriver, Natalspruit, Rietspruit, Withokspruit, and various other unnamed wetlands and pans. *(The site does not belong to any of the named catchment systems, but a pan is located*).

Although the site falls within the original extent of the Critically Endangered Klipriver Highveld Grassland ecosystem, the site has been transformed by agriculture and there is little or no natural habitat remaining (refer to section 6.2. below, with results of the field assessment).

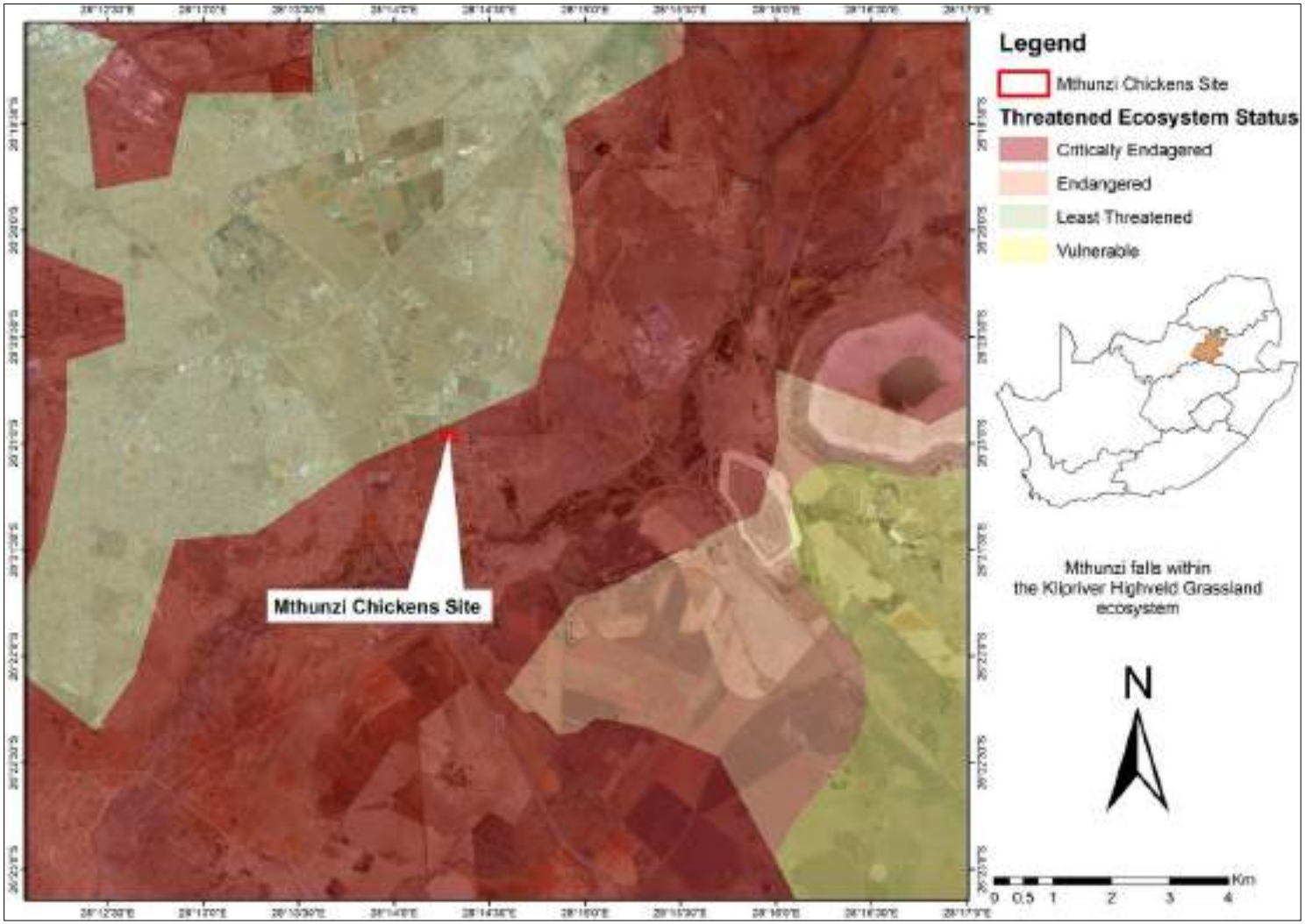

Figure 8: Regional location of the 2 hectare site within the original extent of the Klipriver Highveld Grassland ecosystem, which includes the Carletonville Dolomite Grassland vegetation unit. Data source: SANBI, 2011.

5.2.5. Freshwater Ecosystem Priority Areas

The National Freshwater Ecosystem Priority Areas project (NFEPA; Driver *et al.* 2011) provides strategic spatial priorities for conserving freshwater ecosystems and supporting sustainable use of water resources in South Africa. Freshwater Ecosystem Priority Areas (FEPAs) were identified using a range of criteria dealing with the maintenance of key ecological processes and the conservation of ecosystem types and species associated with rivers, wetlands and estuaries. The NFEPA spatial data indicates that the project development site is near the Rietspruit river, which is located approximately 2km south from the development site. The development site falls under the Rietspruit catchment area, and drains southwards towards the Rietspruit, an NFEPA river. The site does not fall within any classified NFEPA river or wetland areas (Figure 9). The site falls within the catchment area of the Rietspruit, which has a south-western drainage.

The NFEPA guidelines state that FEPAs should be regarded as ecologically important and generally sensitive to change in water quality and quantity, owing to their role in protecting freshwater ecosystems and supporting sustainable use water resources. FEPAs that are in good condition should remain so, and FEPAs that are not in good condition should be rehabilitated to their best attained ecological condition. Land-use practices or activities that will lead to deterioration in the current condition of a FEPA are considered unacceptable, and land use practices or activities that will make rehabilitation of a FEPA difficult or impossible are also considered unacceptable.

The site does not fall within or contain any NFEPA river or wetland areas (Figure 9) and no unclassified wetlands or rivers were identified on site.

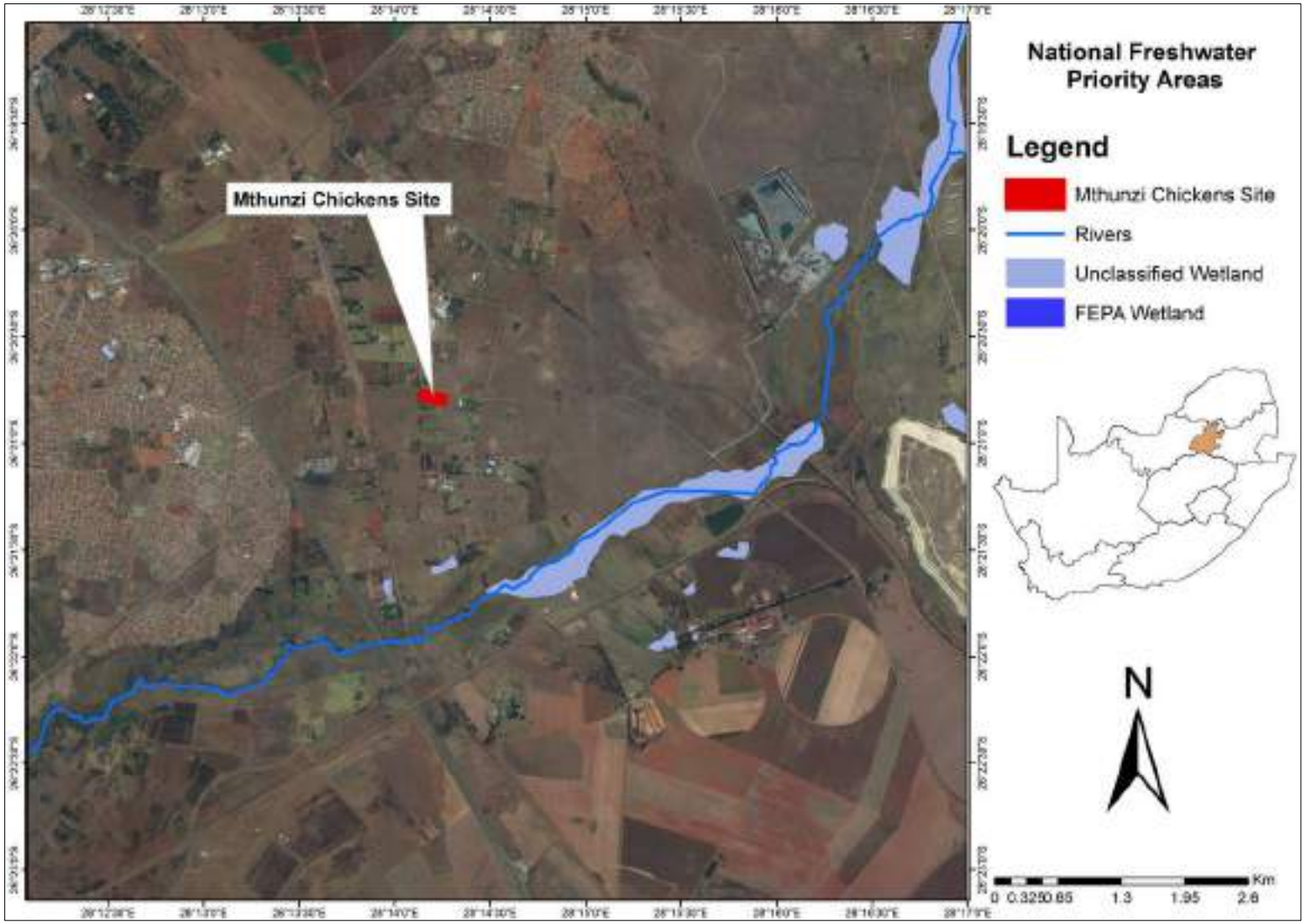

Figure 9: Location of the site in relation to the regional Freshwater Ecosystem Priority Areas. Data source: CSIR, 2011.

5.2.6. Gauteng Conservation Plan

The Gauteng Conservation Plan (Version 3.3) (GDARD, 2011), classifies areas within the province on the basis of its contribution to reach the conservation targets within the province. Areas of conservation importance are classified as Critical Biodiversity Areas (CBAs) that should be conserved and Ecological Support Areas (ESAs) that are important for the maintenance of ecosystem function. CBAs are either “irreplaceable’ must be conserved) or “important” to reach the conservation targets and were classified based on the presence of primary vegetation as well as threatened plant species. Ecological Support Areas (ESAs) were set aside to ensure sustainability in the long term. ESAs can include buffered wetlands, open natural semi-natural vegetation and even cultivated areas. ESAs provide vital connections between areas of high or critical biodiversity importance and are therefore not necessarily good condition or primary vegetation. In addition, areas formally protected are also indicated.

The development site does not fall within any CBAs or ESAs (Figure 10). However, the site is approximately 300 metres to the south east of an Important Area unit identified by the Gauteng Conservation Plan that holds primary vegetation of the Klipriviersberg Highveld Grassland (Figure 10). The development site is further situated approximately outside an Important Area unit is an Orange Listed plant habitat that contains primary vegetation of the Klipriviersberg Highveld Grassland, and is a bird habitat for Red Listed species.

Figure 10: Location of the site in relation to the Gauteng C-Plan Areas. Data source: GDARD, 2011.

5.2.7. Species of Conservation Concern

Threatened or Protected Plant Species (ToPs)

Chapter 4, Part 2 of NEMBA, Threatened or Protected Species (ToPS) Regulations provides for listing of flora and fauna species as Threatened or Protected. If any species is listed as Threatened, it must be further classified as Critically Endangered (CR), Endangered (E), Vulnerable (VU) or Protected (PT). These species are commonly referred to as ToPS listed. Certain activities, known as 'Restricted Activities', are regulated on listed species using permits by a special set of regulations published under the Act. Restricted activities regulated under the Act are keeping, moving, having in possession, importing and exporting, and selling. The status of the species for flora, mammals, birds, reptiles, frogs, butterflies and scorpions as listed in ToPS, are provided for the above mentioned fauna within QDS 2628Ac and listed within their respective sections.

Red Listed species

South Africa has also listed species of Conservation Concern for the purpose of informing conservation decision-making processes and includes all plants that are Threatened, Extinct in the wild, Data Deficient, Near Threatened, Critically Rare, Rare and Declining (Figure 11). These species are also referred to as Red or Orange Listed. The Red List status of flora and faunal species that fall within QDS 2628Ac and identified within the development site are provided in the respective sections.

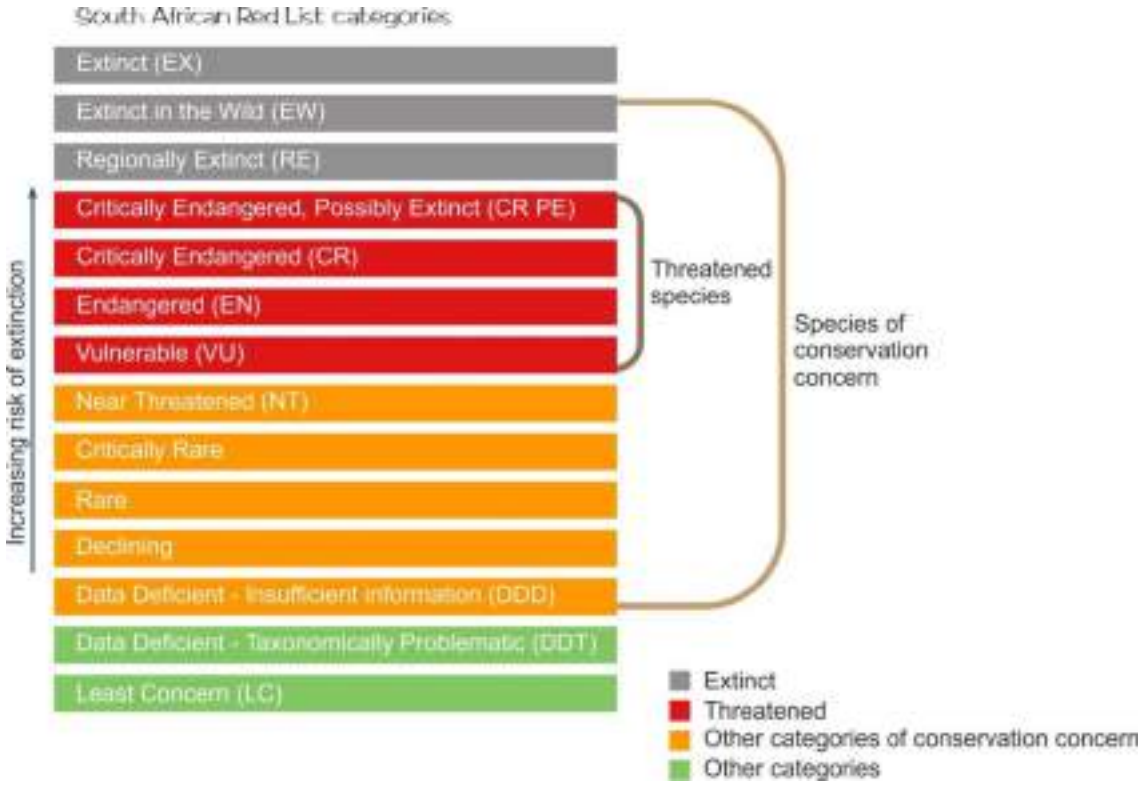

Figure 11: Threatened species and species of Conservation Concern. Diagram source: http://redlist.sanbi.org/redcat.php.

5.2.8. Alien Invasive Plant Species

The list of Alien Invasive Species was published in terms of NEMBA in the Government Gazette No. 37320 of February 2014, as General Notice No. 78. The Alien and Invasive Species Regulations were published in the Government Gazette No. 37886, of 1 August 2014. The legislation calls for the removal and / or control of alien invasive plant species (Category 1 species). Declared weeds and invasive plant species tend to replace and dominate the tree and herbaceous layers of natural ecosystems; and in some cases exclude native plant species because of their superior competitive capabilities. These alien and invasive species transform the composition, structure and function of the natural ecosystems. It is of high importance that these plants are controlled and eradicated (Henderson, 2001).

In addition, unless authorised thereto in terms of the National Water Act, 1998 (Act No. 36 of 1998), no land user shall allow Category 2 plants to occur within 30 meters of the 1:50 year flood line of a river, stream, spring, natural channel in which water flows regularly or intermittently, lake, dam or wetland. Category 3 plants are also prohibited from occurring within close proximity to a watercourse.

Below is a brief description of the three categories in terms of NEMBA:

- *Category 1a*: Invasive species requiring compulsory control. Remove and destroy. Any specimens of Category 1a listed species need, by law, to be eradicated from the environment. No permits will be issued.
- *Category 1b*: Invasive species requiring compulsory control as part of an invasive species control programme. Remove and destroy. These plants are deemed to have such a high invasive potential that infestations can qualify to be placed under a government sponsored invasive species management programme. No permits will be issued.
- *Category 2*: Invasive species regulated by area. A demarcation permit is required to import, possess, grow, breed, move, sell, buy or accept as a gift any plants listed as Category 2 plants. No permits will be issued for Category 2 plants to exist in riparian zones.
- *Category 3*: Invasive species regulated by activity. An individual plant permit is required to undertake any of the following restricted activities (import, possess, grow, breed, move, sell, buy or accept as a gift) involving a Category 3 species. No permits will be issued for Category 3 plants to exist in riparian zones.

6. FIELD ASSESSMENT FINDINGS

6.1. Land use and existing impacts

The development site is highly transformed agricultural land and is currently used to hold livestock and for livestock grazing. Livestock present on site are cattle, goats, sheep and chickens (Figure 12). The vegetation that is present consists mainly of highly transformed grasses that are continuously grazed and a number of large trees that are alien species (Figure 113).

Figure 12: Livestock present on Mthunzi's development site. Photo credit: Rirhandzu Marivate (2017)

Figure 13: Trees found on Mthunzi's development site. Photo credit: Rirhandzu Marivate (2017)

There is infrastructure that currently exists on site and includes a private residence, a toilet paper factory, a sheep and goat enclosure, an office facility and two chicken houses. The infrastructure will be expanded to include an additional six chicken houses, a chicken processing facility (abattoir), a waste storage site and a vegetable garden.

Historical aerial imagery (from the year 2003) indicates that the site previously only had the private residences, and a cultivated field, while the surrounding properties also had some built infrastructure and cultivated fields (Figure 43). From then on, a toilet paper factory was established, followed by the holding of livestock (feedlot), and then the construction of the initial chicken houses (Figure 14).

Figure 14: Aerial image of the site showing the land use activities in the year 2003 (Source: Google Earth, 2018)

Figure 15: Aerial Image of the site showing the current land use activities in year 2018(Source: Google Earth, 2018)

6.2. Vegetation Communities/Habitats

SANBI collates floral data within southern Africa and updates their database system called the National Herbarium Pretoria (PRE) Computerised Information System (PRECIS). This database is captured according to the quarter degree squares (QDSs), and referred to as the Plants of Southern Africa (POSA) database. The study site falls under QDS 2628AC. 259 different plant species have been recorded within the QDS.

The development site is highly transformed with no present vegetation from the original vegetation unit (Carletonville Dolomite Grassland). The structural representation of the reference vegetation of the Carletonville Dolomite Grassland vegetation is shown in Table 1. The information was retrieved from the POSA database for QDS 2628AC, where the site is located, and the dominant families are Asteraceae, Poaceae, and Fabaceae, representing 44%. A list of all plant species observed with the QDS is provided in Appendix 1.

Table 1: Dominant floral families obtained from the POSA website for QDS 2628AC. Data Source: POSA, 2016 (a: dominant families; b: dominant growth forms).

a

Important Family	No. of Species
ASTERACEAE	49
POACEAE	38
FABACEAE	29
APOCYNACEAE	13
CYPERACEAE	11
MALVACEAE	8
IRIDACEAE	7
ASPHODELACEAE	6
SOLANACEAE	6

b

Growth forms	% Total Spp
Herb	46
Graminoid	19
Dwarf Shrub	11
Shrub	11

6.2.1. Vegetation recorded on site

The site is transformed in nature with alien invasive plants and no natural vegetation communities exist (Figure 15). The vegetation was is therefore far removed from the natural state of the Carletonville Dolomite Grassland vegetation unit.

Figure 16: Photographs of the transformed habitats within Mthunzi's project site. Photo credit: Rirhandzu Marivate (2017).

The transformed vegetation unit is dominated by grasses, such as *Eragrostis curvula*, with herbaceous plants in between, namely *Haplocarpha scaposa* & *Helichrysum rugulosum.* The vegetation is transformed from various activities. As stated previously, the property once was cultivated and current activities of grazing and continuous occupation by livestock, and constructed infrastructure contribute to the transformation of the vegetation unit. The species identified within Mthunzi's transformed vegetation unit are listed in Table 2 with examples of the plants shown in Figure 16.

Table 2: List of flora species identified on site.

Family	Species Name	Growth Form
Asclepiadaceae	*Gomphocarpus fruticosa*	Herb
Poaceae	*Eragrostic cf curvula*	Graminiods
Asteraceae	*Haplocarpha cf scaposa*	Herb
Asteraceae	*Helichrysum rugulosum*	Herb

The Threatened Species Programme of the South African National Biodiversity Institute (SANBI) published the Red List of South African Plants (Raimondo *et al*, 2009), with an online database that is updated regularly and provides information of the national conservation status of South African indigenous plants. Table 5 provides a list of all listed plants as recorded in POSA (2018) in QDS 2628AC.

Table 3: Listed plants of Conservation Concern recorded in QDS 2628AC. Data Source: POSA, 2017.

Family	Species	Threat Status	Growth forms
APOCYNACEAE	*Stenostelma umbelluliferum (Schltr.) S.P.Bester & Nicholas*	NT	Geophyte, herb, succulent
ASPHODELACEAE	*Trachyandra erythrorrhiza (Conrath) Oberm.*	NT	Geophyte, succulent
ASTERACEAE	*Cineraria longipes S.Moore*	VU	Dwarf shrub, herb
MESEMBRYANTHEMACEAE	*Lithops lesliei (N.E.Br.) N.E.Br. subsp. lesliei*	NT	Succulent
ORCHIDACEAE	*Habenaria bicolor Conrath & Kraenzl.*	NT	Geophyte, herb

Stenostelma umbelluliferum is a species that grows in open woodland mainly in the vicinity of drainage lines (Victor, et al., 2007); *Trachyandra erythrorrhiza* grows in grassland habitats in black tuft marshes (Mills & Raimondo, 2013); *Cineria longipes* grows on hills, amongst rocks and along seeplines (Helme & Raimondo, 2006); *Lithops lesliei* grows primarily in arid grasslands, around rock areas under the protection of forbs and grasses (Williams, et al., 2008); while *Habenaria bicolor occurs mainly in open sunny grasslands* . There is a low liekelihood that any of these plant species will occur on the development site due to the transformed nature of the site and their specific habitat requirements.

Alien plant species were also identified on the development site. Category 1 alien plant species identified are the *Argemone ochroleuca, Cestrum aurantiacum*, *Cirsium vulgare, Solanum mauritianum and Solanum sisymbriifolium. Schinus terebinthifolius* was the only Category 3 alien plant species identified. All the alien plants have been listed below in Table 4.
According to the regulations, a person who has under his or her control a Category 1b listed invasive species must immediately:
(a) notify the competent authority in writing
(b) take steps to manage the listed invasive species in compliance with
(i) section 75 of the Act;
(ii) the relevant invasive species management programme developed in terms of regulation 4; and
(iii) any directive issued in terms of section 73(3) of the Act.

Furthermore, for a Category 3 species, an individual plant permit is required to undertake any of the following restricted activities: import, possession, grow, breed, move, buy, sell, or accept as a gift.

Table 4: Invasive species recorded on or adjacent to the site. Data source: DEA, 2016.

Taxon Name	***Alien Invasive Status***	**Common Name**	**Growth Form**
Argemone ochroleuca	*1b*	White-flowered Mexican Poppy	Herb
Cestrum aurantiacum	*1b*	Orange cestrum	Tree
Cirsium vulgare	*1b*	Spear thistle, Scotch thistle	Herb
Schinus terebinthifolius	*3 (in Gauteng Province)*	Brazilian pepper tree	Tree
Solanum mauritianum	*1b*	Bugweed	Herb
Solanum sisymbriifolium	*1b*	Wild tomato, Dense-thorned bitter apple	Herb
Prunus armeniaca	-	Armenian plum	Tree


Prunus armeniaca


Argemone ochroleuca


Helichrysum rugulosum


Eragrostis curvula

Figure 17: Example of plant species found on site. Photo credit: Rirhandzu Marivate

6.3. Fauna

The following section provides information on mammal, bird, reptile, frog, butterfly, odonatan and scorpion species (including those that are threatened) that are considered likely to occur in the area or near the development site. Table 5 below provides a summary of each major fauna group, and the number of recorded species per group in QDS 2628AC with information retained from the Animal Demographic Unit (ADU) virtual museum database, and field observations., while Appendix 2 provides a list of all recorded fauna species occurring in QDS 2628AC. Note that the ADU is only used as a reference guideline and there are potentially more species that could occur on site.

Table 5: Number of species occurring per fauna taxon in QDS 2628AC. Data source: ADU, 2018.

Taxon	Approximate No of Species
Mammals	42
Birds	172
Reptiles	40
Frogs	12
Butterflies	72
Odonata	10
Scorpions	3

6.3.1. Mammals

According to Mammal MAP (2018), approximately 42 mammal species are considered likely to occur in the region of the study site (QDS 2628AC), (see table in Appendix 2), and mostly represent

rodents, insectivores, carnivores and bats. Terrestrial mammals that are likely to occur on the development site include the Namaqua Rock mouse, Multimammate Mouse and the Xerix Fourstriped rat, regarded as a pest, as they are species that are commonly found in habitats with developments and human activities, which are the present conditions on site.). Three species of Conservation Concern were recorded in QDS 2628 AC; the Southern African Hedgehog, Serval and the Brown Hyena, are all Near Threatened. The Serval and Brown Hyena are highly unlikely to occur on the development site (Friedmann & Daly, 2004). The Southern African Hedgehog is moderately likely to occur as it found in grasslands and suburban gardens, underneath leaves, bushes and in holes (Cassola, et al., 2017).

6.3.2. Birds

The avian diversity in the region of the site is moderate to high, because of its proximity to the Klipriviersberg Nature Reserve, Suikerbosrand Provincial Nature Reserve, and Rondebult Bird Sanctuary and to the NFEPA wetlands, as well as a number of seeps and other wetlands in the area. Approximately 358 bird species are listed for QDS 2628AC (SABAP 1 and 2 Records at a QDS scale). Appendix 3 provides the 172 bird species that have been recorded in pentad 2620_2810 (SABAP2, 2018). Twelve bird species were recorded during the site visit in November 2017 and the information is provided in Table 6. The bird species that were recorded during the site visits represent common, widespread bird taxa such as bishops, doves, sparrows, etc. These birds are more tolerant of transformed habitats and human activities such as, human settlement, livestock grazing, crop cultivation, vegetation clearing and other human-induced activities.

Table 6: Local bird species that were observed on site. Nomenclature and conservation status based on Taylor, et al. 2015.

Common Name	***Scientific Name***	**Red List**
Rock Dove	*Columba livia*	Least Concern
Western Cattle Egret	*Bubulcus ibis*	Least Concern
Cape Sparrow	*Passer melanurus*	Least Concern
Blacksmith Lapwing	*Vanellus armatus*	Least Concern
Cape turtle dove	*Streptopelia capicola*	Least Concern
Yellow Canary	*Crithagra flaviventris*	Least Concern
Southern Red Bishop	*Euplectes orix*	Least Concern
Yellow-crowned Bishop	*Euplectes afer*	Least Concern
Guinea Fowl	*Numida meleagris*	Least Concern
Laughing Dove	Streptopelia senegalensis	Least Concern

Several threatened or nationally protected bird species were recorded in QDS 2628AC (SABAP2 2018) are listed in Table7 below. The Greater and Lesser Flamingo are water birds and prefer to be in aquatic habitats; the Black Harrier prefers to nest on the ground of tall vegetation; the Black winged Pratincole is an open grassland bird and often spotted in water areas;

These species are unlikely to occur on the development site, as the habitat conditions are unfavourable for them. The Pallid Harrier and the White-bellied Korhaan prefer open grasslands and nest on the ground, while the Secretarybird prefers open grassland and nests in Acacia trees at night. These bird species have a moderate likelihood of occurring on site.

Table 7: List of threatened and nationally protected bird species recorded in QDS 2628AC. Data Source: Taylor, et al. 2015.

Scientific Name	Common Name	Red List Status (Taylor, et al. 2015)	No of Observations of QDS (Rep Rate %)[1]	Likelihood of Occurrence (LoO)[2]
Sylvia nigricapillus	Blackcap, Bush	Vulnerable	0.39	3
Phalacrocorax capensis	Cormorant, Cape	Endangered	0.06	3
Falco biarmicus	Falcon, Lanner	Vulnerable	1.22	3
Falco vespertinus	Falcon, Red-footed	Near Threatened	0.50	3
Phoenicopterus ruber	Flamingo, Greater	Near Threatened	3.56	3
Phoenicopterus minor	Flamingo, Lesser	Near Threatened	0.33	3
Circus maurus	Harrier, Black	Endangered	0.06	3
Circus macrourus	Harrier, Pallid	Near Threatened	0.06	2
Alcedo semitorquata	Kingfisher, Half-collared	Near Threatened	0.11	3
Eupodotis senegalensis	Korhaan, White-bellied	Vulnerable	0.95	2
Rostratula benghalensis	Painted-snipe, Greater	Vulnerable	0.56	3
Anthus crenatus	Pipit, African Rock	Near Threatened	0.17	3
Glareola nordmanni	Pratincole, Black-winged	Near Threatened	0.50	3
Coracias garrulus	Roller, European	Near Threatened	0.22	3
Sagittarius serpentarius	Secretarybird,	Vulnerable	2.89	2
Ciconia nigra	Stork, Black	Near Threatened	0.06	3
Sterna caspia	Tern, Caspian	Vulnerable	0.22	3
Gyps coprotheres	Vulture, Cape	Endangered	0.06	3

6.3.3. Reptiles

Forty species of reptile species are considered likely to occur in the region of the development site according to information retrieved from ReptileMAP (2018) for QDS 2628AC and represent mainly snakes and lizards (see Appendix 2). The most likely reptile species to occur include Rhombic Egg-Eater, Highveld Garter snake, Cape Gecko, Common Dwarf Gecko, Delalande's Sanveld Lizard, Spotted Grass Snake, Speckled Rock Skink, Cape Skink and the Bibron's Blind Snake as indicated in Table 8. Some burrows, termitaria, grasses observed on site represent important habitat for many potentially occurring reptile species (including those that have not been listed in ADU for the QDS). Table 8 provides a list of the reptiles observes in QDS 2628AC and moderately to highly likely to occur in the development site. There are no recorded conservation important reptile species that may potentially occur within the QDS or on the project site.

[1] The rate at which the species had been reported in the QDS to date.
[2] Likelihood of Occurrence: LoO; 1 = Highly likely to occur (found on site; site conditions highly favourable), 2=Moderate likely to occur, 3=Leasrt Likely to occur (unfavrouable site conditions).

Table 8: Reptiles that are observed to occur within QDS 2628AC where the development site is located. Data Source: Bates, et al. 2014.

Family	Scientific Name	Common Name	Red List Status (Bates, et al., 2014)	Habitat (Bates, et al., 2014)	LoO
Agamidae	*Agama atra*	Southern Rock Agama	Least Concern	Found in variety of rocky habitats. Shelters in rock crevices and under rocks	2
Colubridae	*Dasypeltis scabra*	Rhombic Egg-eater	Least Concern	It is often found in deserted termitaria, under rocks, in rock crevices, under bark of trees and in rotting logs.	1
Elapidae	*Elapsoidea sundevallii subsp. media*	Highveld Garter Snake	Least Concern	Found in a wide variety of habitats, especially in alluvial and aeolian sands. The refugia of the snake include old termitaria and under rocks.	1
Cordylidae	*Pseudocordylus melanotus melanotus*	Common Crag Lizard	Least Concern	Found on rock outcrops in montane and Highveld grassland. Shelters in narrow crevices between rocks.	2
Gekkonidae	*Pachydactylus affinis*	Transvaal Gecko	Least Concern	Found in rocky outcrops, occasionally also in moribund termitaria or buildings in grassland and savanna biomes.	2
Gekkonidae	*Pachydactylus capensis*	Cape Gecko	Least Concern	Occurs in a wide range of mostly open habitat types, wherever there are appropriate refugia (rocks, disused termitaria, logs, logs, debris, building materials).	1
Gerrhosauridae	*Gerrhosaurus flavigularis*	Yellow-throated Plated Lizard	Least Concern	Found on rocky hillsides, and sandy flats where they shelter in burrows in the soil and sometimes under rocks, forage between grass tussocks and in leaf litter at base of bushes.	2
Gekkonidae	*Lygodactylus capensis subsp. capensis*	Common Dwarf Gecko	Least Concern	Found in savanna habitats but adapts readily to urban situations, and rapidly expanding its range, but not in natural areas.	1
Lacertidae	*Nucras lalandii*	Delalande's Sandveld Lizard	Least Concern	Associated with montane and temperate grasslands, as well as coastal fynbos habitat in the southern Cape. It shelters in burrows in the ground or under rocks. Frequently found in high altitude areas.	1
Lamprophiidae	*Lamprophis aurora*	Aurora House Snake	Least Concern	Commonly found in grassland, fynbos and moist savanna habitats. Occurring from coast, to the plateau of the Highveld. Often found near streams, under rocks and some times in old termitaria	2
Lamprophiidae	*Lycophidion capense subsp. capense*	Cape Wolf Snake	Least Concern	Mainly occurs in coastal regions to higher elevations in the central parts of South Africa. Often found under rocks or logs and in old termitaria	2

Lamprophiidae	*Psammophylax rhombeatus rhombeatus*	Spotted Grass Snake	Least Concern	It is very common and found in savanna, grassland, fynbos and desert, from the coast up to about 2 300m. It shelters under rocks on soils, in rock crevices, old termitaria and holes in the ground.	1
Scincidae	*Trachylepis punctatissima*	Speckled Rock Skink	Least Concern	Is rupicolous and/or semi-arboreal in nature. Found in rocky outcrops, trees and houses, and largely along the escarpment and on the Highveld. Found mainly in KwaZulu-Natal Midlands to elevations of 2600 m on the Drakensberg escarpment.	1
Scincidae	*Trachylepis capensis*	Cape Skink	Least Concern	Terrestrial species found in all major biomes in South Africa. Very abundant in grassland, savanna and fynbos at altitudes of 0-2300m. Has been recorded from rocky areas, open veld, holes in disused termite mounds and around houses. At times digs tunnels at the base of vegetation or rocks, and is also fond of areas with mats of dead leaves.	1
Typhlopidae	*Afrotyphlops bibronii*	Bibron's Blind Snake	Least Concern	Burrows in loose soil and moves into surface soils in search of macro-invertebrate prey items, especially after rain. Found in old termitaria, and in or on soil under rocks and rotting logs.	1

6.3.4. Frogs

Twelve frog species have been recorded in QDS 2628AC, according to FrogMAP (2018), listed in Table 9 below. Of these listed species, four are considered to be highly likely to occur. Some hardy toad and frog species such as the Raucous, Olive and Guttural toads, and the Common Cacao are more likely to be present on the site as they are adapted to disturbed areas and are likely to seek refuge under logs, matted grasses, and termitaria for breeding and/or inhabiting, (FrogMAP, 2018).

Table 9: Frog species that have been recorded in QDS 2628AC. Data Source: Minter, et al., 2014.

Family	**Scientific Name**	**Common Name**	**Red List Status (Minter, et al., 2004)**	**Habitat (Minter, et al., 2004)**	**LoO**
Bufonidae	*Schismaderma carens*	Red Toad	Least Concern	Found in a variety of vegetation types, particularly in the Savanna biome, and often found in Grassland vegetation. Preferred breeding in deep, muddy pools or dams.	2
Bufonidae	*Sclerophrys capensis*	Raucous Toad	Least Concern	Abundant in artificial grasslands of agricultural areas and frequently encountered at breeding sites around farm dams, large ponds and pools along slow-flowing streams,	1
Bufonidae	*Sclerophrys garmani*	Olive toad	Least Concern	They are found under fallen logs, rocks, and mats of vegetation, abandoned termitaria, or any objects that provide shelter. They breed in various	1

				places including farm dams, ornamental ponds, in urban areas.	
Bufonidae	*Sclerophrys gutturalis*	Guttural Toad	Least Concern	Found in termitaria and in the burrows of large lizard. They shelter under logs, rocks and other object in day time. As well as drain-pipes and gutters, burrows or in holes excavated in soft ground.	1
Hyperoliidae	*Kassina senegalensis*	Bubbling Kassina	Least Concern	Found in a variety of vegetation types in the Savanna and Grassland biomes, while breed in temporary and permanent water bodies that include well vegetated shallow pans, vleis, marshes and deep dams.	3
Pipidae	*Xenopus laevis*	Common Platanna	Least Concern	Inhabits all biomes in South Africa, in streams, rivers and pools. Also found in man-made water bodies such as farm dams, ponds, sewage purification works and fish farms.	3
Pyxicephalidae	*Amietia delalandii*	Delalande's River Frog	Least Concern	Note: name changed from Amietia angolensis. Occurs in small permanent streams, and ponds in lowland and savanna-like habitats. Breeding occurs in both deep and shallow water.	3
Pyxicephalidae	*Amietia fuscigula*	Cape River Frog	Least Concern	Associated with permanent springs, ponds and farm dams in dry northwest, while occur along most well-vegetated waterways elsewhere.	3
Pyxicephalidae	*Amietia poyntoni*	Poynton's River Frog	Least Concern	It is associated with permanent springs, ponds and farm dams in dry northwest, while occur along most well-vegetated waterways elsewhere.	3
Pyxicephalidae	*Cacosternum boettgeri*	Common Caco	Least Concern	Prefers open areas with short vegetation, especially abundant in grassy areas. Known to tolerate drier habitats, but also occurs in high rainfall areas. Breeds in almost any small, temporary water body, such as pools in in undulated grasslands, culverts and other rain filled depressions	1
Pyxicephalidae	*Tomopterna cryptotis*	Tremelo Sand Frog	Least Concern	Found in various vegetation types in the Savanna and Grassland biomes. Breed in shallow, standing water at the edges of dams, pans and small bodies of water such as roadside puddles.	3
Pyxicephalidae	*Tomopterna natalensis*	Natal Sand Frog	Least Concern	Found in various of vegetation types in Grassland and Savanna biomes and breed in streams, rivers or other places where water flows slowly, but not standing still.	3

6.3.5. Butterflies

Based on LepiMAP (2018), 92species of butterfly have been recorded in QDS 2628AC, see Appendix 2. Most of the butterflies recorded are likely to occur or at least pass through the development site. Two butterfly species were encountered during the site visit (see Table 10), all of which have previously been recorded in QDS 2628AC.

Table 10: Local butterfly species encountered during the site visit. Data Source: Mecenero, et al. 2013.

Common Name	Scientific Name	Red List Status (Mecenero, et al. 2013)
Cupreous Blue	*Eicochrysops messapus mahallakoaena*	Least Concern
Pioneer white	*Belenois aurota*	Least Concern

Many of the observed butterfly species and most of the potentially occurring butterfly species are common and widespread. None of the species recorded in the QDS are of conservation concern.

6.3.6. Odonata

Ten odonata species have been recorded to date on QDS 2628AC (OdonataMAP, 2018), (Table 11) but many more are likely to occur. No dragonfly or damselfly species were observed during the site investigation., The species recorded in QDS 2628AC prefer aquatic landscapes as habitats, except for the Evening Hawker, Tropical Bluetail, and Red-veined Darter, which are moderately likely to occur as it is observed to occur in open areas between bushes and trees, and along roadsides and in gardens (Samways & Simaika, 2016). Although none of the odonatan species that have been recorded on site has a threatened or protected status, some species that have a threat status may occur.

Table 11: Odonata (dragonfly & damselfly) species observed to occur in QDS 2628AC. Data Source: OdonataMAP, 2018.

Scientific Name	Common Name	Red List Status (Samways & Simaika, 2016)	Habitat (Samways & Simaika, 2016)	LoO
Anaciaeschna triangulifera	Evening Hawker	Not Listed	Occurs throughout South Africa. Breeds in warm, shallow, grassy, temporary pools. Wheels and glides individually and in groups in bushy areas. It flies in open areas between bushes and trees, along roadsides and in gardens.	2
Anax imperator	Blue Emperor	Not Listed	Found in most parts of South Africa. Inhabits various types of still waters including pools, dams and quiet reaches of streams and rivers where there are swampy areas with lush, short grasses and sedges.	3
Africallagma glaucum	Swamp Bluet	Not Listed	Found in most parts of South Africa. Inhabits various types of still waters including pools, dams and quiet reaches of streams and rivers where there are swampy areas with lush, short grasses and sedges.	3
Ischnura senegalensis	Tropical Bluetail		Found in stagnant habitats with high dung input from mammals and in habitats severely disturbed by humans. Know to tolerate slightly brackish conditions; and conspicuous when it flits and rests among reeds, sedges and grasses in marshy areas.	2

Pseudagrion citricola	Yellow-faced Sprite	Not Listed	Widespread in South Africa; Occurs along sluggish streams and rivers and sometimes seen at dams and pool with banks of tall grasses, rushes and herbs	3
Pseudagrion salisburyense	Slate Sprite	Not Listed	Occurs in sluggish or still reaches of streams and rivers with an abundance of reeds, grasses and herbs. Sometimes common in farm dams, and some natural pools and waterholes. It rests along a grass stem or reed blade overhanging the water.	3
Orthetrum caffrum	Two-striped Skimmer	Not Listed	Occurs around montane pools and still reaches of streams and rocky rivers, and some times in marshes. It perches on sticks or reeds over the water.	3
Sympetrum fonscolombii	Red-veined Darter or Nomad	Not Listed	It is a migratory species, especially in early summer. It breeds in the margins of pools and dams with an abundance of tall grasses and reeds. Has been found in grassland, sometimes far from water.	2
Trithemis kirbyi	Orange-winged Dropwing	Not Listed	Occurs around reedy pools and marshes and is usually seen perching on reed tips ant the edge of the water or on twigs on the bank. It is sometimes seen perching on bushes on grassland away from water.	3
Elattoneura glauca	Common Threadtail	Not Listed	It occurs at pools, vleis and small lakes usually fringed with bushes or trees and with an abundance of grasses, sedges and lilies. Occasionally also occurs at grassy margins of slow river reaches.	3

6.3.7. Scorpions

Three scorpion species have been observed to occur in QDS 2628AC, where the study site falls (ScorpionMAP, 2018), namely *Pseudolychas ochraceus, Uroplectes triangulifer* are known to occur in disturbed areas, under rocks and refugia, and sometimes found in households, and *Opistophtalmus pugnax* which prefers to burrow in the ground (Table 12). These species may occur on the project site due of available habitat. The potentially occurring scorpion species do not have a threatened or protected status. Note that the ScorpionMAP has limited number of species recorded in the QDS, and more scorpion species that have not been recorded may occur.

Table 12. Scorpion species observed in QDS2628AC. Source; ScorpionMAP, 2018.

Scientific Name	Common Name	Red List Status (Leeming, 2013)	Habitat (Leeming, 2013)	LoO
Pseudolychas ochraceus	Plain Pygmy-Thicktail	Least Concern	The scorpion is found in riverine valleys and areas with dense vegetation. Prefers damp, moist areas often shelters underrocks, logs and inside leaf litter. Often enters houses in summer, and found in places of increase moisture (sinks, showers, dish clothes, laundry)	2
Uroplectes triangulifer	Highveld Lesser-Thicktail	Least Concern	Occurs in varied habitats from forests to desserts. Prefers living under rocks and in treets, and has sometimes been found in houses.	2
Opistophtalmus pugnax	Pugnacious Burrowing Scorpion	Least Concern	Prefers to burrow under rocks and other surface debris. It is commonly found on rocky outcrops and ridges.	2

7. LOCAL AREAS OF CONSERVATION SIGNIFICANCE

The sites natural sensitivity can be mapped in terms of its conservation significance. The mapping is based on ecological sensitivity, the extent of disturbance, the presence of conservation important species, and conservation value (adapted from Natural Scientific Services, 2017). In terms of the Gauteng Conservation Plan (C-Plan), the site is not designated for biodiversity management and conservation.

Areas within the development site are ranked on biodiversity conservation significance and scored as indicated below. The scoring was determined using the information that is available for the area and the site visit. Based on the findings from all the information available, a map indicating the relative conservation significance of areas within the development site is presented in Figure 19.

Areas of Low environmental sensitivity comprise:

- Areas with infrastructure
- Overgrazed areas
- Areas with alien vegetation
- Areas stripped of natural vegetation.

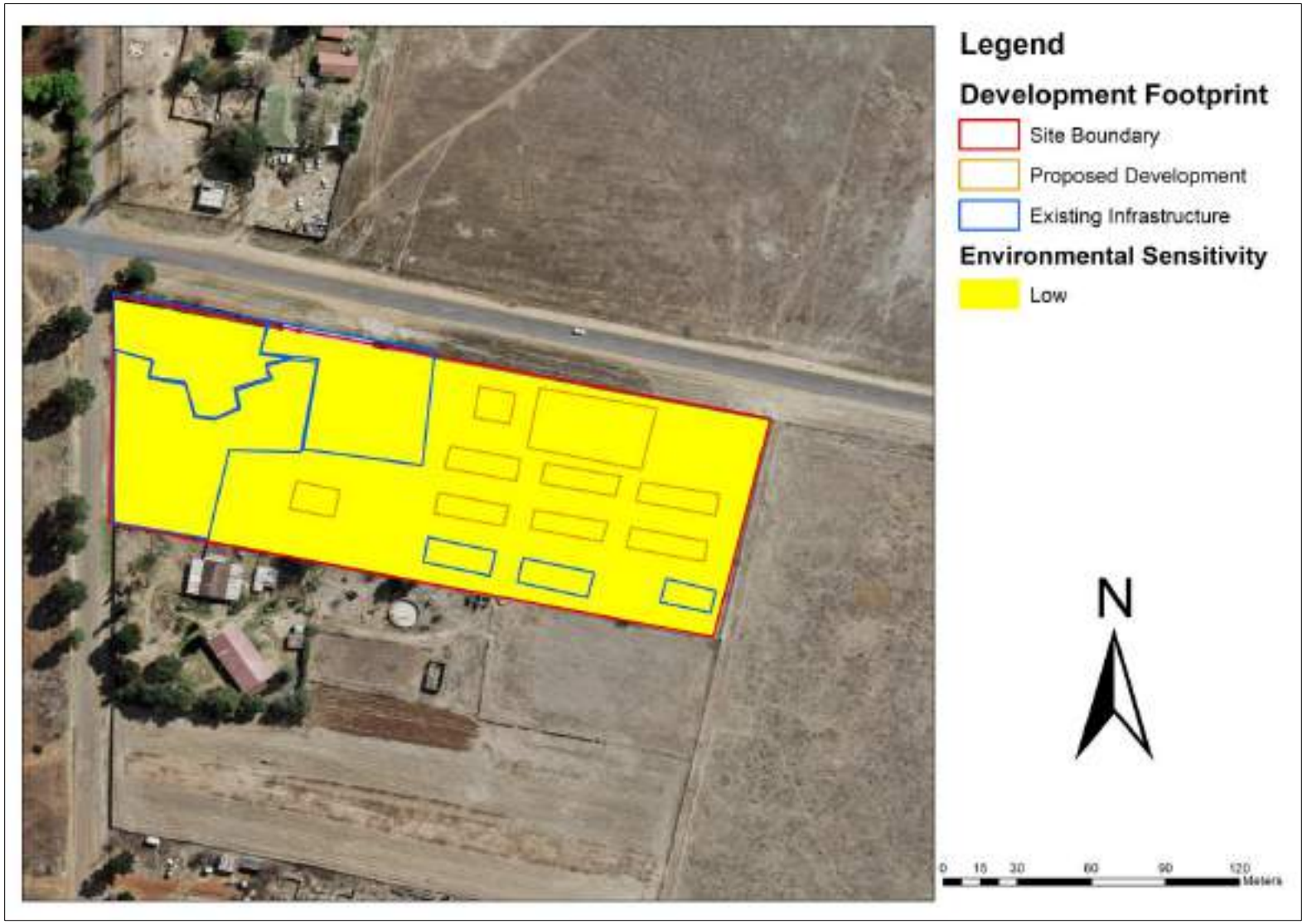

Figure 18: Environmental sensitivity of Mthunzi Chicken Supplier's project site. Data source: CSIR, 2017, Google Images, 2018.

8. IMPACT ASSESSMENT AND MANAGEMENT ACTIONS

This section provides an assessment of the predicted impacts of the proposed expansion of the chicken layer facility on the local ecology, including mitigation and monitoring actions. The approach and terminology used for the impact assessment are provided in Appendix 4.

Based on the brief scan of the site, the following potential impacts and management actions were identified, with detailed impact assessments provided in Tables 13, 14 & 15:

Construction phase:

1. **IMPACT: Loss of terrestrial vegetation and faunal habitat resulting from clearing of the project footprint**

The development of six chicken houses, an abattoir, a vegetable garden and a waste storage site will cover a total area of approximately 2700 m^2 on a 2.57 hectare plot. There are two existing chicken houses, toilet paper factory, private residence, livestock enclosure and transformed vegetation and alien vegetation on site. The habitat being lost has been identified to be of low conservation value (refer to section 7). Taking into consideration these factors, and that the area is zoned for agriculture, the impact of the project footprint on ecology is predicated to be of Low significance, both with and without mitigation.

MANAGEMENT ACTIONS:

Avoid the unnecessary loss of remaining vegetation and faunal habitats and promote the re-establishment of indigenous vegetation in disturbed areas.

- Relocate the proposed chicken house to the north of the existing facility, to the lower environmentally sensitive Herbaceous Alien Weeds vegetation (see figure 24).
- Ensure that construction areas are well demarcated and restrict clearing of vegetation to minimize loss of vegetation and faunal habitats.
- Replant indigenous Highveld grassland vegetation in disturbed areas.
- If any indigenous fauna are on site during construction activities, relocate them to the nearest natural area.

2. **IMPACT: Construction activities and vehicles increase the occurrence and spread of alien plant species**

The proposed project may increase the existing occurrence of alien plant species on site as a result of soil disturbance for the construction of the chicken houses. The spread of alien plant species may also be caused by the introduction of alien seeds associated with the movement of vehicles and materials during the construction phase. Given the context of the project in an agricultural area, the existing transformed nature of the site, the existing chicken facility and the small footprint of

excavations, the predicted impact of construction of additional chicken houses in increasing occurrence of alien plants is predicted to be Medium significance without mitigation, and Low with mitigation.

MANAGEMENT ACTIONS:

Minimize the introduction and spread of invasive alien species during construction.

- By law, ensure that all Category 1b alien vegetation is mechanically removed and disposed of in the correct manner prior to construction. Other category Alien Invasive Species should also be mechanically removed and disposed of.
- Limit or regulate access by vehicles to the construction site and ensure that all source materials that enter the construction site are known.
- Keep construction activities neat and tidy.

3. IMPACT: Dust and erosion caused by construction activities on the environment

Construction activities are likely to increase bare ground, dust and the land's susceptibility to erosion. Taking into consideration that only a small portion of the property will be developed (approx. 0.27 ha of 2.57 ha), and furthermore that the land in the site is relatively flat, the impact of construction vehicles and digging of the ground on the immediate environment is predicted to be of Low significance, both with and without mitigation.

MANAGEMENT ACTIONS:

Minimize dust and erosion by implementing effective measures to control dust erosion, such as limiting the number of vehicles, people and materials to the construction site.

- Ensure vehicles and construction workers are limited to designated areas.
- Implement erosion protection measures on site that reduce erosion. Re-vegetate areas that will not be developed. Have designated areas for soil stockpiles, and construction material. Soil stockpile areas must be bunded.
- Implement dust control measures such as adding mulch, and/ or periodically wetting the bare ground.

4. IMPACT: Faunal sensory disturbance as a result of construction activities (incl. moving vehicles) on fauna

The increase in noise and light pollution at night will be a sensory disturbance and may result in fauna vacating the area, at least temporarily during construction phase. Given that the property has a low diversity of fauna and that the fauna found on site has already been exposed to human disturbances. The impact of construction activities on the fauna communities is predicted to be of Low significance, both with and without mitigation.

MANAGEMENT ACTIONS:

Reduce the duration of construction activities, reducing noise and light pollution that cause sensory disturbance on fauna.

- Commence construction in winter in order to reduce the risk of disturbing active (including migratory) animals such as birds.
- Limit construction activities to day time hours.
- Minimize or eliminate security and construction lights in order to reduce disturbance of any nocturnal fauna.

Operations phase:

1. **IMPACT: Sensory disturbance on the fauna as a result of noise and light from the chicken houses**

The fauna on site will be affected by an increased level of noise from the additional 15 000 chickens (to a toal of 20 000 chickens) and light from the additional chicken layer facility. Taking into consideration that the development footprint of the chicken layer facility will be contained to a small area of the site, the impact of lighting is predicted to be of low significance. The additional chickens will noticeably increase the noise levels and is predicted to be of a Low Significance. The overall impact of noise, dust and light is predicated to be of Medium to Low.

MANAGEMENT ACTIONS:

Minimize sensory disturbance of fauna by minimizing essential lighting, noise, and preventing unnecessary light and noise pollution, especially on nocturnal animals.

- Reduce the essential lighting by ensuring that all outdoor lights are fitted with caps or that they are angled downwards
- Ensure that Ultraviolet filtered lights are installed so that warmer, long-wavelength light is emitted to reduce insect attraction.
- Ensure that the machinery and ventilation systems emit a low noise, and are well maintained.
- Activities that will generate the most noise should be limited to during the day.

2. **IMPACT: Contamination of the environment as a result of handling of chicken waste**

Various contaminants are present in chicken waste that include nutrients, pathogens, veterinary pharmaceuticals (such as antibiotics), and naturally excreted hormones. The site drains towards the Rietspruit, an NFEPA river located 2km south of the development site. Improper management and disposal of carcasses as well as excess fodder, chemicals such as pesticides and any other operational waste may cause contamination of the local soils; contaminants, and contaminated sediment may also be carried towards the river by surface water when it rains. Taking into

consideration that the chicken facility will implement the recommended protocol (NEM:WA, 2008) to handle chicken waste and chemicals, the impact of contaminants on the surrounding environment is predicted to be of Medium significance.

MANAGEMENT ACTIONS:

Environmental contamination can be avoided by ensuring that excrement, carcasses, feed, and other operational waste and hazardous materials are appropriately and effectively contained and disposed of without detriment to the environment. Furthermore, that there is appropriate control measures in place for any contamination event.

- Ensure that the facility design and its operations adhere to the best practice norms and standards and that the South African National Standard (SANS) for the care and use of animal waste.
- Adhere to best practice chicken husbandry and waste disposal norms as outlined in the NEM:WA (Act 59 of 2008).
- Waste must be stored in designated areas for storage. Clearly demarcate appropriate storage for different types of waste.
- Ensure regular removal of waste on site is done and ensure that all waste is disposed of at an appropriate licensed waste facility. This can be done by requesting receipts from the facility for each delivery.
- Ensure that there are waste management and emergency procedures in place for accidental contamination of the surrounding environment.
- Ensure training of staff is done to handle hazardous substances and for other waste management and emergency procedures.

With the effective application of the above management actions, the overall impact of contaminants is predicted to be of Low significance.

3. **IMPACT: Increase in animal pests as a result of inappropriate handling of chicken waste and poor hygiene conditions.**

Incorrect management of the facility could result in the increased breeding of invertebrate pest species. Poor waste management also attracts vertebrate pests including rodents, and certain bird species. The increase of pests may have an adverse effect on the indigenous fauna with increase competition, predations, and the transmission of diseases. Taking into consideration that the chicken facility will implement the recommended protocol on handling waste and pest control the impact of diseases on the remaining fauna is predicted to be of Medium significance**MANAGEMENT ACTIONS:**

Ensure that effective pest control that does not affect non-target animals by controlling access and proliferation of pests as far as possible.

- Adequate ventilation is required to keep floors, bedding and fodder dry
- Clean floors regularly and prevent unwanted animal access to the fodder.
- Regularly clean the facility to minimize the influx of pests.
- Inspect and clear litter and waste from the site. Ensure that the areas surrounding the chicken facility are free of spilled manure and litter.
- Regular mowing of areas around the facility required to reduce prevalence if insects.
- Ensure effective sanitation and rodent proofing and humane extermination of rodents. It is strongly recommended that poisons are avoided!
- Ensure that appropriate and humane pest control measures are put in place and are restricted to problematic areas, and ensure these measures are taxon-specific, in order to avoid unnecessary extermination of non-pest fauna.

With the effective application of the above management actions, the overall impact of diseases from poor hygiene and waste management is predicted to be of Low significance.

4. **IMPACT: Environmental contamination of the surrounding environment from organic waste and blood**

   The development of an abattoir must ensure that proper guidelines and strict management protocols are adhered to. Incorrect management of the abattoir may lead to the contamination of the surrounding environment, including soil and water pollution, with organic waste and blood from the operational by products. Taking into consideration that the abattoir operations will adhere to the GDARD guidelines for Management of Abattoirs, the impact of the facility is seen to be of Medium significance without mitigation and Low significance with mitigation measures

MANAGEMENT ACTION:

Ensure that effective .management and containment of chicken blood and organic waste are implemented as far as possible.

- Blood, waste water should drain into septic tank and any remaining waste will be disposed of by licenced contractor.
- Ensure that excrement, carcasses, feed, and other operational waste are appropriately and effectively contained and disposed of without detriment to the environment.
- Adhere to GDARD guidelines for Management of Abattoirs.
- Design of abattoir must comply with health and safety guidelines for broilers and abattoirs.

- Ensure that the development are designed and lined with impermeable substances (concrete) in accordance with advice from international best practice norms.

- Establish appropriate emergency procedures for accidental contamination of the surroundings. Waste recycling should be incorporated into the facility's operations as far as possible. Designate a secured, access restricted, sign posted room for the storage of potentially hazardous substances such as herbicides, pesticides dips and medications.

- Storm water should not be allowed to come into contact with any effluent. Monitoring water quality of onsite borehole should be conducted.

5. IMPACT: Transmission of diseases as a result of poor chicken waste management and/or prevalence of pests leading to a change in population of native fauna

Diseases could be transmitted either directly from chickens and their excrement, or indirectly from an increased prevalence of pests, which could in turn adversely affect the population dynamics of native fauna in the surrounding area. Taking into consideration that the chicken facility will implement the recommended protocol on handling waste and pest control the impact of diseases on the remaining fauna is predicted to be of Low significance, both with and without mitigation.

MANAGEMENT ACTIONS:

Avoid transmission of diseases to remaining fauna.

- Ensure that excrement, carcasses, feed, and other operational waste and hazardous materials are appropriately and effectively contained and disposed of without detriment to the environment.

- Chicken mortalities must be identified and removed immediately from the facility. The source of these deaths must immediately be investigated.

- Train workers to effectively handle sick and dead animals.

- Ensure that there are appropriate control measures in place for any contamination event.

6. IMPACT: Altered burning from vehicles, human activity and built infrastructure.

Fires may occur from uncontrolled human activity and accidents from the activities within the chicken houses as well as vehicles on site and affect the surrounding vegetation and fauna habitat. Taking into consideration that the management of the poultry enterprise will implement fire management protocols the impact of fire on the environment is predicted to be of Low significance.

MANAGEMENT ACTIONS:

Avoid fires on site.

- Implement and train farm workers on the fire plan and emergency protocols regularly.
- Create and maintain a fire break between the development and the surrounding environment.
- Develop a space for safe storage of flammable material on site.
- Ensure that the appropriate measures are implemented in case of any accidental fires.

Decommissioning phase:

1. **IMPACT: Loss of fauna and flora from decommissioning and removal of facilities on site.**

The decommissioning of the site will need to be done according to the legislated requirements at the time. At this stage, the end use of the site after the chicken farming is unknown. Decommissioning could lead to increased dust and potential erosion if the land is left bare, and could lead to temporary sensory disturbance of fauna. Additionally, decommissioning could lead to the increase of alien plant species. If the natural vegetation was re-established after the chicken farming has ceased, this could have a positive impact on the ecology of the site. In the form of rehabilitation through leveling the ground, adding top soil and planting indigenous vegetation to re-establish the floral communities and to stabilize and prevent erosion, and reduce the likelihood of establishment of alien plants species. However, it is recognised that the site is located in an agricultural area. Taking into consideration that decommissioning activities will occur within an agricultural surrounding area, and the small number of fauna that will still be remaining on site, the impact of removing the chicken facility on the immediate and surrounding environment is predicted to be of positive Medium significance (without the mitigation proposed below).

MANAGEMENT ACTIONS:

Promote the re-establishment of indigenous vegetation in disturbed areas and minimize introduction and spread of invasive alien vegetation.

- Plant only locally indigenous flora if landscaping is required.
- Remove all building rubble and waste off site to registered dump sites
- Monitor alien invasives and control when necessary on a weekly basis during decommissioning
- Manually remove all Category 1 alien species in order to minimize soil disturbance as far as possible.

Table 12: Impact assessment of predicted impacts during the Construction Phase

Impact Description	Mitigation	Spatial Extent	Intensity	Duration	Revers-ibility	Irreplace-ability	Probability	Significance		Status	Ranking of Impact	Confidence
								Without Mitigation	*With Mitigation*			
Impact of project footprint on transformed vegetation and faunal habitat												
From clearing of vegetation, increased vehicle activity, altered burning and proliferation of alien flora	Avoid unnecessary loss of vegetation and faunal habitats; relocate indigenous fauna to natural areas in the neighbouring vicinity; promote re-establishment of indigenous vegetation in disturbed areas	Local (<2km)	Low	Long Term	High	Low	Probable	Low	Low	Negative	5	High
Impact of construction activities (including movement of vehicles) on occurrence and spread of alien plant species												
The proposed project may increase the existing occurrence alien grasses and herbaceous plants on site as a result of soil disturbance for foundations for the chicken house and waste storage site, as well as the introduction of alien seed with the movement of vehicles and materials	Minimize the introduction and proliferation of invasive alien species during construction by limiting and regulating access by potential vectors of alien flora and maintaining a tidy construction site	Local	Low	Temporary	High	Low	Probable	Low	Low	Negative	4	High
Impact of dust and erosion caused by construction activities on ecology on the site												

Construction activities are likely to increase bare ground, dust and the land's susceptibility to erosion	Minimise dust and erosion by implementing effective measures to control dust erosion, such as limiting vehicles, people and materials to the construction site.	Local	Low	Temporary	High	Low	Probable	Low	Low	Negative	4	High
Impact of sensory disturbance as a result of construction activities (incl. vehicles) on fauna												
The increase in noise and light pollution will be a sensory disturbance and may result in fauna such as rodents vacating the area, at least temporarily during construction phase**.**	The duration of construction activities, reducing noise and light pollution can reduce sensory disturbance on fauna.	Local	Low	Temporary	High	Low	Probable	Low	Low	Negative	4	High

Table 13: Impact assessment of predicted impacts during the Operations Phase

Impact Description	Mitigation	Spatial Extent	Intensity	Duration	Revers-ibility	Irreplaceability	Probability	Significance		Status	Ranking of Impact	Confidence
								Without Mitigation	*With Mitigation*			
Impact on the fauna as a result of noise, lights and dust from the chicken houses leading to sensory disturbance												
Noise generated by the chickens, and lights turned on at night may have an impact on the fauna in the environment.	Minimise sensory disturbance of fauna by minimizing essential lighting, noise, and preventing unnecessary light and noise pollution, especially on nocturnal animals.	Local	Low	Long-term	High	Low	Probable	Low	Low	Negative	3	High
Impact of contaminants as a result of handling of chicken waste on leading to contaminating the surrounding environment												
Improper management and disposal of carcasses as well as excess fodder, chemicals such as pesticides and any other operational waste may cause contamination of the local soils, nearby seeplines and groundwater.	Environmental contamination can be avoided by ensuring that excrement, carcasses, feed, and other operational waste and hazardous materials are appropriately and effectively contained and disposed of without detriment to the environment.	Local	Low	Long-term	High	Low	Highly Probable	Medium	Low	Negative	4	High

Impact of animal pests as a result of inappropriate handling of chicken waste and poor hygiene conditions in handling the chickens leading to increased breeding of animal pest.												
Poor management of chicken excrement and excess fodder may increase breeding of invertebrate pests. Poor waste management and hygiene practices may also attract vertebrate pests. And may adversely affect the local/ indigenous fauna.	Ensure that effective pest control that also does not affect non-target animals by controlling access and proliferation of pests as far as possible.	Local	Low	Long-term	High	Low	Highly Probable	Low	Low	Negative	5	High
Impact of diseases as a result of poor chicken waste management and/or prevalence of pests leading to a change in population of native fauna												
Diseases could be transmitted either directly from chickens and their excrement, or indirectly from an increased prevalence of pests, which could in turn adversely affect the population dynamics of native fauna in the surrounding area.	Ensure that pests and other potential vectors are unable to enter areas where they might encounter production animals, carcasses, excrement or bedding, by thoroughly sealing these areas using effective, humane and environmentally-friendly means.	Local	Low	Long-term	High	Low	Probable	Medium	Low	Negative	4	High
Impact of organic waste and blood from inappropriate handling of chickens carcasses and by-products in the abattoir operations												
Environmental contamination of the surrounding environment,	Ensure that effective .management and containment of chicken	Local	Low	Long-term	High	Low	Probable	Medium	Low	Negative	4	High

soil and water, from organic waste and blood	blood and organic waste are implemented as far as possible.											
Impact of fires on the surrounding environment as a result of accidents caused by human activities on site												
Impact of fires that could occur as a result of human activity on site and use of vehicles	Avoid and minimise fires on site.	Local	Low	Short-term	High	Low	Probable	Low	Low	Negative	4	High

Table 14: Impact assessment of predicted impacts during the Decommissioning Phase

Impact Description	Mitigation	Spatial Extent	Intensity	Duration	Reversibility	Irreplaceability	Probability	Significance		Status	Ranking of Impact	Confidence
								Without Mitigation	*With Mitigation*			
Impact of decommissioning and removal of facilities on fauna and flora on site												
Decommissioning could lead to increased dust and potential erosion if land is left bare, and could lead to sensory disturbance of fauna.	Promote the re-establishment of indigenous vegetation in disturbed areas and minimize introduction and spread of invasive alien vegetation.	Local (<2km)	Low	Temporary	High	Low	Probable	Medium	Low	Positive	4	High

9. FINDINGS, POTENTIAL IMPLICATIONS AND SPECIALIST OPINION

The area around the Mthunzi Chicken Supplier project does not have any regionally or locally important topographical or ecological features that would be negatively impacted by the proposed project. The 2.57 ha site has been transformed by existing infrastructure, human activity, alien invasive vegetation and cultivation. The following is a summary of the key findings and potential implications of the proposed expansion of the chicken broiler facility on the ecology of the site and local area:

Species richness: The current disturbed nature of the plot means that the floral habitats have already been transformed. Native fauna species have been displaced by previous and current land use activities. Furthermore, some faunal species may be displaced from expansion activities, while others may be introduced. Overall, the species richness is low.

Conservation Important species: There is a low likelihood of Conservation Important species occurring on site.

Sensitive species and/areas: The project falls in the Carletonville Dolomite Grassland vegetation unit, which is considered to be Endangered and the Kliprivier Highveld Grassland ecosystem which is Critically Endangered. However, the habitat on site is already highly transformed by agriculture.

Habitat quality and extent: The site has been transformed by fencing, previous and current cultivation, grazing activities, invasive alien plants and human activities.

Impact on species richness and conservation: The expansion of the chicken broiler facility will have a small, permanent footprint. Given the current transformed nature of the site, it is predicted that further impacts on the surrounding ecology will be minimal. However, if management measures are not adhered to, contamination and degradation of the surrounding areas could occur.

Biodiversity, Conservation importance and Connectivity: The site does not contain any CBAs, ESAs or NFEPA river or wetland areas. The proposed development will have no effect on the ecological connectivity of the area.

Management Recommendation: If any native fauna species are encountered or exposed during construction, they should be removed and relocated to preferable natural areas in the vicinity. Category 1 Alien and invasive plants must be removed and disposed of in the correct manner. Indigenous vegetation should be re-established in disturbed areas when the development is operational.

General opinion: From an ecological perspective, there is no objection against the proposed development provided the mitigation measures are implemented.

10.CONCLUSION

The construction of a chicken broiler and abattoir facility with a total footprint of 2700 m² could have a negative impact on the ecology of the area. The development of the facility may cause habitat change which may further result in secondary ecology impacts. However, the proposed project will be developed in an area zoned for agriculture and on transformed grassland and previously cultivated land that is infested by alien invasive vegetation. The conservation status of the site is ranked as Low, meaning that the land has little conservation value and could be considered for development. The project is considered to have limited impact on the remaining floral and faunal communities in the area. There were no sensitive ecological systems or components recognised. Therefore, from a conservation perspective, the development is considered to be acceptable.

Furthermore, with the implementation of the mitigation measures outlined in the report, the significance of ecological impacts on site can be reduced to Low. Based on the site visit and the information that was available to date, it is the opinion of the CSIR specialist that there are no fatal flaws to the project. If all the recommended mitigation measures are implemented, the CSIR specialist has no objection to the project going forward.

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APPENDICES

Appendix 1: Plant species recorded in QDS 2628AC

Appendix 2: Fauna (excluding birds) that have been recorded in QDS 2628AC

Appendix 3: Birds that have been recorded in pentad 2620_2810 (SABAP2 2018)

Appendix 4: Approach and terminology used for the impact assessment

Appendix 5: Curriculum Vitae of Rirhandzu Marivate

Appendix 1: Plant species recorded in QDS 2628AC

Family	Species	Threat Status	Growth forms
ACANTHACEAE	*Barleria macrostegia Nees*	LC	Herb
ACANTHACEAE	*Barleria obtusa Nees*	LC	Dwarf shrub, herb, shrub
ACANTHACEAE	*Blepharis stainbankiae C.B.Clarke*	LC	Herb
ACANTHACEAE	*Crabbea acaulis N.E.Br.*	LC	Herb
AGAPANTHACEAE	*Agapanthus campanulatus F.M.Leight. subsp. patens (F.M.Leight.) F.M.Leight.*	LC	Herb
ALISMATACEAE	*Alisma plantago-aquatica L.*	Not Evaluated	Hydrophyte, hyperhydate
ALLIACEAE	*Tulbaghia leucantha Baker*	LC	Herb
AMARANTHACEAE	*Achyranthes aspera L. var. aspera*	Not Evaluated	Herb
AMARANTHACEAE	*Amaranthus muricatus (Moq.) Hieron.*	Not Evaluated	Herb
ANACARDIACEAE	*Searsia discolor (E.Mey. ex Sond.) Moffett*	LC	Dwarf shrub, shrub
ANACARDIACEAE	*Searsia magalismontana (Sond.) Moffett subsp. magalismontana*	LC	Dwarf shrub
ANACARDIACEAE	*Searsia rigida (Mill.) F.A.Barkley var. margaretae (Burtt Davy ex Moffett) Moffett*	LC	Shrub
ANACARDIACEAE	*Searsia rigida (Mill.) F.A.Barkley var. rigida*	LC	Shrub
APIACEAE	*Afrosciadium magalismontanum (Sond.) P.J.D.Winter*	LC	Herb
APIACEAE	*Alepidea peduncularis A.Rich.*	DDT	Herb
APIACEAE	*Berula erecta (Huds.) Coville*	LC	Herb
APOCYNACEAE	*Ancylobotrys capensis (Oliv.) Pichon*	LC	Climber, shrub
APOCYNACEAE	*Asclepias aurea (Schltr.) Schltr.*	LC	Herb
APOCYNACEAE	*Asclepias eminens (Harv.) Schltr.*	LC	Herb
APOCYNACEAE	*Asclepias fallax (Schltr.) Schltr.*	LC	Herb
APOCYNACEAE	*Asclepias gibba (E.Mey.) Schltr. var. gibba*	LC	Herb
APOCYNACEAE	*Aspidoglossum biflorum E.Mey.*	LC	Herb, succulent
APOCYNACEAE	*Cordylogyne globosa E.Mey.*	LC	Geophyte, succulent
APOCYNACEAE	*Pachycarpus schinzianus (Schltr.) N.E.Br.*	LC	Herb, succulent
APOCYNACEAE	*Parapodium costatum E.Mey.*	LC	Herb, succulent
APOCYNACEAE	*Raphionacme velutina Schltr.*	LC	Geophyte, herb, succulent
APOCYNACEAE	*Schizoglossum periglossoides Schltr.*	LC	Herb, succulent
APOCYNACEAE	*Stenostelma umbelluliferum (Schltr.) S.P.Bester & Nicholas*	NT	Geophyte, herb, succulent
APOCYNACEAE	*Xysmalobium undulatum (L.) Aiton f. var. undulatum*	LC	Herb, succulent
ASPARAGACEAE	*Asparagus cooperi Baker*	LC	Dwarf shrub, shrub
ASPARAGACEAE	*Asparagus laricinus Burch.*	LC	Shrub
ASPARAGACEAE	*Asparagus suaveolens Burch.*	LC	Shrub
ASPHODELACEAE	*Aloe marlothii A.Berger subsp. marlothii*	LC	Succulent, tree
ASPHODELACEAE	*Bulbine narcissifolia Salm-Dyck*	LC	Geophyte, herb, succulent
ASPHODELACEAE	*Chortolirion angolense (Baker) A.Berger*	LC	Geophyte, succulent
ASPHODELACEAE	*Kniphofia ensifolia Baker subsp. ensifolia*	LC	Herb
ASPHODELACEAE	*Trachyandra erythrorrhiza (Conrath) Oberm.*	NT	Geophyte, succulent
ASPHODELACEAE	*Trachyandra saltii (Baker) Oberm. var. saltii*	LC	Geophyte, succulent

Family	Species	Threat Status	Growth forms
ASTERACEAE	*Aster harveyanus Kuntze*	LC	Herb
ASTERACEAE	*Aster peglerae Bolus*	LC	Herb
ASTERACEAE	*Athrixia angustissima DC.*	LC	Herb
ASTERACEAE	*Athrixia elata Sond.*	LC	Dwarf shrub
ASTERACEAE	*Athrixia phylicoides DC.*	LC	Shrub
ASTERACEAE	*Berkheya seminivea Harv. & Sond.*	LC	Herb
ASTERACEAE	*Cineraria aspera Thunb.*	LC	Herb, suffrutex
ASTERACEAE	*Cineraria longipes S.Moore*	VU	Dwarf shrub, herb
ASTERACEAE	*Conyza podocephala DC.*	LC	Herb
ASTERACEAE	*Cotula coronopifolia L.*	LC	Helophyte, herb
ASTERACEAE	*Crepis hypochaeridea (DC.) Thell.*	Not Evaluated	Herb
ASTERACEAE	*Denekia capensis Thunb.*	LC	Herb
ASTERACEAE	*Dimorphotheca spectabilis Schltr.*	LC	Herb
ASTERACEAE	*Felicia filifolia (Vent.) Burtt Davy subsp. filifolia*	LC	Shrub
ASTERACEAE	*Garuleum woodii Schinz*	LC	Shrub, suffrutex
ASTERACEAE	*Helichrysum aureum (Houtt.) Merr. var. monocephalum (DC.) Hilliard*	LC	Herb
ASTERACEAE	*Helichrysum caespititium (DC.) Harv.*	LC	Herb
ASTERACEAE	*Helichrysum cephaloideum DC.*	LC	Herb
ASTERACEAE	*Helichrysum chionosphaerum DC.*	LC	Herb
ASTERACEAE	*Helichrysum harveyanum Wild*	LC	Herb
ASTERACEAE	*Helichrysum kraussii Sch.Bip.*	LC	Shrub
ASTERACEAE	*Helichrysum lepidissimum S.Moore*	LC	Herb, shrub
ASTERACEAE	*Helichrysum nudifolium (L.) Less. var. nudifolium*	LC	Herb
ASTERACEAE	*Helichrysum rugulosum Less.*	LC	Herb
ASTERACEAE	*Helichrysum setosum Harv.*	LC	Herb, shrub
ASTERACEAE	*Hilliardiella hirsuta (DC.) H.Rob.*	LC	Herb
ASTERACEAE	*Lopholaena coriifolia (Sond.) E.Phillips & C.A.Sm.*	LC	Shrub, succulent
ASTERACEAE	*Nidorella anomala Steetz*	LC	Herb
ASTERACEAE	*Schistostephium crataegifolium (DC.) Fenzl ex Harv.*	LC	Herb, suffrutex
ASTERACEAE	*Schkuhria pinnata (Lam.) Kuntze ex Thell.*	Not Evaluated	Herb
ASTERACEAE	*Senecio coronatus (Thunb.) Harv.*	LC	Herb
ASTERACEAE	*Senecio hieracioides DC.*	LC	Herb
ASTERACEAE	*Senecio lydenburgensis Hutch. & Burtt Davy*	LC	Herb
ASTERACEAE	*Tagetes minuta L.*	Not Evaluated	Herb
ASTERACEAE	*Tripteris aghillana DC. var. aghillana*	LC	Herb, succulent
ASTERACEAE	*Ursinia nana DC. subsp. leptophylla Prassler*	LC	Herb
ASTERACEAE	*Vernonia galpinii Klatt*	LC	Herb
ASTERACEAE	*Vernonia sutherlandii Harv.*	LC	Herb
BORAGINACEAE	*Cynoglossum hispidum Thunb.*	LC	Herb
BRASSICACEAE	*Nasturtium officinale R.Br.*	Not Evaluated	Herb
BUDDLEJACEAE	*Buddleja saligna Willd.*	LC	Shrub, tree
CARYOPHYLLACEAE	*Dianthus mooiensis F.N.Williams subsp. kirkii (Burtt Davy) S.S.Hooper*	Not Evaluated	Herb

Family	Species	Threat Status	Growth forms
CARYOPHYLLACEAE	*Pollichia campestris Aiton*	LC	Herb
CELASTRACEAE	*Pterocelastrus echinatus N.E.Br.*	LC	Shrub, tree
CHENOPODIACEAE	*Chenopodium album L.*	Not Evaluated	Herb
CHENOPODIACEAE	*Chenopodium schraderianum Roem. & Schult.*	Not Evaluated	Herb
COMMELINACEAE	*Cyanotis speciosa (L.f.) Hassk.*	LC	Herb, succulent
CONVOLVULACEAE	*Cuscuta campestris Yunck.*	Not Evaluated	Herb, parasite
CONVOLVULACEAE	*Falkia oblonga Bernh. ex C.Krauss*	LC	Herb
CONVOLVULACEAE	*Ipomoea oblongata E.Mey. ex Choisy*	LC	Herb, succulent
CRASSULACEAE	*Crassula alba Forssk. var. alba*	LC	Herb, succulent
CRASSULACEAE	*Crassula arborescens (Mill.) Willd. subsp. arborescens*	LC	Shrub, succulent
CRASSULACEAE	*Crassula setulosa Harv. var. jenkinsii Schönland*	LC	Herb, lithophyte, succulent
CUCURBITACEAE	*Kedrostis africana (L.) Cogn.*	LC	Climber, herb, succulent
CYPERACEAE	*Abildgaardia ovata (Burm.f.) Kral*	LC	Cyperoid, helophyte, herb, mesophyte
CYPERACEAE	*Bulbostylis burchellii (Ficalho & Hiern) C.B.Clarke*	LC	Cyperoid, herb, mesophyte
CYPERACEAE	*Cyperus congestus Vahl*	LC	Cyperoid, helophyte, herb
CYPERACEAE	*Cyperus obtusiflorus Vahl var. obtusiflorus*	LC	Cyperoid, herb, mesophyte
CYPERACEAE	*Fimbristylis complanata (Retz.) Link*	LC	Cyperoid, helophyte, herb
CYPERACEAE	*Fuirena coerulescens Steud.*	LC	Cyperoid, helophyte, herb
CYPERACEAE	*Fuirena pubescens (Poir.) Kunth var. pubescens*	LC	Cyperoid, helophyte, herb, mesophyte
CYPERACEAE	*Isolepis cernua (Vahl) Roem. & Schult. var. cernua*	LC	Cyperoid, helophyte, herb
CYPERACEAE	*Isolepis costata Hochst. ex A.Rich.*	LC	Cyperoid, helophyte, herb
CYPERACEAE	*Kyllinga pulchella Kunth*	LC	Cyperoid, helophyte, herb
CYPERACEAE	*Scirpoides burkei (C.B.Clarke) Goetgh., Muasya & D.A.Simpson*	LC	Cyperoid, herb, mesophyte
DIOSCOREACEAE	*Dioscorea quartiniana A.Rich.*	LC	Climber, geophyte, succulent
DIOSCOREACEAE	*Dioscorea sylvatica Eckl. var. brevipes (Burtt Davy) Burkill*	Not Evaluated	Climber, geophyte, succulent
DROSERACEAE	*Drosera burkeana Planch.*	LC	Carnivore, herb
EBENACEAE	*Diospyros austro-africana De Winter var. microphylla (Burch.) De Winter*	LC	Shrub
EBENACEAE	*Diospyros lycioides Desf. subsp. guerkei (Kuntze) De Winter*	LC	Shrub, tree
EBENACEAE	*Euclea crispa (Thunb.) Gürke subsp. crispa*	LC	Shrub, tree
EUPHORBIACEAE	*Ricinus communis L. var. communis*	Not Evaluated	Shrub, tree
FABACEAE	*Abrus laevigatus E.Mey.*	LC	Climber
FABACEAE	*Acacia caffra (Thunb.) Willd.*	LC	Shrub, tree
FABACEAE	*Argyrolobium rupestre (E.Mey.) Walp. subsp. rupestre*	LC	Herb
FABACEAE	*Argyrolobium tuberosum Eckl. & Zeyh.*	LC	Herb
FABACEAE	*Crotalaria distans Benth. subsp. distans*	LC	Herb
FABACEAE	*Dichilus lebeckioides DC.*	LC	Dwarf shrub, herb
FABACEAE	*Dichilus strictus E.Mey.*	LC	Dwarf shrub, herb, shrub
FABACEAE	*Elephantorrhiza elephantina (Burch.) Skeels*	LC	Dwarf shrub, shrub, suffrutex
FABACEAE	*Eriosema burkei Benth. ex Harv. var. burkei*	LC	Herb

Family	Species	Threat Status	Growth forms
FABACEAE	*Erythrina zeyheri Harv.*	LC	Dwarf shrub, shrub, succulent
FABACEAE	*Indigastrum burkeanum (Benth. ex Harv.) Schrire*	LC	Herb
FABACEAE	*Indigastrum fastigiatum (E.Mey.) Schrire*	LC	Herb
FABACEAE	*Indigofera dimidiata Vogel ex Walp.*	LC	Herb
FABACEAE	*Indigofera hedyantha Eckl. & Zeyh.*	LC	Herb
FABACEAE	*Indigofera hilaris Eckl. & Zeyh. var. hilaris*	LC	Herb
FABACEAE	*Indigofera obscura N.E.Br.*	LC	Herb
FABACEAE	*Indigofera oxytropis Benth. ex Harv.*	LC	Herb
FABACEAE	*Macrotyloma axillare (E.Mey.) Verdc. var. axillare*	LC	Climber, herb
FABACEAE	*Melolobium wilmsii Harms*	LC	Dwarf shrub
FABACEAE	*Mundulea sericea (Willd.) A.Chev. subsp. sericea*	LC	Shrub, tree
FABACEAE	*Rhynchosia adenodes Eckl. & Zeyh.*	LC	Herb
FABACEAE	*Rhynchosia reptabunda N.E.Br.*	LC	Climber, herb
FABACEAE	*Rhynchosia sordida (E.Mey.) Schinz*	LC	Dwarf shrub, herb, shrub
FABACEAE	*Rhynchosia totta (Thunb.) DC. var. totta*	LC	Climber, herb
FABACEAE	*Tephrosia longipes Meisn. subsp. longipes var. longipes*	LC	Dwarf shrub, herb, shrub
FABACEAE	*Trifolium africanum Ser. var. africanum*	LC	Herb
FABACEAE	*Vicia sativa L. subsp. sativa*	Not Evaluated	Climber, herb
FABACEAE	*Vigna vexillata (L.) A.Rich. var. vexillata*	LC	Climber, herb
FABACEAE	*Zornia linearis E.Mey.*	LC	Herb
GERANIACEAE	*Geranium multisectum N.E.Br.*	LC	Herb
GERANIACEAE	*Monsonia angustifolia E.Mey. ex A.Rich.*	LC	Herb
HYACINTHACEAE	*Ledebouria inquinata (C.A.Sm.) Jessop*	LC	Geophyte
HYPERICACEAE	*Hypericum aethiopicum Thunb. subsp. sonderi (Bredell) N.Robson*	LC	Herb
HYPOXIDACEAE	*Hypoxis acuminata Baker*	LC	Geophyte
HYPOXIDACEAE	*Hypoxis multiceps Buchinger ex Baker*	LC	Geophyte
IRIDACEAE	*Babiana bainesii Baker*	LC	Geophyte, herb
IRIDACEAE	*Gladiolus papilio Hook.f.*	LC	Geophyte, herb
IRIDACEAE	*Gladiolus permeabilis D.Delaroche subsp. edulis (Burch. ex Ker Gawl.) Oberm.*	LC	Geophyte, herb
IRIDACEAE	*Gladiolus sericeovillosus Hook.f. subsp. calvatus (Baker) Goldblatt*	LC	Geophyte, herb
IRIDACEAE	*Gladiolus sericeovillosus Hook.f. subsp. sericeovillosus*	LC	Geophyte, herb
IRIDACEAE	*Moraea pallida (Baker) Goldblatt*	LC	Geophyte, herb
IRIDACEAE	*Moraea simulans Baker*	LC	Geophyte, herb
JUNCACEAE	*Juncus exsertus Buchenau*	LC	Helophyte, herb
LAMIACEAE	*Ajuga ophrydis Burch. ex Benth.*	LC	Herb
LAMIACEAE	*Salvia runcinata L.f.*	LC	Herb
LAMIACEAE	*Syncolostemon pretoriae (Gürke) D.F.Otieno*	LC	Herb
LAMIACEAE	*Teucrium trifidum Retz.*	LC	Herb
LOBELIACEAE	*Cyphia assimilis Sond.*	LC	Climber, herb
LOBELIACEAE	*Monopsis decipiens (Sond.) Thulin*	LC	Herb
LYTHRACEAE	*Nesaea sagittifolia (Sond.) Koehne var. sagittifolia*	LC	Dwarf shrub

Family	Species	Threat Status	Growth forms
LYTHRACEAE	*Nesaea schinzii Koehne*	LC	Dwarf shrub
MALVACEAE	*Hermannia coccocarpa (Eckl. & Zeyh.) Kuntze*	LC	Herb
MALVACEAE	*Hermannia cordata (E.Mey. ex E.Phillips) De Winter*	LC	Herb
MALVACEAE	*Hermannia geniculata Eckl. & Zeyh.*	LC	Dwarf shrub
MALVACEAE	*Hermannia grandistipula (Buchinger ex Hochst.) K.Schum.*	LC	Herb
MALVACEAE	*Hermannia lancifolia Szyszyl.*	LC	Herb
MALVACEAE	*Melhania prostrata DC.*	LC	Dwarf shrub
MALVACEAE	*Sida chrysantha Ulbr.*	LC	Dwarf shrub
MALVACEAE	*Sida rhombifolia L. subsp. rhombifolia*	LC	Dwarf shrub, herb, shrub
MENISPERMACEAE	*Antizoma angustifolia (Burch.) Miers ex Harv.*	LC	Climber
MESEMBRYANTHEMACEAE	*Khadia acutipetala (N.E.Br.) N.E.Br.*	LC	Succulent
MESEMBRYANTHEMACEAE	*Lithops lesliei (N.E.Br.) N.E.Br. subsp. lesliei*	NT	Succulent
MYRSINACEAE	*Myrsine africana L.*	LC	Shrub
ORCHIDACEAE	*Habenaria bicolor Conrath & Kraenzl.*	NT	Geophyte, herb
ORCHIDACEAE	*Habenaria epipactidea Rchb.f.*	LC	Geophyte, herb
ORCHIDACEAE	*Satyrium hallackii Bolus subsp. ocellatum (Bolus) A.V.Hall*	LC	Geophyte, herb
OROBANCHACEAE	*Harveya speciosa Bernh.*	LC	Herb, parasite
OROBANCHACEAE	*Striga bilabiata (Thunb.) Kuntze subsp. bilabiata*	LC	Herb, parasite
PHYTOLACCACEAE	*Phytolacca octandra L.*	Not Evaluated	Herb, succulent
POACEAE	*Agrostis eriantha Hack. var. eriantha*	LC	Graminoid
POACEAE	*Alloteropsis semialata (R.Br.) Hitchc. subsp. eckloniana (Nees) Gibbs Russ.*	LC	Graminoid
POACEAE	*Alloteropsis semialata (R.Br.) Hitchc. subsp. semialata*	LC	Graminoid
POACEAE	*Andropogon appendiculatus Nees*	LC	Graminoid
POACEAE	*Andropogon schirensis Hochst. ex A.Rich.*	LC	Graminoid
POACEAE	*Aristida bipartita (Nees) Trin. & Rupr.*	LC	Graminoid
POACEAE	*Aristida canescens Henrard subsp. canescens*	LC	Graminoid
POACEAE	*Aristida diffusa Trin. subsp. burkei (Stapf) Melderis*	LC	Graminoid
POACEAE	*Arundinella nepalensis Trin.*	LC	Graminoid
POACEAE	*Brachiaria serrata (Thunb.) Stapf*	LC	Graminoid
POACEAE	*Chloris virgata Sw.*	LC	Graminoid
POACEAE	*Cynodon transvaalensis Burtt Davy*	LC	Graminoid
POACEAE	*Digitaria diagonalis (Nees) Stapf var. diagonalis*	LC	Graminoid
POACEAE	*Digitaria monodactyla (Nees) Stapf*	LC	Graminoid
POACEAE	*Digitaria ternata (A.Rich.) Stapf*	LC	Graminoid
POACEAE	*Diheteropogon amplectens (Nees) Clayton var. amplectens*	LC	Graminoid
POACEAE	*Echinochloa jubata Stapf*	LC	Graminoid
POACEAE	*Elionurus muticus (Spreng.) Kunth*	LC	Graminoid
POACEAE	*Eragrostis capensis (Thunb.) Trin.*	LC	Graminoid
POACEAE	*Eragrostis curvula (Schrad.) Nees*	LC	Graminoid
POACEAE	*Eragrostis nindensis Ficalho & Hiern*	LC	Graminoid
POACEAE	*Eragrostis sclerantha Nees subsp. sclerantha*	LC	Graminoid
POACEAE	*Eragrostis stapfii De Winter*	LC	Graminoid

Family	Species	Threat Status	Growth forms
POACEAE	*Eragrostis tef (Zuccagni) Trotter*	Not Evaluated	Graminoid
POACEAE	*Eustachys paspaloides (Vahl) Lanza & Mattei*	LC	Graminoid
POACEAE	*Harpochloa falx (L.f.) Kuntze*	LC	Graminoid
POACEAE	*Heteropogon contortus (L.) Roem. & Schult.*	LC	Graminoid
POACEAE	*Hyparrhenia dregeana (Nees) Stapf ex Stent*	LC	Graminoid
POACEAE	*Hyparrhenia hirta (L.) Stapf*	LC	Graminoid
POACEAE	*Imperata cylindrica (L.) Raeusch.*	LC	Graminoid
POACEAE	*Koeleria capensis (Steud.) Nees*	LC	Graminoid
POACEAE	*Leersia hexandra Sw.*	LC	Graminoid
POACEAE	*Leptochloa fusca (L.) Kunth*	LC	Graminoid
POACEAE	*Lolium perenne L.*	Not Evaluated	Graminoid
POACEAE	*Miscanthus junceus (Stapf) Pilg.*	LC	Graminoid
POACEAE	*Panicum maximum Jacq.*	LC	Graminoid
POACEAE	*Panicum repens L.*	LC	Graminoid
POACEAE	*Panicum schinzii Hack.*	LC	Graminoid
POACEAE	*Paspalum dilatatum Poir.*	Not Evaluated	Graminoid
POACEAE	*Paspalum distichum L.*	LC	Graminoid
POACEAE	*Pennisetum sphacelatum (Nees) T.Durand & Schinz*	LC	Graminoid
POACEAE	*Poa annua L.*	Not Evaluated	Graminoid
POACEAE	*Setaria nigrirostris (Nees) T.Durand & Schinz*	LC	Graminoid
POACEAE	*Setaria sphacelata (Schumach.) Stapf & C.E.Hubb. ex M.B.Moss var. torta (Stapf) Clayton*	LC	Graminoid
POACEAE	*Sporobolus natalensis (Steud.) T.Durand & Schinz*	LC	Graminoid
POACEAE	*Trachypogon spicatus (L.f.) Kuntze*	LC	Graminoid
POACEAE	*Trichoneura grandiglumis (Nees) Ekman*	LC	Graminoid
POACEAE	*Tristachya leucothrix Trin. ex Nees*	LC	Graminoid
POACEAE	*Urochloa panicoides P.Beauv.*		Graminoid
POLYGALACEAE	*Polygala houtboshiana Chodat*	LC	Herb
POLYGALACEAE	*Polygala illepida E.Mey. ex Harv.*	LC	Herb
POLYGONACEAE	*Persicaria attenuata (R.Br.) Soják subsp. africana K.L.Wilson*	LC	Helophyte, herb, hydrophyte
POTAMOGETONACEAE	*Potamogeton pectinatus L.*	LC	Herb, hydrophyte
PROTEACEAE	*Leucospermum cuneiforme (Burm.f.) Rourke*	LC	Shrub
PROTEACEAE	*Protea roupelliae Meisn. subsp. roupelliae*	LC	Tree
PTERIDACEAE	*Adiantum raddianum C.Presl*	Not Evaluated	Geophyte, herb
RANUNCULACEAE	*Ranunculus meyeri Harv.*	LC	Helophyte
RHAMNACEAE	*Ziziphus zeyheriana Sond.*	LC	Dwarf shrub
ROSACEAE	*Cliffortia nitidula (Engl.) R.E.& T.C.E.Fr. subsp. pilosa Weim.*	Not Evaluated	Shrub
ROSACEAE	*Rubus rigidus Sm.*	LC	Shrub
RUBIACEAE	*Afrocanthium gilfillanii (N.E.Br.) Lantz*	LC	[No lifeform defined]
RUBIACEAE	*Galium spurium-aparine complex*	LC	Scrambler
RUBIACEAE	*Pentanisia angustifolia (Hochst.) Hochst.*	LC	Herb
RUBIACEAE	*Vangueria infausta Burch. subsp. infausta*	LC	Tree

Family	Species	Threat Status	Growth forms
SANTALACEAE	*Osyris lanceolata Hochst. & Steud.*	LC	Shrub
SANTALACEAE	*Thesium deceptum N.E.Br.*	LC	Parasite, shrub
SANTALACEAE	*Thesium exile N.E.Br.*	LC	Herb, parasite
SANTALACEAE	*Thesium rasum (A.W.Hill) N.E.Br.*	LC	Herb, parasite, shrub
SANTALACEAE	*Thesium transvaalense Schltr.*	LC	Dwarf shrub, herb, parasite
SAPOTACEAE	*Mimusops zeyheri Sond.*	LC	Shrub, tree
SCROPHULARIACEAE	*Diclis rotundifolia (Hiern) Hilliard & B.L.Burtt*	LC	Herb
SCROPHULARIACEAE	*Selago capitellata Schltr.*	LC	Herb
SOLANACEAE	*Datura stramonium L.*	Not Evaluated	Herb, shrub
SOLANACEAE	*Physalis angulata L.*	Not Evaluated	Herb
SOLANACEAE	*Solanum retroflexum Dunal*	LC	Herb
SOLANACEAE	*Solanum rigescens Jacq.*	Not Evaluated	[No lifeform defined]
SOLANACEAE	*Solanum sisymbriifolium Lam.*	Not Evaluated	Herb, shrub
SOLANACEAE	*Withania somnifera (L.) Dunal*	LC	Dwarf shrub, herb, shrub
THYMELAEACEAE	*Gnidia kraussiana Meisn. var. kraussiana*	LC	Dwarf shrub, shrub
VITACEAE	*Rhoicissus tridentata (L.f.) Wild & R.B.Drumm. subsp. tridentata*	Not Evaluated	Shrub

Appendix 2: Fauna (excluding birds) that have been recorded in QDS 2628AC

Mammals

Family	Genus	species	Common Name	Red List Status	No of Observations on QDS	No of Observation on Site	LoO
Bovidae	*Alcelaphus*	*buselaphus*	Hartebeest	Not listed	63	0	3
Bovidae	*Connochaetes*	*gnou*	Black Wildebeest	Least Concern	7	0	3
Bovidae	*Connochaetes*	*taurinus*		Least Concern	1	0	3
Bovidae	*Damaliscus*	*pygargus*	Blesbok	Least Concern	89	0	3
Bovidae	*Pelea*	*capreolus*	Vaal Rhebok	Least Concern	2	0	3
Bovidae	*Raphicerus*	*campestris*	Steenbok	Least Concern	31	0	3
Bovidae	*Redunca*	*arundinum*	Southern Reedbuck	Least Concern	11	0	3
Bovidae	*Redunca*	*fulvorufula*	Mountain Reedbuck	Least Concern	4	0	3
Bovidae	*Sylvicapra*	*grimmia*	Bush Duiker	Least Concern	1	0	3
Bovidae	*Tragelaphus*	*oryx*	Common Eland	Least Concern	46	0	3
Bovidae	*Tragelaphus*	*strepsiceros*	Greater Kudu	Least Concern	4	0	3
Canidae	*Canis*	*mesomelas*	Black-backed Jackal	Least Concern	23	0	2
Cercopithecidae	*Papio*	*ursinus*	Chacma Baboon	Least Concern	1	0	3
Emballonuridae	*Taphozous*	*mauritianus*	Mauritian Tomb Bat	Least Concern	1	0	3
Equidae	*Equus*	*quagga*	Plains Zebra	Not listed	92	0	3
Erinaceidae	*Atelerix*	*frontalis*	Southern African Hedgehog	Near Threatened	4	0	3
Felidae	*Felis*	*catus*	Domestic Cat	Introduced	1	0	2
Felidae	*Leptailurus*	*serval*	Serval	Near Threatened	2	0	3
Felidae	*Panthera*	*pardus*	Leopard	Least Concern	1	0	3
Herpestidae	*Atilax*	*paludinosus*	Marsh Mongoose	Least Concern	1	0	3
Herpestidae	*Cynictis*	*penicillata*	Yellow Mongoose	Least Concern	6	0	2

Herpestidae	*Herpestes*	*sanguineus*	Slender Mongoose	Least Concern	2	0	3
Herpestidae	*Suricata*	*suricatta*	Meerkat	Least Concern	3	0	3
Hyaenidae	*Hyaena*	*brunnea*	Brown Hyena	Near Threatened	4	0	3
Hystricidae	*Hystrix*	*africaeaustralis*	Cape Porcupine	Least Concern	13	0	3
Leporidae	*Lepus*	*saxatilis*	Scrub Hare	Least Concern	3	0	2
Leporidae	*Pronolagus*	*rupestris*	Smith's Red Rock Hare	Least Concern	1	0	3
Macroscelididae	*Elephantulus*	*myurus*	Eastern Rock Elephant Shrew	Least Concern	2	0	3
Muridae	*Aethomys*	*namaquensis*	Namaqua Rock Mouse	Least Concern	1	0	2
Muridae	*Gerbilliscus*	*brantsii*	Highveld Gerbil	Least Concern	1	0	3
Muridae	*Mastomys*		Multimammate Mice	Not listed	7	0	2
Muridae	*Mus*	*musculus*		Not listed	1	0	2
Muridae	*Otomys*		Vlei Rats	Not listed	1	0	3
Muridae	*Otomys*	*auratus*	Southern African Vlei Rat	Not listed	1	0	3
Muridae	*Rhabdomys*	*pumilio*	Xeric Four-striped Grass Rat	Least Concern	2	0	1
Mustelidae	*Aonyx*	*capensis*	African Clawless Otter	Least Concern	2	0	3
Orycteropodidae	*Orycteropus*	*afer*	Aardvark	Least Concern	1	0	3
Procaviidae	*Procavia*	*capensis*	Cape Rock Hyrax	Least Concern	2	0	3
Soricidae	*Crocidura*	*mariquensis*	Swamp Musk Shrew	Data Deficient	1	0	3
Viverridae	*Genetta*	*genetta*	Common Genet	Least Concern	1	0	3
Viverridae	*Genetta*	*tigrina*	Cape Genet	Least Concern	1	0	3

Frogs

Family	***Genus***	***species***	***Common Name***	**Red List Status**	**No of Observations on QDS**	**No of Observation on Site**	**LoO**
Bufonidae	*Schismaderma*	*carens*	Red Toad	Least Concern	3	0	3
Bufonidae	*Sclerophrys*	*capensis*	Raucous Toad	Least Concern	3	0	2

Bufonidae	*Sclerophrys*	*garmani*	Olive Toad	Least Concern	1	0	3
Bufonidae	*Sclerophrys*	*gutturalis*	Guttural Toad	Least Concern	21	0	2
Hyperoliidae	*Kassina*	*senegalensis*	Bubbling Kassina	Least Concern	16	0	2
Pipidae	*Xenopus*	*laevis*	Common Platanna	Least Concern	1	0	3
Pyxicephalidae	*Amietia*	*delalandii*	Delalande's River Frog	Least Concern	11	0	2
Pyxicephalidae	*Amietia*	*fuscigula*	Cape River Frog	Least Concern	1	0	3
Pyxicephalidae	*Amietia*	*poyntoni*	Poynton's River Frog	Not evaluated	1	0	3
Pyxicephalidae	*Cacosternum*	*boettgeri*	Common Caco	Least Concern	27	0	2
Pyxicephalidae	*Tomopterna*	*cryptotis*	Tremelo Sand Frog	Least Concern	4	0	3
Pyxicephalidae	*Tomopterna*	*natalensis*	Natal Sand Frog	Least Concern	16	0	3

Reptiles

Family	**Genus**	**species**	**Common Name**	**Red List Status**	**No of Observations on QDS**	**No of Observation on Site**	**LoO**
Agamidae	*Agama*	*aculeata*	Distant's Ground Agama	Not listed	2	0	3
Agamidae	*Agama*	*atra*	Southern Rock Agama	Not listed	29	0	3
Colubridae	*Crotaphopeltis*	*hotamboeia*	Red-lipped Snake	Least Concern	1	0	2
Colubridae	*Dasypeltis*	*scabra*	Rhombic Egg-eater	Least Concern	5	0	2
Cordylidae	*Cordylus*	*vittifer*	Common Girdled Lizard	Least Concern	3	0	3
Cordylidae	*Pseudocordylus*	*melanotus*	Common Crag Lizard	Least Concern	21	0	3
Elapidae	*Elapsoidea*	*sundevallii*	Highveld Garter Snake	Least Concern	1	0	3
Elapidae	*Hemachatus*	*haemachatus*	Rinkhals	Least Concern	4	0	2
Gekkonidae	*Lygodactylus*	*capensis*	Common Dwarf Gecko	Least Concern	1	0	2
Gekkonidae	*Pachydactylus*	*affinis*	Transvaal Gecko	Least Concern	3	0	3
Gekkonidae	*Pachydactylus*	*capensis*	Cape Gecko	Least Concern	4	0	3
Gerrhosauridae	*Gerrhosaurus*	*flavigularis*	Yellow-throated Plated Lizard	Least Concern	4	0	2

Family	**Genus**	**species**	**Common Name**	**Red List Status**	**No of Observations on QDS**	**No of Observation on Site**	**LoO**
Lacertidae	*Nucras*	*lalandii*	Delalande's Sandveld Lizard	Least Concern	1	0	3
Lamprophiidae	*Aparallactus*	*capensis*	Black-headed Centipede-eater	Least Concern	6	0	3
Lamprophiidae	*Atractaspis*	*bibronii*	Bibron's Stiletto Snake	Not listed	1	0	3
Lamprophiidae	*Boaedon*	*capensis*	Brown House Snake	Near Threatened	3	0	2
Lamprophiidae	*Duberria*	*lutrix*	South African Slug-eater	Introduced	1	0	3
Lamprophiidae	*Homoroselaps*	*dorsalis*	Striped Harlequin Snake	Near Threatened	1	0	3
Lamprophiidae	*Homoroselaps*	*lacteus*	Spotted Harlequin Snake	Least Concern	1	0	3
Lamprophiidae	*Lamprophis*	*aurora*	Aurora House Snake	Least Concern	1	0	2
Lamprophiidae	*Lycodonomorphus*	*inornatus*	Olive House Snake	Least Concern	1	0	3
Lamprophiidae	*Lycodonomorphus*	*rufulus*	Brown Water Snake	Least Concern	3	0	3
Lamprophiidae	*Lycophidion*	*capense*	Cape Wolf Snake	Least Concern	3	0	3
Lamprophiidae	*Prosymna*	*sundevallii*	Sundevall's Shovel-snout	Near Threatened	2	0	3
Lamprophiidae	*Psammophis*	*crucifer*	Cross-marked Grass Snake	Least Concern	1	0	3
Lamprophiidae	*Psammophylax*	*rhombeatus*	Spotted Grass Snake	Least Concern	4	0	2
Leptotyphlopidae			Unidentified Leptotyphlopidae	Least Concern	2	0	3
Leptotyphlopidae	*Leptotyphlops*	*scutifrons*	Peters' Thread Snake	Least Concern	3	0	2
Pelomedusidae	*Pelomedusa*	*galeata*	South African Marsh Terrapin	Least Concern	1	0	3
Scincidae	*Panaspis*	*wahlbergii*	Wahlberg's Snake-eyed Skink	Least Concern	3	0	3
Scincidae	*Trachylepis*	*capensis*	Cape Skink	Not listed	4	0	2
Scincidae	*Trachylepis*	*punctatissima*	Speckled Rock Skink	Not listed	2	0	2
Scincidae	*Trachylepis*	*sp. (Transvaal varia)*	Skink	Not listed	1	0	3
Scincidae	*Trachylepis*	*varia*	Variable Skink	Not listed	2	0	3
Testudinidae	*Stigmochelys*	*pardalis*	Leopard Tortoise	Least Concern	1	0	3
Typhlopidae	*Afrotyphlops*	*bibronii*	Bibron's Blind Snake	Least Concern	2	0	3

Family	**Genus**	**species**	**Common Name**	**Red List Status**	**No of Observations on QDS**	**No of Observation on Site**	**LoO**
Typhlopidae	*Rhinotyphlops*	*lalandei*	Delalande's Beaked Blind Snake	Least Concern	1	0	3
Viperidae	*Bitis*	*arietans*	Puff Adder	Least Concern	4	0	2
Viperidae	*Causus*	*rhombeatus*	Rhombic Night Adder	Data Deficient	1	0	2

Butterflies

Family	Genus	species	sub-species	Red List Status	No of Observations on QDS 2628AC	No of Observation on Site	LoO
HESPERIIDAE	*Afrogegenes*			Not listed	13	0	2
HESPERIIDAE	*Coeliades*	*pisistratus*		Least Concern	1	0	3
HESPERIIDAE	*Eretis*	*djaelaelae*		Least Concern	1	0	3
HESPERIIDAE	*Eretis*	*umbra*	umbra	Least Concern	7	0	3
HESPERIIDAE	*Gegenes*	*pumilio*	gambica	Least Concern	2	0	3
HESPERIIDAE	*Kedestes*	*barberae*	barberae	Least Concern	7	0	3
HESPERIIDAE	*Kedestes*	*lepenula*		Least Concern	1	0	3
HESPERIIDAE	*Kedestes*	*nerva*	nerva	Least Concern	1	0	3
HESPERIIDAE	*Metisella*	*meninx*		Least Concern	1	0	3
HESPERIIDAE	*Platylesches*	*neba*		Least Concern	1	0	3
HESPERIIDAE	*Spialia*			Not listed	4	0	3
HESPERIIDAE	*Spialia*	*asterodia*		Least Concern	6	0	3
HESPERIIDAE	*Spialia*	*ferax*		Least Concern	5	0	3
HESPERIIDAE	*Spialia*	*mafa*	mafa	Least Concern	12	0	2
HESPERIIDAE	*Spialia*	*spio*		Least Concern	1	0	3
HESPERIIDAE	*Tsitana*	*tsita*		Least Concern	7	0	3
LYCAENIDAE	*Actizera*	*lucida*		Least Concern	6	0	3
LYCAENIDAE	*Aloeides*	*aranda*		Least Concern	6	0	3
LYCAENIDAE	*Aloeides*	*dentatis*	dentatis	Least Concern	39	0	3
LYCAENIDAE	*Aloeides*	*henningi*		Least Concern	30	0	2
LYCAENIDAE	*Aloeides*	*molomo*	molomo	Least Concern	9	0	3
LYCAENIDAE	*Aloeides*	*taikosama*		Least Concern	4	0	3
LYCAENIDAE	*Aloeides*	*trimeni*	trimeni	Least Concern	4	0	3
LYCAENIDAE	*Anthene*	*amarah*	amarah	Least Concern	1	0	3
LYCAENIDAE	*Anthene*	*definita*	definita	Least Concern	3	0	3
LYCAENIDAE	*Anthene*	*livida*	livida	Least Concern	3	0	3
LYCAENIDAE	*Axiocerses*	*tjoane*	tjoane	Least Concern	3	0	3
LYCAENIDAE	*Azanus*	*jesous*		Least Concern	4	0	3
LYCAENIDAE	*Azanus*	*moriqua*		Least Concern	4	0	3
LYCAENIDAE	*Azanus*	*ubaldus*		Least Concern	5	0	3
LYCAENIDAE	*Cacyreus*	*marshalli*		Least Concern	2	0	3
LYCAENIDAE	*Capys*	*disjunctus*		Least Concern	2	0	3
LYCAENIDAE	*Chilades*	*trochylus*		Least Concern	8	0	3
LYCAENIDAE	*Cigaritis*	*ella*		Least Concern	1	0	3
LYCAENIDAE	*Cigaritis*	*mozambica*		Least Concern	2	0	3
LYCAENIDAE	*Cigaritis*	*natalensis*		Least Concern	6	0	3
LYCAENIDAE	*Cupidopsis*	*cissus*	cissus	Least Concern	11	0	2
LYCAENIDAE	*Cupidopsis*	*jobates*	jobates	Least Concern	2	0	3
LYCAENIDAE	*Eicochrysops*	*messapus*	mahallakoaena	Least Concern	33	0	1
LYCAENIDAE	*Euchrysops*	*dolorosa*		Least Concern	1	0	3
LYCAENIDAE	*Euchrysops*	*osiris*		Least Concern	1	0	3

LYCAENIDAE	*Euchrysops*	*subpallida*		Least Concern	1	0	3
LYCAENIDAE	*Lampides*	*boeticus*		Least Concern	30	0	1
LYCAENIDAE	*Lepidochrysops*	*ketsi*	ketsi	Least Concern	1	0	3
LYCAENIDAE	*Lepidochrysops*	*ortygia*		Least Concern	2	0	3
LYCAENIDAE	*Lepidochrysops*	*patricia*		Least Concern	19	0	2
LYCAENIDAE	*Lepidochrysops*	*plebeia*	plebeia	Least Concern	8	0	3
LYCAENIDAE	*Lepidochrysops*	*tantalus*		Least Concern	2	0	3
LYCAENIDAE	*Leptomyrina*	*henningi*	henningi	Least Concern	12	0	2
LYCAENIDAE	*Leptotes*			Not listed	3	0	3
LYCAENIDAE	*Leptotes*	*babaulti*		Least Concern	2	0	3
LYCAENIDAE	*Leptotes*	*pirithous*	pirithous	Least Concern	10	0	2
LYCAENIDAE	*Tarucus*	*sybaris*	sybaris	Least Concern	19	0	2
LYCAENIDAE	*Tuxentius*	*melaena*	melaena	Least Concern	1	0	3
LYCAENIDAE	*Uranothauma*	*nubifer*	nubifer	Least Concern	3	0	3
LYCAENIDAE	*Zintha*	*hintza*	hintza	Least Concern	3	0	3
LYCAENIDAE	*Zizeeria*	*knysna*	knysna	Least Concern	11	0	2
LYCAENIDAE	*Zizina*	*otis*	antanossa	Least Concern	1	0	3
LYCAENIDAE	*Zizula*	*hylax*		Least Concern	15	0	2
NYMPHALIDAE	*Acraea*	*horta*		Least Concern	6	0	3
NYMPHALIDAE	*Acraea*	*neobule*	neobule	Least Concern	4	0	3
NYMPHALIDAE	*Aeropetes*	*tulbaghia*		Least Concern	1	0	3
NYMPHALIDAE	*Byblia*	*ilithyia*		Least Concern	4	0	3
NYMPHALIDAE	*Catacroptera*	*cloanthe*	cloanthe	Least Concern	24	0	2
NYMPHALIDAE	*Danaus*	*chrysippus*	orientis	Least Concern	10	0	2
NYMPHALIDAE	*Hypolimnas*	*misippus*		Least Concern	8	0	3
NYMPHALIDAE	*Junonia*	*hierta*	cebrene	Least Concern	26	0	2
NYMPHALIDAE	*Junonia*	*oenone*	oenone	Least Concern	2	0	3
NYMPHALIDAE	*Junonia*	*orithya*	madagascariensis	Least Concern	6	0	3
NYMPHALIDAE	*Paternympha*	*narycia*		Least Concern	4	0	3
NYMPHALIDAE	*Precis*	*archesia*	archesia	Least Concern	3	0	3
NYMPHALIDAE	*Stygionympha*	*wichgrafi*	wichgrafi	Least Concern	11	0	2
NYMPHALIDAE	*Telchinia*	*rahira*	rahira	Least Concern	2	0	3
NYMPHALIDAE	*Vanessa*	*cardui*		Least Concern	9	0	3
PAPILIONIDAE	*Papilio*	*demodocus*	demodocus	Least Concern	10	0	2
PIERIDAE	*Belenois*	*aurota*		Least Concern	40	0	1
PIERIDAE	*Belenois*	*creona*	severina	Least Concern	9	0	3
PIERIDAE	*Belenois*	*zochalia*	zochalia	Least Concern	1	0	3
PIERIDAE	*Catopsilia*	*florella*		Least Concern	7	0	3

PIERIDAE	*Colias*	*electo*	electo	Least Concern	2	0	3
PIERIDAE	*Colotis*	*antevippe*	gavisa	Least Concern	1	0	3
PIERIDAE	*Colotis*	*euippe*	omphale	Least Concern	1	0	3
PIERIDAE	*Colotis*	*evagore*	antigone	Least Concern	1	0	3
PIERIDAE	*Colotis*	*evenina*	evenina	Least Concern	4	0	3
PIERIDAE	*Eurema*	*brigitta*	brigitta	Least Concern	10	0	2
PIERIDAE	*Mylothris*	*agathina*	agathina	Least Concern	1	0	3
PIERIDAE	*Pinacopteryx*	*eriphia*	eriphia	Least Concern	2	0	3
PIERIDAE	*Pontia*	*helice*	helice	Least Concern	12	0	2
PIERIDAE	*Teracolus*	*agoye*	bowkeri	Least Concern	2	0	3
PIERIDAE	*Teracolus*	*eris*	eris	Least Concern	1	0	3
PIERIDAE	*Teracolus*	*subfasciatus*		Least Concern	3	0	3

Odonata

Family	**Scientific Name**	**Common Name**	**Red List Status**	**No of Observations on QDS**	**No of Observation on Site**	**LoO**
Aeshnidae	*Anaciaeschna triangulifera*	Evening Hawker	Not listed	1	0	3
Aeshnidae	*Anax imperator*	Blue Emperor	Not listed	1	0	3
Coenagrionidae	*Africallagma glaucum*	Swamp Bluet	Not listed	1	0	3
Coenagrionidae	*Ischnura senegalensis*	Tropical Bluetail	Not listed	1	0	3
Coenagrionidae	*Pseudagrion citricola*	Yellow-faced Sprite	Not listed	1	0	3
Coenagrionidae	*Pseudagrion salisburyense*	Slate Sprite	Not listed	7	0	3
Libellulidae			Not listed	1	0	3
Libellulidae	*Orthetrum caffrum*	Two-striped Skimmer	Not listed	4	0	3
Libellulidae	*Sympetrum fonscolombii*	Red-veined Darter or Nomad	Not listed	4	0	3
Libellulidae	*Trithemis*		Not listed	1	0	3
Libellulidae	*Trithemis kirbyi*	Orange-winged Dropwing	Not listed	1	0	3
Platycnemididae	*Elattoneura glauca*	Common Threadtail	Not listed	3	0	3

Scorpions

Family	Scientific Name	Red List Status	No of Observations on QDS	No of Observation on Site	LoO
BUTHIDAE	*Pseudolychas ochraceus*	Not listed	1	0	2

BUTHIDAE	*Uroplectes triangulifer*	Not listed	1	0	2
SCORPIONIDAE	*Opistophthalmus pugnax*	Not listed	2	0	2

Appendix 3: Birds that have been recorded in pentad 2620_2810 (SABAP2 2018)

Scientific Name	Common Name	Red List Status	No of Observations of QDS (Rep Rate %)	LoO
Recurvirostra avosetta	Avocet, Pied	Not Listed	3.0	3
Tricholaema leucomelas	Barbet, Acacia Pied	Not Listed	28.1	2
Lybius torquatus	Barbet, Black-collared	Not Listed	63.1	1
Trachyphonus vaillantii	Barbet, Crested	Not Listed	75.3	1
Merops apiaster	Bee-eater, European	Not Listed	14.5	3
Euplectes orix	Bishop, Southern Red	Not Listed	74.6	1
Euplectes afer	Bishop, Yellow-crowned	Not Listed	18.2	3
Telophorus zeylonus	Bokmakierie	Not Listed	47.2	2
Pycnonotus nigricans	Bulbul, African Red-eyed	Not Listed	20.0	2
Pycnonotus tricolor	Bulbul, Dark-capped	Not Listed	77.4	1
Crithagra atrogularis	Canary, Black-throated	Not Listed	54.8	1
Serinus canicollis	Canary, Cape	Not Listed	6.8	3
Crithagra flaviventris	Canary, Yellow	Not Listed	16.4	3
Crithagra mozambicus	Canary, Yellow-fronted	Not Listed	8.1	3
Myrmecocichla formicivora	Chat, Anteating	Not Listed	19.7	3
Cercomela familiaris	Chat, Familiar	Not Listed	16.8	3
Cisticola textrix	Cisticola, Cloud	Not Listed	17.1	3
Cisticola aridulus	Cisticola, Desert	Not Listed	2.9	3
Cisticola tinniens	Cisticola, Levaillant's	Not Listed	61.1	1
Cisticola ayresii	Cisticola, Wing-snapping	Not Listed	12.3	3
Cisticola juncidis	Cisticola, Zitting	Not Listed	31.4	2
Hirundo spilodera	Cliff-swallow, South African	Not Listed	8.3	3
Fulica cristata	Coot, Red-knobbed	Not Listed	43.0	2
Phalacrocorax africanus	Cormorant, Reed	Not Listed	34.6	2
Phalacrocorax carbo	Cormorant, White-breasted	Not Listed	5.9	3
Centropus burchellii	Coucal, Burchell's	Not Listed	7.4	3
Cursorius temminckii	Courser, Temminck's	Not Listed	0.4	3
Amaurornis flavirostris	Crake, Black	Not Listed	8.6	3
Corvus albus	Crow, Pied	Not Listed	50.4	1
Chrysococcyx caprius	Cuckoo, Diderick	Not Listed	26.4	2
Chrysococcyx klaas	Cuckoo, Klaas's	Not Listed	1.8	3
Cuculus solitarius	Cuckoo, Red-chested	Not Listed	11.0	3
Anhinga rufa	Darter, African	Not Listed	8.9	3
Streptopelia senegalensis	Dove, Laughing	Not Listed	95.0	1
Streptopelia semitorquata	Dove, Red-eyed	Not Listed	82.5	1

Columba livia	Dove, Rock	Not Listed	56.9	1
Dicrurus adsimilis	Drongo, Fork-tailed	Not Listed	0.3	3
Anas sparsa	Duck, African Black	Not Listed	21.1	2
Dendrocygna bicolor	Duck, Fulvous	Not Listed	4.7	3
Dendrocygna viduata	Duck, White-faced	Not Listed	13.5	3
Anas undulata	Duck, Yellow-billed	Not Listed	40.1	2
Bubo africanus	Eagle-owl, Spotted	Not Listed	3.7	3
Bubulcus ibis	Egret, Cattle	Not Listed	51.6	1
Egretta garzetta	Egret, Little	Not Listed	6.3	3
Egretta intermedia	Egret, Yellow-billed	Not Listed	2.9	3
Lanius collaris	Fiscal, Common (Southern)	Not Listed	80.0	1
Phoenicopterus ruber	Flamingo, Greater	Near Threatened	3.6	3
Sarothrura rufa	Flufftail, Red-chested	Not Listed	5.1	3
Muscicapa striata	Flycatcher, Spotted	Not Listed	11.6	3
Scleroptila levaillantoides	Francolin, Orange River	Not Listed	19.3	3
Corythaixoides concolor	Go-away-bird, Grey	Not Listed	51.6	1
Alopochen aegyptiacus	Goose, Egyptian	Not Listed	47.7	2
Plectropterus gambensis	Goose, Spur-winged	Not Listed	25.9	2
Sphenoeacus afer	Grassbird, Cape	Not Listed	7.3	3
Tachybaptus ruficollis	Grebe, Little	Not Listed	28.9	2
Numida meleagris	Guineafowl, Helmeted	Not Listed	65.2	1
Larus cirrocephalus	Gull, Grey-headed	Not Listed	10.5	3
Scopus umbretta	Hamerkop, Hamerkop	Not Listed	5.0	3
Ardea melanocephala	Heron, Black-headed	Not Listed	35.9	2
Ardea goliath	Heron, Goliath	Not Listed	2.4	3
Ardea cinerea	Heron, Grey	Not Listed	12.2	3
Ardea purpurea	Heron, Purple	Not Listed	7.0	3
Ardeola ralloides	Heron, Squacco	Not Listed	3.9	3
Upupa africana	Hoopoe, African	Not Listed	51.6	1
Delichon urbicum	House-martin, Common	Not Listed	4.6	3
Threskiornis aethiopicus	Ibis, African Sacred	Not Listed	38.5	2
Plegadis falcinellus	Ibis, Glossy	Not Listed	34.6	2
Bostrychia hagedash	Ibis, Hadeda	Not Listed	83.0	1
Actophilornis africanus	Jacana, African	Not Listed	0.2	3
Falco rupicolus	Kestrel, Rock	Not Listed	3.2	3
Alcedo cristata	Kingfisher, Malachite	Not Listed	2.1	3
Elanus caeruleus	Kite, Black-shouldered	Not Listed	45.9	2
Afrotis afraoides	Korhaan, Northern Black	Not Listed	25.2	2
Vanellus senegallus	Lapwing, African Wattled	Not Listed	45.6	2
Vanellus armatus	Lapwing, Blacksmith	Not Listed	77.9	1
Vanellus coronatus	Lapwing, Crowned	Not Listed	75.4	1
Mirafra fasciolata	Lark, Eastern Clapper	Not Listed	3.2	3
Certhilauda semitorquata	Lark, Eastern Long-billed	Not Listed	3.7	3
Calandrella cinerea	Lark, Red-capped	Not Listed	10.1	3
Mirafra africana	Lark, Rufous-naped	Not Listed	33.1	2

Chersomanes albofasciata	Lark, Spike-heeled	Not Listed	8.9	3
Macronyx capensis	Longclaw, Cape	Not Listed	68.1	1
Riparia cincta	Martin, Banded	Not Listed	2.9	3
Riparia paludicola	Martin, Brown-throated	Not Listed	33.5	2
Riparia riparia	Martin, Sand	Not Listed	2.2	3
Ploceus velatus	Masked-weaver, Southern	Not Listed	94.6	1
Gallinula chloropus	Moorhen, Common	Not Listed	31.7	2
Urocolius indicus	Mousebird, Red-faced	Not Listed	70.5	1
Colius striatus	Mousebird, Speckled	Not Listed	65.4	1
Colius colius	Mousebird, White-backed	Not Listed	2.1	3
Acridotheres tristis	Myna, Common	Not Listed	90.1	1
Cisticola fulvicapilla	Neddicky, Neddicky	Not Listed	46.3	2
Nycticorax nycticorax	Night-Heron, Black-crowned	Not Listed	3.8	3
Tyto alba	Owl, Barn	Not Listed	2.4	3
Asio capensis	Owl, Marsh	Not Listed	7.9	3
Cypsiurus parvus	Palm-swift, African	Not Listed	45.8	2
Vidua paradisaea	Paradise-whydah, Long-tailed	Not Listed	0.6	3
Columba guinea	Pigeon, Speckled	Not Listed	82.1	1
Anthus cinnamomeus	Pipit, African	Not Listed	33.1	2
Anthus crenatus	Pipit, African Rock	Near Threatened	0.2	3
Anthus vaalensis	Pipit, Buffy	Not Listed	1.2	3
Anthus leucophrys	Pipit, Plain-backed	Not Listed	2.4	3
Charadrius tricollaris	Plover, Three-banded	Not Listed	20.7	2
Netta erythrophthalma	Pochard, Southern	Not Listed	3.3	3
Prinia flavicans	Prinia, Black-chested	Not Listed	50.3	1
Prinia subflava	Prinia, Tawny-flanked	Not Listed	37.6	2
Coturnix coturnix	Quail, Common	Not Listed	1.8	3
Ortygospiza atricollis	Quailfinch, African	Not Listed	9.3	3
Quelea quelea	Quelea, Red-billed	Not Listed	15.5	3
Rallus caerulescens	Rail, African	Not Listed	6.3	3
Acrocephalus baeticatus	Reed-warbler, African	Not Listed	14.1	3
Acrocephalus arundinaceus	Reed-warbler, Great	Not Listed	1.3	3
Cossypha caffra	Robin-chat, Cape	Not Listed	82.7	1
Philomachus pugnax	Ruff, Ruff	Not Listed	5.1	3
Bradypterus baboecala	Rush-warbler, Little	Not Listed	12.7	3
Actitis hypoleucos	Sandpiper, Common	Not Listed	0.9	3
Calidris ferruginea	Sandpiper, Curlew	Not Listed	0.2	3
Tringa stagnatilis	Sandpiper, Marsh	Not Listed	1.4	3
Tringa glareola	Sandpiper, Wood	Not Listed	5.1	3
Anas smithii	Shoveler, Cape	Not Listed	5.5	3
Circaetus pectoralis	Snake-eagle, Black-chested	Not Listed	1.1	3
Gallinago nigripennis	Snipe, African	Not Listed	16.3	3
Passer melanurus	Sparrow, Cape	Not Listed	86.1	1
Passer domesticus	Sparrow, House	Not Listed	55.0	1
Passer diffusus	Sparrow, Southern Grey-	Not Listed	17.5	3

	headed			
Plocepasser mahali	Sparrow-weaver, White-browed	Not Listed	23.8	2
Pternistis swainsonii	Spurfowl, Swainson's	Not Listed	44.0	2
Lamprotornis nitens	Starling, Cape Glossy	Not Listed	66.4	1
Spreo bicolor	Starling, Pied	Not Listed	42.5	2
Creatophora cinerea	Starling, Wattled	Not Listed	15.2	3
Himantopus himantopus	Stilt, Black-winged	Not Listed	9.6	3
Calidris minuta	Stint, Little	Not Listed	3.1	3
Saxicola torquatus	Stonechat, African	Not Listed	77.5	1
Ciconia ciconia	Stork, White	Not Listed	2.9	3
Cinnyris talatala	Sunbird, White-bellied	Not Listed	40.1	2
Hirundo rustica	Swallow, Barn	Not Listed	43.1	2
Hirundo cucullata	Swallow, Greater Striped	Not Listed	60.3	1
Hirundo abyssinica	Swallow, Lesser Striped	Not Listed	3.4	3
Hirundo albigularis	Swallow, White-throated	Not Listed	39.4	2
Porphyrio madagascariensis	Swamphen, African Purple	Not Listed	7.1	3
Acrocephalus gracilirostris	Swamp-warbler, Lesser	Not Listed	26.1	2
Apus barbatus	Swift, African Black	Not Listed	1.3	3
Apus apus	Swift, Common	Not Listed	1.5	3
Apus affinis	Swift, Little	Not Listed	34.8	2
Anas capensis	Teal, Cape	Not Listed	3.2	3
Anas hottentota	Teal, Hottentot	Not Listed	5.0	3
Anas erythrorhyncha	Teal, Red-billed	Not Listed	15.6	3
Chlidonias hybrida	Tern, Whiskered	Not Listed	4.6	3
Chlidonias leucopterus	Tern, White-winged	Not Listed	1.5	3
Burhinus capensis	Thick-knee, Spotted	Not Listed	32.0	2
Turdus smithi	Thrush, Karoo	Not Listed	64.4	1
Parus cinerascens	Tit, Ashy	Not Listed	12.7	3
Streptopelia capicola	Turtle-dove, Cape	Not Listed	91.1	1
Motacilla capensis	Wagtail, Cape	Not Listed	68.9	1
Phylloscopus trochilus	Warbler, Willow	Not Listed	16.7	3
Amandava subflava	Waxbill, Orange-breasted	Not Listed	10.1	3
Ploceus capensis	Weaver, Cape	Not Listed	13.5	3
Amblyospiza albifrons	Weaver, Thick-billed	Not Listed	37.1	2
Oenanthe pileata	Wheatear, Capped	Not Listed	22.3	2
Oenanthe monticola	Wheatear, Mountain	Not Listed	30.7	2
Zosterops virens	White-eye, Cape	Not Listed	72.6	1
Vidua macroura	Whydah, Pin-tailed	Not Listed	40.4	2
Euplectes axillaris	Widowbird, Fan-tailed	Not Listed	6.7	3
Euplectes progne	Widowbird, Long-tailed	Not Listed	54.1	1
Euplectes ardens	Widowbird, Red-collared	Not Listed	52.5	1
Euplectes albonotatus	Widowbird, White-winged	Not Listed	9.6	3
Phoeniculus purpureus	Wood-hoopoe, Green	Not Listed	43.8	2
Jynx ruficollis	Wryneck, Red-throated	Not Listed	32.1	2

Appendix 4: Approach and terminology used for the impact assessment

The identification of potential impacts should include impacts that may occur during the construction and operational phases of the activity. The assessment of impacts is to include direct, indirect as well as cumulative impacts.

In order to identify potential impacts (both positive and negative) it is important that the nature of the proposed activity is well understood so that the impacts associated with the activity can be understood. The process of identification and assessment of impacts will include:

- Determine the current environmental conditions in sufficient detail so that there is a baseline against which impacts can be identified and measured;
- Determine future changes to the environment that will occur if the activity does not proceed;
- An understanding of the activity in sufficient detail to understand its consequences; and
- The identification of significant impacts which are likely to occur if the activity is undertaken.

As per DEA *Guideline 5: Assessment of Alternatives and Impacts* the following methodology is to be applied to the prediction and assessment of impacts. Potential impacts should be rated in terms of the direct, indirect and cumulative:

- **Direct impacts** are impacts that are caused directly by the activity and generally occur at the same time and at the place of the activity. These impacts are usually associated with the construction, operation or maintenance of an activity and are generally obvious and quantifiable.

- **Indirect impacts** of an activity are indirect or induced changes that may occur as a result of the activity. These types of impacts include all the potential impacts that do not manifest immediately when the activity is undertaken or which occur at a different place as a result of the activity.

- **Cumulative impacts** are impacts that result from the incremental impact of the proposed activity on a common resource when added to the impacts of other past, present or reasonably foreseeable future activities. Cumulative impacts can occur from the collective impacts of individual minor actions over a period of time and can include both direct and indirect impacts.

- **Spatial extent** – The size of the area that will be affected by the impact:

    - Site specific;
    - Local
    - Regional (within 30 km of site); or
    - National.

- **Intensity** –The anticipated severity of the impact:

- High (severe alteration of natural systems, patterns or processes);
- Medium (notable alteration of natural systems, patterns or processes; or
- Low (negligible alteration of natural systems, patterns or processes).

- **Duration** –The timeframe during which the impact will be experienced:
  - Temporary (less than 1 year);
  - Short term (1 to 6 years);
  - Medium term (6 to 15 years);
  - Long term (the impact will only cease after the operational life of the activity); or
  - Permanent (mitigation will not occur in such a way or in such a time span that the impact can be considered transient).

- **Reversibility of impacts -**
  - High reversibility of impacts (impact is highly reversible at end of project life);
  - Moderate reversibility of impacts;
  - Low reversibility of impacts; or
  - Impacts are non- reversible (impact is permanent).

- **Irreplaceability of resource loss caused by impacts –**
  - High irreplaceability of resources (project will destroy unique resources that cannot be replaced);
  - Moderate irreplaceability of resources;
  - Low irreplaceability of resources; or
  - Resources are replaceable (the affected resource is easy to replace/ rehabilitate.

Using the criteria above, the impacts will further be assessed in terms of the following:

- **Probability** – The probability of the impact occurring:
  - Improbable (little or no chance of occurring);
  - Probable (<50% chance of occurring);
  - Highly probable (50 – 90% chance of occurring); or
  - Definite (>90% chance of occurring).

- **Significance** – Will the impact cause a notable alteration of the environment?
  - Low to very low (the impact may result in minor alterations of the environment and can be easily avoided by implementing appropriate mitigation measures, and will not have an influence on decision-making);
  - Medium (the impact will result in moderate alteration of the environment and can be reduced or avoided by implementing the appropriate mitigation measures, and will only have an influence on the decision-making if not mitigated); or

    - High (the impacts will result in major alteration to the environment even with the implementation on the appropriate mitigation measures and will have an influence on decision-making).
- **Status** - Whether the impact on the overall environment (social, biophysical and economic) will be:
    - Positive - environment overall will benefit from the impact;
    - Negative - environment overall will be adversely affected by the impact; or
    - Neutral - environment overall will not be affected.
- **Confidence** – The degree of confidence in predictions based on available information and specialist knowledge:
    - Low;
    - Medium; or
    - High.

Impacts will then be collated into an EMP and these will include the following:

- Management actions and monitoring of the impacts;
- Identifying negative impacts and prescribing mitigation measures to avoid or reduce negative impacts; and
- Positive impacts will be identified and enhanced where possible.

Table 1 below is to be used by specialists for the rating of impacts.

Other aspects to be taken into consideration in the assessment of impact significance are:

- Impacts will be evaluated for the construction and operation phases of the development. The assessment of impacts for the decommissioning phase will be brief, as there is limited understanding at this stage of what this might entail. The relevant rehabilitation guidelines and legal requirements applicable at the time will need to be applied;
- The impact evaluation will, where possible, take into consideration the cumulative effects associated with this and other facilities/projects which are either developed or in the process of being developed in the local area; and
- The impact assessment will attempt to quantify the magnitude of potential impacts (direct and cumulative effects) and outline the rationale used. Where appropriate, national standards are to be used as a measure of the level of impact.
- Impacts should be assessed for all layouts and project components.

IMPORTANT: Impacts should be described both before and after the proposed mitigation and management measures have been implemented. The assessment of the potential impact “before mitigation” should take into consideration all management actions that are already part of the project design (which are a given). The assessment of the potential impact “after mitigation” should take into consideration any additional management actions proposed by the specialist, to minimise negative or enhance positive impacts.

Appendix 5: Curriculum Vitae of Rirhandzu Marivate

CURRICULUM VITAE: RIRHANDZU MARIVATE

PO Box 320
Stellenbosch
7599
South Africa

Office : +27 21 888 2432
Cell : +27 76 183 0642
Fax : +27 21 888 2473
Email : rmarivate@csir.co.za

Position in Firm: Junior Environmental Assessment Practitioner (305759)
Full Name: Marivate, Rirhandzu Anna
Specialisation: Environmental & Ecological Science
Professional Registration: Cand. Sci. Nat. Environmental Sciences – Reg Number: 100147/14
Date of Birth: 23 February 1989
Nationality: South African

BIOSKETCH

Rirhandzu holds a Bachelor degree in Zoology & Geology, Honours in Ecology, Environment and Conservation from the University of the Witwatersrand; and has environmental research experience with the University of Cape Town. The research focus has been within the domain of socioecology, looking at investigating local ecological knowledge of stakeholders on the provisioning of freshwater resources and its impacts on the management for of the Berg river in the Western Cape, South Africa. The research looked at how perception on resource utilisation affects management priorities, and creating a matrix of perceptions would be used a tool for better decision making within the Berg River Catchment Management Areas. Rirhandzu is currently studying towards her Master in Philosophy in Sustainable Development at the University of Stellenbosch. Here current research interest is looking at environmental planning and management within municipalities and how to optimise green spaces by including ecosystem goods and services to build resilience within those municipalities.

Since 2014, Rirhandzu has worked at the Council for Scientific and Industrial Research (CSIR) as an Environmental Assessment Practitioner (EAP) Intern within the Environmental Management Services (EMS) group, and from 2015 as a Junior Environmental Practitioner for the same group. Her duties include Assistance to other EAPs within EMS in their projects; Research in environmental assessment topics (e.g. indications, best practice, legislation); Report writing and project management; Participating in various forms of environmental assessments (BAs, EIAs, SEAs); consultation with stakeholders and public meetings; and Project administration (e.g. contracting and invoicing). She is particularly involved with the Special Needs and Skills Development (SNSD) Programme, which looks at assisting Community Trusts, Small, Micro to Medium Enterprises, with environmental services. She has also been involved with the Monitoring and Evaluation of the National Strategy for Sustainable Development by the Department of Environmental Affairs (DEA). Rirhandzu has established good client relationships and partnerships with the Land Bank, Department of Agriculture, Forestry and Fisheries (DAFF), and Department of Mineral Resources (DMR) through the SNSD Programme. She is involved as a stakeholder in the continuous consultations for the Development of Environmental Indices in response to the National Development Plan (NDP), led by the DEA.

Rirhandzu further involved with the Applied Centre for Climate and Earth Systems Sciences (ACCESS- NRE) as a national representative for the Student NEC and as a member of their Advisory Board for their Habitable Planet Programme. The HPW programme aims to educate undergraduate and high school learners in environmental and earth systems sciences, with the goal of encouraging them to pursue science careers.

EXPERIENCE

Completion Date	Project description	Role	Client
2014 (in progress)	**Special Needs and Skills Development Programme:** Programme management and conducting of Basic Assessments for disadvantaged communities/businesses/enterprises	**Project Manager;** Stakeholder Co-ordination; Project Support; Mentorship; Ecological Input	National Department of Environmental Affairs (DEA), South Africa
2013- 2014	**Monitoring and Evaluation** for the National Strategy for Sustainable Development and Action Plan.	**Project Member;** Stakeholder engagement, Researcher, Report Writing	National Department of Environmental Affairs (DEA), South Africa

Completion Date	Project description	Role	Client
2013-2015	**Strategic Environmental Assessment (SEA)** for wind and solar PV energy in South Africa.	Data Management	National Department of Environmental Affairs (DEA), South Africa
2014-2016	**Strategic Environmental Assessment (SEA)** for Electricity Grid Infrastructure (EGI).	Stakeholder Engagement	National Department of Environmental Affairs (DEA), South Africa
2014	**Screening Study (SS)** for the Development of Biochar and Composting Facilities to support land restoration near the proposed Ntambelanga Dam, Umzimvubu Catchment, Eastern Cape**.**	**Project Manager,** Project Research & Report Writing	National Department of Environmental Affairs (DEA), South Africa
2015	**Environmental Screening Study (ESS)** for projects undertaken in the Amatikulu Aquaculture Development Zone, KwaZulu-Natal.	**Project Manager,** Project Research & Report Writing	National Department of Agriculture, Forestry & Fisheries (DAFF), S Africa
2015-2016	**Development of Sustainability Indicators** for the National Integrated State of the Environment Report for Namibia.	**Project Manager**, Project Research & Report Writing	Ministry of Environment and Tourism (MET), Namibia
2016	**Basic Assessment** for the development of a 5.5ha pig production facility and a 2.5 ha chicken broiler facility on Farm Rietvalei, Portion 1 & 6, near Delmas, Mpumalanga.	**Project Manager**	Mokate Estates (Pty) Ltd
2016	**Basic Assessment** for the development of a 0.6 hectare Chicken Layer Facility on a 7.8 hectare farm in Mashau-Bodwe Village, Makhado District, Limpopo.	**Project Manager**	Wanga Poultry (Pty) Ltd
2016	**Sustainable Development Appraisal for Gold Standard** on a microprogramme of the NOVA Brickstar Wood Stove in the Mahlaba Area, Limpopo.	**Project Member**, Project Researcher, Translator	Gold Standard Foundation
2017 (In Progress)	**Sustainable Development Goal Lab** on "Mainstreaming resilience into climate change adaptation and disaster risk planning."	**Project Member**	Future Earth; Stockholm Resilience Centre; University of Tokyo
2017 (In progress)	**Basic Assessment** for the proposed development of a leisure and cultural village on Farm Moiloa 412-JO, Dinokana Village, North West.	**Project Manager**	Makadima Leisure & Cultural Village 101 (Pty) Ltd
2017 (In progress)	**Basic Assessment** for the expansion of a Chicken Layer Facility on a 4.4 hectare farm on plot 226 Withok Estate, Brakpan, Ekurhuleni District, Gauteng	**Project Manager**	Lewin AgriBusiness (Pty) Ltd
2017 (In progress)	**Basic Assessment** for the expansion of a Chicken Broiler Facility on a 2.57 hectare farm on plot 62, Mapleton, Ekurhuleni District, Gauteng.	**Project Manager**	Mthunzi Chicken Supplier (Pty) Ltd

PAST EMPLOYMENT RECORD

- **2014-2015** CSIR Environmental Management Services (EMS) Environmental Scientist and Assessment Practitioner (Intern).
- **2011-2013** UCT Environmental & Geographical Science Department (N Methner; K Vickery) Researcher & Teaching Assistant
- **2010** WITS School of Animal Plant & Environmental Sciences (Prof K Balkwill) Teaching Assistant.
- **2009** ESKOM Generation Environmental Management (D Herbst) Environmental Officer (Intern).
- **2009** WITS School of Geosciences (Dr G Drennan; Dr M Evans) Teaching & Field Assistant.
- **2008** WITS School of Animal Plant & Environmental Sciences (T Gardiner; Dr W Twine) Environmental Control & Field Assistant.
- **2008** Jane Goodall Institute (Dr L Duncan) Field Assistant.

QUALIFICATIONS

- **2010 University of the Witwatersrand (Wits) BSc Honours (Ecology, Environment and Conservation)**
  Coursework: Approaches to Science, Experimental Design and Biostatistics, Introduction to Statistics Computer programme R, Introduction to Geographic Information Systems, Global Change: Impact on Soils, Plants and the Environment, Ecological Engineering and Phytoremediation, Ethnoecology.
  Thesis: Species Composition and Population Structure of Trees Protected in Cultivated Fields of Rural Villages in the Bushbuckridge Region, Mpumalanga Province (Supervisors: Dr Wayne Twine, Prof Ed Witkowski)

- **2006 – 2009 University of the Witwatersrand (Wits) BSc (Zoology & Ecology)**
  Senior Courses: Research Report Writing; Exploration and Environmental Geochemistry; Introduction to Palaeoclimatology; Environmental Geomorphology; Diversity, Ecology and Economic Importance of Algae; Functional Ecology in Changing Environments; Ecological Communities and Biodiversity Conservation; Structural Geology; Igneous Petrology; Physics of the Earth and Plate Tectonics; Ore Petrology and Mineralisation Processes

SHORT-COURSES, CONFERENCES AND WORKSHOPS

- 2017 Ecosystem-Based Adaptation: Developing Capacity for Implementation, SANBI, Pretoria National Botanical Gardens, June 2017.
- 2015 Practical Adaptation for vulnerable communities by Adaptation Network, Kirstenbosch Botanical Gardens, Cape Town, August 2015.
- 2015 International Association for Impact Assessors South Africa (IAIAsa) National Annual Conference, August 2016, KZN.
- 2015 Sharpening the Tool: New Techniques & Methods in Environmental Impact Assessments, SE Solutions, Stellenbosch, Western Cape
- 2014 CiLLA Project Management I Course on July 2014 at CSIR Stellenbosch
- 2014 International Association for Impact Assessors South Africa (IAIAsa) Air Quality Management (AQM) Workshop on June 2014 in Western Cape
- 2014 South African Environmental Observation Network (SAEON) Graduate Student Network (GSN) Annual Conference September 2014, Eastern Cape.
- 2014 IAIAsa National Conference from August 2014 at Midrand, Gauteng
- 2014 African Student Energy (ASE) Annual Summit Cape Peninsula University of Technology June 2014, Western Cape
- 2014 International Association for Impact Association South Africa (IAIAsa) New National Environmental Management Act (NEMA) regulations March 2014 Western Cape
- 2014 Applied Centre for Climate and Earth Systems Sciences (ACCESS) facilitation for teacher training January 2014,WC.
- 2012 International Conference for Freshwater Governance for Sustainable Development November 2012, KwaZulu-Natal
- 2012 Society of South African Geographers (SSAG) Annual Conference at University of Cape Town June 2012, Western Cape
- 2011 Applied Centre for Climate and Earth System Sciences (ACCESS) teacher training, Western Cape
- 2011 BlueBuck Environmental Network Annual Summit at Rhodes University, Eastern Cape
- 2010 Biodiversity and People Mini-Symposium, University of the Witwatersrand, October 2010, Mpumalanga

LANGUAGES

	Speaking	Reading	Writing
Setswana	Excellent	Excellent	Excellent
Xitsonga	Excellent	Excellent	Excellent
English	Excellent	Excellent	Excellent

PROFESSIONAL REGISTRATIONS

- IAIA: Member of International Association of Impact Assessment South Africa (IAIAsa) since 5 February 2014.
- SACNASP: Registered as Candidate Natural Scientist with South African Council for Natural Scientific Professions (SACNASP) since July 2014. Registration number: 100147/14

Attention: Rirhandzu Marivate / Minnelise Levendal

5 November 2018

Our Ref: **2392**

CSIR- Environmental Management Services
Implementation Unit
Tel: 021-888-2432
email: rmarivate@csir.co.za

Dear Rirhandzu and Minnelise

ECOLOGICAL REVIEW FOR THE SPECIAL SKILLS DEVELOPMENT PROJECT – MTHUNZI CHICKEN FARM, GAUTENG

As requested by the CSIR- Environmental Management Services, NSS was appointed for the review of a number of terrestrial ecological scans that the CSIR has been involved in. This included the Mthunzi Chicken Farming Project.

NSS conducted two detailed reviews on the Mthunzi Ecological Scan report. The NSS team members that conducted the review are highlighted in **Table 1** below.

Table 1. NSS Review Team

Team Member	Qualifications
Susan Abell Senior Ecologist & Vegetation Specialist	▪ *PrSciNat* Registered (400116/05) -Ecology and Environmental Science ▪ MSc – Resource Conservation Biology
Tyron Clark Faunal Specialist	▪ BSc Honours- Zoology ▪ MSc in progress

All comments and corrections made in the reviews by NSS must be addressed. As the extent of the site is small and is largely transformed, it is NSS's opinion that the approach and methodologies followed is sufficient for the purpose of the project and therefore no further site visits are warranted. If all comments made in the review process are addressed, then it is NSS's opinion that the report is consistent with the requirements set out in Appendix 6 of GN R326 Environmental Impact Assessment (EIA) Regulations, 7 April 2017.

Yours Sincerely,

Susan Abell
Natural Scientific Services

HERITAGE IMPACT ASSESSMENT

(REQUIRED UNDER SECTION 38(8) OF THE NHRA (No. 25 OF 1999)

FOR THE PROPOSED MTHUNZI CHICKEN SUPPLIER, GAUTENG PROVINCE

Type of development:

Agricultural Development

Client:

CSIR

Client info:

Rirhandzu Marivate

E – mail: rmarivate@csir.co.za

Developer: Mthunzi Chicken Supplier (Pty) Ltd

HCAC - Heritage Consultants
Private Bag X 1049
Suite 34
Modimolle
0510
Tel: 082 373 8491
Fax: 086 691 6461
E-Mail: jaco.heritage@gmail.com

Report Author:
Mr. J. van der Walt

Project Reference:
HCAC Project number 2171120
Report date:
November 2017

APPROVAL PAGE

Project Name	**Mthunzi Chicken Supplier**
Report Title	Heritage Impact Assessment Mthunzi Chicken Supplier
Authority Reference Number	**11499**
Report Status	Final Report
Applicant Name	Mthunzi Chicken Supplier (Pty) Ltd

	Name	Signature	Qualifications and Certifications	Date
Document Compilation	Jaco van der Walt		MA Archaeology ASAPA #159	November 2017
	Marko Hutten		BA Hons Archaeology	November 2017

DOCUMENT PROGRESS

Distribution List

Date	Report Reference Number	Document Distribution	Number of Copies
28 November 2017	217120	CSIR	Electronic Copy

Amendments on Document

Date	Report Reference Number	Description of Amendment

INDEMNITY AND CONDITIONS RELATING TO THIS REPORT

The findings, results, observations, conclusions and recommendations given in this report are based on the author's best scientific and professional knowledge as well as available information. The report is based on survey and assessment techniques which are limited by time and budgetary constraints relevant to the type and level of investigation undertaken and HCAC reserves the right to modify aspects of the report including the recommendations if and when new information becomes available from ongoing research or further work in this field, or pertaining to this investigation.

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The client, on acceptance of any submission by HCAC and on condition that the client pays to HCAC the full price for the work as agreed, shall be entitled to use for its own benefit:

- The results of the project;
- The technology described in any report; and
- Recommendations delivered to the client.

Should the applicant wish to utilise any part of, or the entire report, for a project other than the subject project, permission must be obtained from HCAC to do so. This will ensure validation of the suitability and relevance of this report on an alternative project.

REPORT OUTLINE

Appendix 6 of the GNR 326 EIA Regulations published on 7 April 2017 provides the requirements for specialist reports undertaken as part of the environmental authorisation process. In line with this, Table 1 provides an overview of Appendix 6 together with information on how these requirements have been met.

Table 1. Specialist Report Requirements.

Requirement from Appendix 6 of GN 326 EIA Regulation 2017	Chapter
(a) Details of - (i) the specialist who prepared the report; and (ii) the expertise of that specialist to compile a specialist report including a curriculum vitae	Section a Section 12
(b) Declaration that the specialist is independent in a form as may be specified by the competent authority	*Declaration of Independence*
(c) Indication of the scope of, and the purpose for which, the report was prepared	Section 1
(cA)an indication of the quality and age of base data used for the specialist report	Section 3.4 and 7.1.
(cB) a description of existing impacts on the site, cumulative impacts of the proposed development and levels of acceptable change;	9
(d) Duration, Date and season of the site investigation and the relevance of the season to the outcome of the assessment	Section 3.4
(e) Description of the methodology adopted in preparing the report or carrying out the specialised process inclusive of equipment and modelling used	Section 3
(f) details of an assessment of the specific identified sensitivity of the site related to the proposed activity or activities and its associated structures and infrastructure, inclusive of a site plan identifying site alternatives;	Section 8 and 9
(g) Identification of any areas to be avoided, including buffers	Section 8 and 9
(h) Map superimposing the activity including the associated structures and infrastructure on the environmental sensitivities of the site including areas to be avoided, including buffers	Section 8
(I) Description of any assumptions made and any uncertainties or gaps in knowledge	Section 3.7
(j) a description of the findings and potential implications of such findings on the impact of the proposed activity **including identified alternatives on the environment** or activities;	Section 9
(k) Mitigation measures for inclusion in the EMPr	Section 9
(I) Conditions for inclusion in the environmental authorisation	Section 9
(m) Monitoring requirements for inclusion in the EMPr or environmental authorisation	Section 9
(n) Reasoned opinion - (i) as to whether the proposed activity, activities or portions thereof should be authorised; (iA) regarding the acceptability of the proposed activity or activities; and (ii) if the opinion is that the proposed activity, activities or portions thereof should be authorised, any avoidance, management and mitigation measures that should be included in the EMPr, and where applicable, the closure plan	Section 9.2
(o) Description of any consultation process that was undertaken during the course of preparing the specialist report	Section 6
(p) A summary and copies of any comments received during any consultation process and where applicable all responses thereto; and	Refer to BA report
(q) Any other information requested by the competent authority	Section 10

Executive Summary

Mthunzi Chicken Supplier (Pty) Ltd and the CSIR are conducting a Basic Assessment for an expansion on Plot 62, Diana Road, Mapleton, in Ekurhuleni, Gauteng Province. HCAC was appointed to conduct a Heritage Impact Assessment to determine the presence of cultural heritage sites and the impact of the proposed development on these non-renewable resources. The study area was assessed both on desktop level and by a field survey. The field survey was conducted as a non-intrusive pedestrian survey to cover the extent of Plot 62 as development plans are not available at this stage.

No archaeological sites or material of significance was recorded during the survey. A paleontological desktop study was conducted by Rossouw (2017) that concluded: " *Potential impact on palaeontological remains within the development footprint is considered to be negligible and it is recommended that the planned development is exempt from a full Phase 1 Palaeontological Impact Assessment.*.". No further mitigation prior to construction is recommended in terms of the archaeological and paleontological components of Section 35 for the proposed development to proceed.

In terms of the built environment of the area (Section 34), no standing structures older than 60 years occur within the study areas. In terms of Section 36 of the Act no burial sites were recorded. If any graves are located in future they should ideally be preserved *in-situ* or alternatively relocated according to existing legislation. No public monuments are located within or close to the study area. The area is rural in character and the proposed project is in line with the current land use and will not impact negatively on significant cultural landscapes or viewscapes. During the public participation process conducted for the project no heritage concerns was raised.

Due to the lack of significant heritage resources in the study area the impact of the proposed project on heritage resources is considered low and it is recommended that the proposed project can commence on the condition that the following recommendations are implemented as part of the EMPr and based on approval from SAHRA:

- Implementation of a chance find procedure.

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Declaration of Independence

Specialist Name	Jaco van der Walt
Declaration of Independence	I declare, as a specialist appointed in terms of the National Environmental Management Act (Act No 108 of 1998) and the associated 2014 Environmental Impact Assessment (EIA) Regulations, 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 48 and is punishable in terms of section 24F of the Act.
Signature	
Date	28/11/2017

a) Expertise of the specialist

Jaco van der Walt has been practising as a CRM archaeologist for 15 years. He obtained an MA degree in Archaeology from the University of the Witwatersrand focussing on the Iron Age in 2012 and is a PhD candidate at the University of Johannesburg focussing on Stone Age Archaeology with specific interest in the Middle Stone Age (MSA) and Later Stone Age (LSA). Jaco is an accredited member of ASAPA (#159) and have conducted more than 500 impact assessments in Limpopo, Mpumalanga, North West, Free State, Gauteng, KZN as well as he Northern and Eastern Cape Provinces in South Africa.

Jaco has worked on various international projects in Zimbabwe, Botswana, Mozambique, Lesotho, DRC Zambia and Tanzania. Through this he has a sound understanding of the IFC Performance Standard requirements, with specific reference to Performance Standard 8 – Cultural Heritage.

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ABBREVIATIONS

AIA: Archaeological Impact Assessment
ASAPA: Association of South African Professional Archaeologists
BGG Burial Ground and Graves
BIA: Basic Impact Assessment
CFPs: Chance Find Procedures
CMP: Conservation Management Plan
CRR: Comments and Response Report
CRM: Cultural Resource Management
DEA: Department of Environmental Affairs
EA: Environmental Authorisation
EAP: Environmental Assessment Practitioner
ECO: Environmental Control Officer
EIA: Environmental Impact Assessment*
EIA: Early Iron Age*
EIA Practitioner: Environmental Impact Assessment Practitioner
EMP: Environmental Management Programme
ESA: Early Stone Age
ESIA: Environmental and Social Impact Assessment
GIS Geographical Information System
GPS: Global Positioning System
GRP Grave Relocation Plan
HIA: Heritage Impact Assessment
LIA: Late Iron Age
LSA: Late Stone Age
MEC: Member of the Executive Council
MIA: Middle Iron Age
MPRDA: Mineral and Petroleum Resources Development Act
MSA: Middle Stone Age
NEMA National Environmental Management Act, 1998 (Act No. 107 of 1998)
NHRA National Heritage Resources Act, 1999 (Act No. 25 of 1999)
NID Notification of Intent to Develop
NoK Next-of-Kin
PRHA: Provincial Heritage Resource Agency
SADC: Southern African Development Community
SAHRA: South African Heritage Resources Agency

**Although EIA refers to both Environmental Impact Assessment and the Early Iron Age both are internationally accepted abbreviations and must be read and interpreted in the context it is used.*

GLOSSARY

Archaeological site (remains of human activity over 100 years old)
Early Stone Age (~ 2.6 million to 250 000 years ago)
Middle Stone Age (~ 250 000 to 40-25 000 years ago)
Later Stone Age (~ 40-25 000, to recently, 100 years ago)
The Iron Age (~ AD 400 to 1840)
Historic (~ AD 1840 to 1950)
Historic building (over 60 years old)

1 Introduction and Terms of Reference:

Heritage Contracts and Archaeological Consulting CC (**HCAC)** has been contracted by the CSIR to conduct a heritage impact assessment of the proposed Mthunzi Chicken Supplier. The report forms part of the Basic Assessment Report (BAR) and Environmental Management Programme Report (EMPR) for the development.

The aim of the study is to survey the proposed development footprint to identify cultural heritage sites, document, and assess their importance within local, provincial and national context. It serves to assess the impact of the proposed project on non-renewable heritage resources, and to submit appropriate recommendations with regard to the responsible cultural resources management measures that might be required to assist the developer in managing the discovered heritage resources in a responsible manner. It is also conducted to protect, preserve, and develop such resources within the framework provided by the National Heritage Resources Act of 1999 (Act No 25 of 1999). The report outlines the approach and methodology utilized before and during the survey, which includes: Phase 1, review of relevant literature; Phase 2, the physical surveying of the area on foot and by vehicle; Phase 3, reporting the outcome of the study.

During the survey, no heritage sites were identified. General site conditions and features on sites were recorded by means of photographs, GPS locations, and site descriptions. Possible impacts were identified and mitigation measures are proposed in the following report. SAHRA as a commenting authority under section 38(8) of the National Heritage Resources Act, 1999 (Act No. 25 of 1999) require all environmental documents, complied in support of an Environmental Authorisation application as defined by NEMA EIA Regulations section 40 (1) and (2), to be submitted to SAHRA. As such the Basic Assessment report and its appendices must be submitted to the case as well as the EMPr, once it's completed by the Environmental Assessment Practitioner (EAP).

1.1 Terms of Reference

Field study

Conduct a field study to: (a) locate, identify, record, photograph and describe sites of archaeological, historical or cultural interest; b) record GPS points of sites/areas identified as significant areas; c) determine the levels of significance of the various types of heritage resources affected by the proposed development.

Reporting

Report on the identification of anticipated and cumulative impacts the operational units of the proposed project activity may have on the identified heritage resources for all 3 phases of the project; i.e., construction, operation and decommissioning phases. Consider alternatives, should any significant sites be impacted adversely by the proposed project. Ensure that all studies and results comply with the relevant legislation, SAHRA minimum standards and the code of ethics and guidelines of ASAPA.

To assist the developer in managing the discovered heritage resources in a responsible manner, and to protect, preserve, and develop them within the framework provided by the National Heritage Resources Act of 1999 (Act No 25 of 1999).

Table 2: Project Description

Size of farm and portions	6 Hectares on Plot 62, Mapleton, Ekurhuleni District, Gauteng Province
Magisterial District	Ekhuruleni Municipality
1: 50 000 map sheet number	1:50 000 topographical map 2628 AC Alberton 1:250 000 geological map 2628 East Rand
Central co-ordinate of the development	26°21'10.36"S 28°14'52.13"E

Table 3: Infrastructure and project activities

Type of development	Chicken Broiler Facility
Project size	6 hectares
Project Components	**Currently on site** □ 2 x 225 m² chicken houses (2500 chickens each house) □ 1 x Borehole □ 1 x Toilet paper factory near site □ 1 x Tractor The site also has a small number of livestock which include goats, cattle and sheep. **Proposed Development Expansion** □ 4 x 225 m² chicken houses (2500 chickens each house) □ 1x waste storage site (chicken manure) □ 1 x processing unit (abattoir)

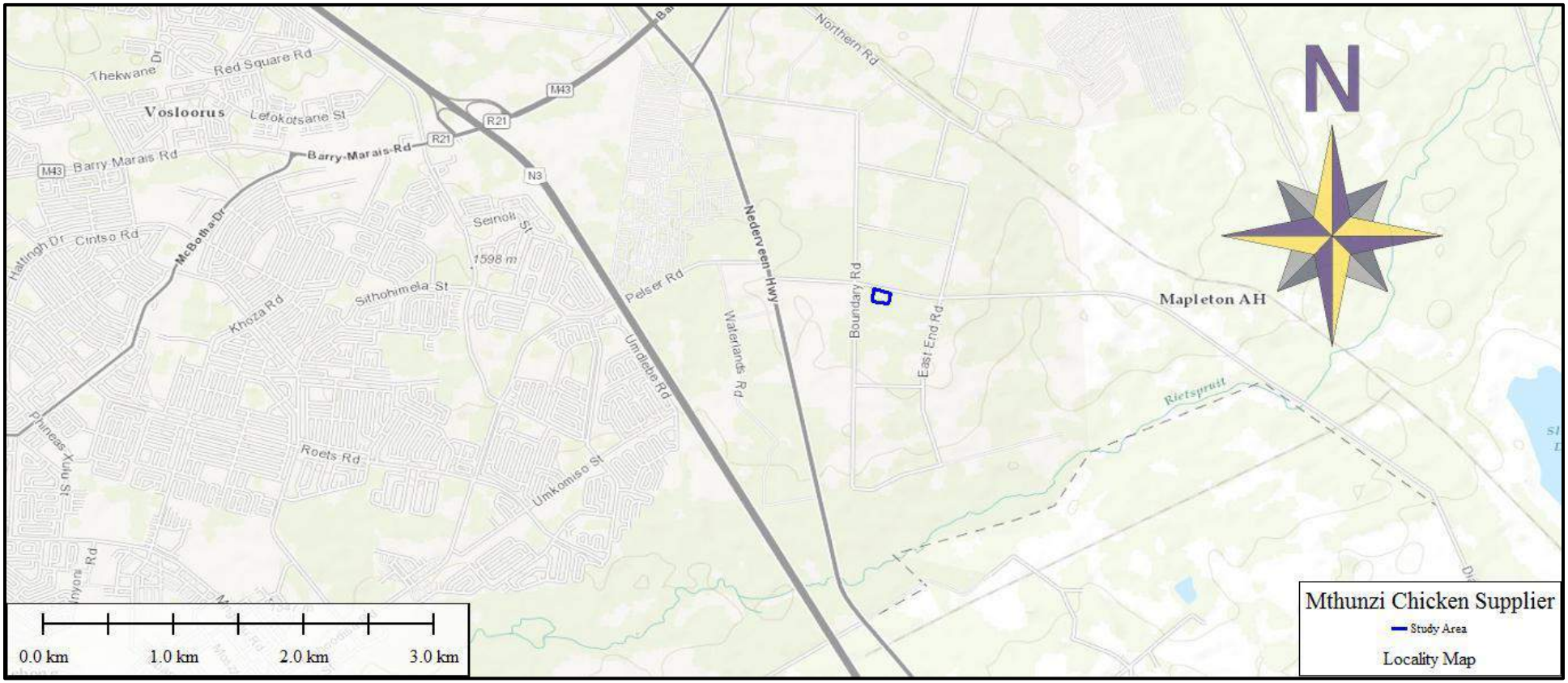

Figure 1. Locality map of the larger area indicating the study area in blue.

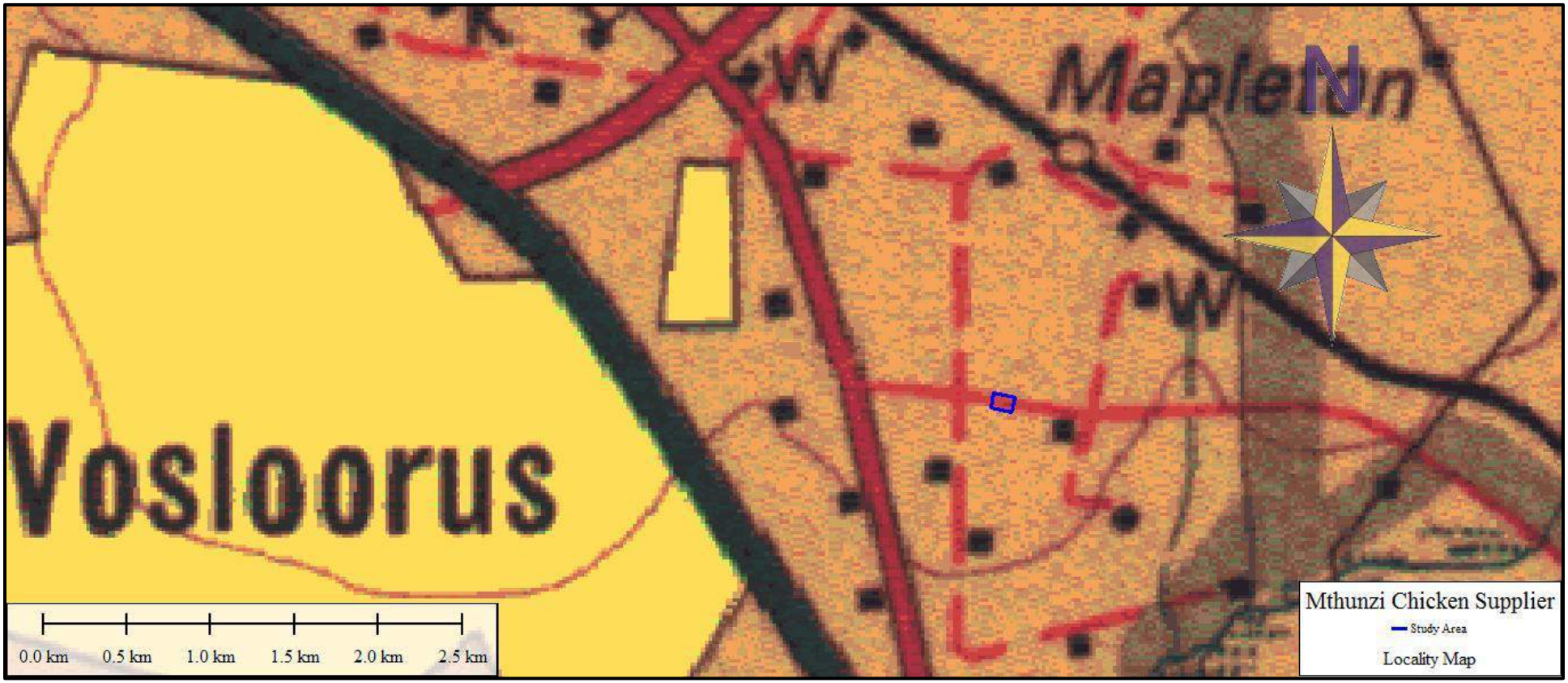

Figure 2. Provincial locality map (1: 250 000 topographical map)

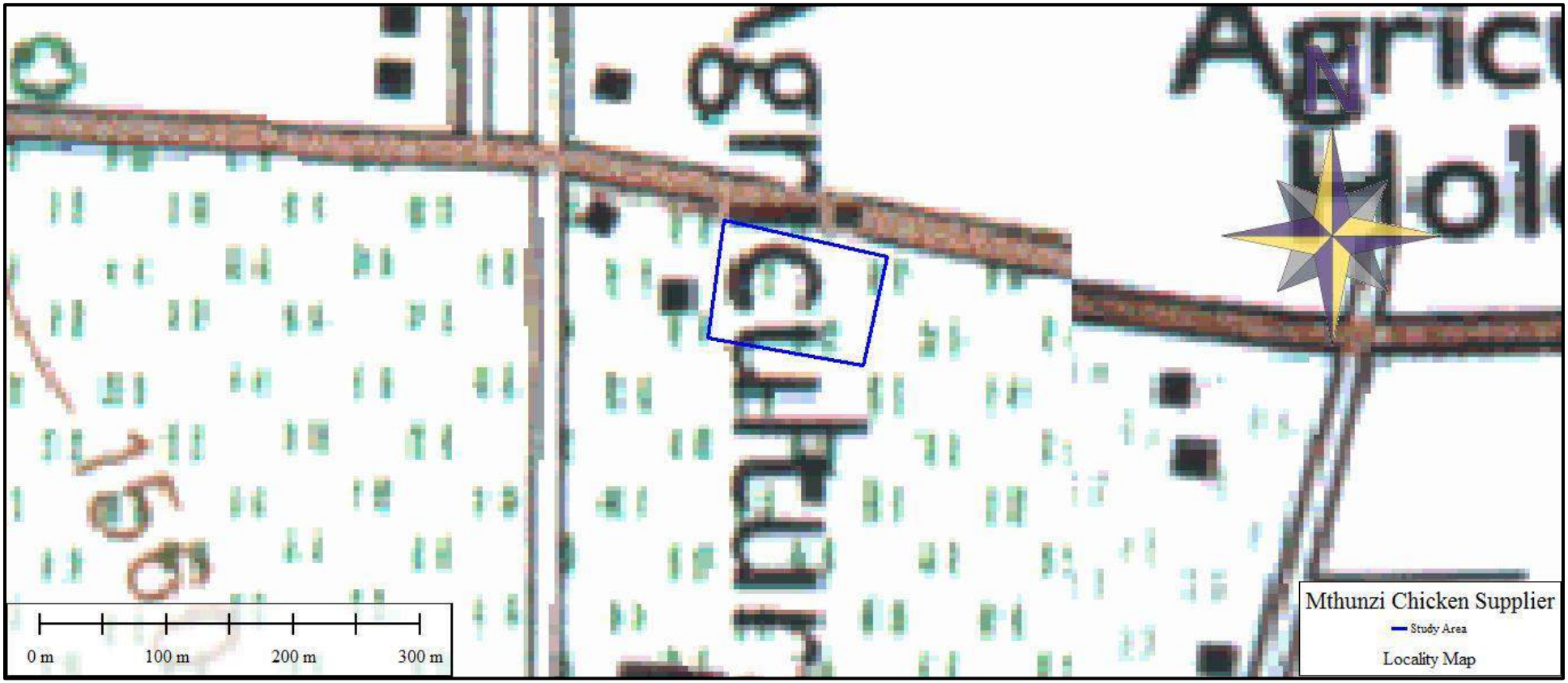

Figure 3: Regional locality map (1:50 000 topographical map).

Figure 4. Satellite image indicating the development footprint (Google Earth 2016).

2 Legislative Requirements

The HIA, as a specialist sub-section of the EIA, is required under the following legislation:

- National Heritage Resources Act (NHRA), Act No. 25 of 1999)
- National Environmental Management Act (NEMA), Act No. 107 of 1998 - Section 23(2)(b)
- Mineral and Petroleum Resources Development Act (MPRDA), Act No. 28 of 2002 - Section 39(3)(b)(iii)

A Phase 1 HIA is a pre-requisite for development in South Africa as prescribed by SAHRA and stipulated by legislation. The overall purpose of heritage specialist input is to:

- Identify any heritage resources, which may be affected;
- Assess the nature and degree of significance of such resources;
- Establish heritage informants/constraints to guide the development process through establishing thresholds of impact significance;
- Assess the negative and positive impact of the development on these resources; and
- Make recommendations for the appropriate heritage management of these impacts.

The HIA should be submitted, as part of the impact assessment report or EMPr, to the PHRA if established in the province or to SAHRA. SAHRA will ultimately be responsible for the professional evaluation of Phase 1 AIA reports upon which review comments will be issued. 'Best practice' requires Phase 1 AIA reports and additional development information, as per the impact assessment report and/or EMPr, to be submitted in duplicate to SAHRA after completion of the study. SAHRA accepts Phase 1 AIA reports authored by professional archaeologists, accredited with ASAPA or with a proven ability to do archaeological work.

Minimum accreditation requirements include an Honours degree in archaeology or related discipline and 3 years post-university CRM experience (field supervisor level). Minimum standards for reports, site documentation and descriptions are set by ASAPA in collaboration with SAHRA. ASAPA is based in South Africa, representing professional archaeology in the SADC region. ASAPA is primarily involved in the overseeing of ethical practice and standards regarding the archaeological profession. Membership is based on proposal and secondment by other professional members.

Phase 1 AIA's are primarily concerned with the location and identification of heritage sites situated within a proposed development area. Identified sites should be assessed according to their significance. Relevant conservation or Phase 2 mitigation recommendations should be made. Recommendations are subject to evaluation by SAHRA.

Conservation or Phase 2 mitigation recommendations, as approved by SAHRA, are to be used as guidelines in the developer's decision-making process.

Phase 2 archaeological projects are primarily based on salvage/mitigation excavations preceding development destruction or impact on a site. Phase 2 excavations can only be conducted with a permit, issued by SAHRA to the appointed archaeologist. Permit conditions are prescribed by SAHRA and includes (as minimum requirements) reporting back strategies to SAHRA and deposition of excavated material at an accredited repository.

In the event of a site conservation option being preferred by the developer, a site management plan, prepared by a professional archaeologist and approved by SAHRA, will suffice as minimum requirement.

After mitigation of a site, a destruction permit must be applied for with SAHRA by the applicant before development may proceed.

Human remains older than 60 years are protected by the National Heritage Resources Act, with reference to Section 36. Graves older than 60 years, but younger than 100 years fall under Section 36 of Act 25 of 1999 (National Heritage Resources Act), as well as the Human Tissues Act (Act 65 of 1983), and are the jurisdiction of SAHRA. The procedure for Consultation Regarding Burial Grounds and Graves (Section 36[5]) of Act 25 of 1999) is applicable to graves older than 60 years that are situated outside a formal cemetery administrated by a local authority. Graves in this age category, located inside a formal cemetery administrated by a local authority, require the same authorisation as set out for graves younger than 60 years, in addition to SAHRA authorisation. If the grave is not situated inside a formal cemetery, but is to be relocated to one, permission from the local authority is required and all regulations, laws and by-laws, set by the cemetery authority, must be adhered to.

Human remains that are less than 60 years old are protected under Section 2(1) of the Removal of Graves and Dead Bodies Ordinance (Ordinance No. 7 of 1925), as well as the Human Tissues Act (Act 65 of 1983), and are the jurisdiction of the National Department of Health and the relevant Provincial Department of Health and must be submitted for final approval to the office of the relevant Provincial Premier. This function is usually delegated to the Provincial MEC for Local Government and Planning; or in some cases, the MEC for Housing and Welfare. Authorisation for exhumation and reinternment must also be obtained from the relevant local or regional council where the grave is situated, as well as the relevant local or regional council to where the grave is being relocated. All local and regional provisions, laws and by-laws must also be adhered to. To handle and transport human remains, the institution conducting the relocation should be authorised under Section 24 of Act 65 of 1983 (Human Tissues Act).

3 METHODOLOGY

3.1 Literature Review

A brief survey of available literature was conducted to extract data and information on the area in question to provide general heritage context into which the development would be set. This literature search included published material, unpublished commercial reports and online material, including reports sourced from the South African Heritage Resources Information System (SAHRIS).

3.2 Genealogical Society and Google Earth Monuments

Google Earth and 1:50 000 maps of the area were utilised to identify possible places where sites of heritage significance might be located; these locations were marked and visited during the field work phase. The database of the Genealogical Society was consulted to collect data on any known graves in the area.

3.3 Public Consultation and Stakeholder Engagement:

Stakeholder engagement is a key component of any BAR process, it involves stakeholders interested in, or affected by the proposed development. Stakeholders are provided with an opportunity to raise issues of concern (for the purposes of this report only heritage related issues will be included). The aim of the public consultation process was to capture and address any issues raised by community members and other stakeholders during key stakeholder and public meetings. The process involved:

- Placement of advertisements and site notices
- Stakeholder notification (through the dissemination of information and meeting invitations);
- Stakeholder meetings undertaken with I&APs;
- Authority Consultation
- The compilation of a Basic Assessment Report (BAR).

Please refer to section 6 for more detail.

3.4 Site Investigation

Conduct a field study to: a) systematically survey the proposed project area to locate, identify, record, photograph and describe sites of archaeological, historical or cultural interest; b) record GPS points of sites/areas identified as significant areas; c) determine the levels of significance of the various types of heritage resources recorded in the project area.

Table 4: Site Investigation Details

	Site Investigation
Date	7 November 2017
Season	Summer. The development footprint was adequately surveyed to record the presence of heritage sites (Figure 5).

Figure 5: Track logs of the survey in black.

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3.5 Site Significance and Field Rating

Section 3 of the NHRA distinguishes nine criteria for places and objects to qualify as 'part of the national estate' if they have cultural significance or other special value. These criteria are:

- Its importance in/to the community, or pattern of South Africa's history;
- Its possession of uncommon, rare or endangered aspects of South Africa's natural or cultural heritage;
- Its potential to yield information that will contribute to an understanding of South Africa's natural or cultural heritage;
- Its importance in demonstrating the principal characteristics of a particular class of South Africa's natural or cultural places or objects;
- Its importance in exhibiting particular aesthetic characteristics valued by a community or cultural group;
- Its importance in demonstrating a high degree of creative or technical achievement at a particular period;
- Its strong or special association with a particular community or cultural group for social, cultural or spiritual reasons;
- Its strong or special association with the life or work of a person, group or organisation of importance in the history of South Africa;
- Sites of significance relating to the history of slavery in South Africa.

The presence and distribution of heritage resources define a 'heritage landscape'. In this landscape, every site is relevant. In addition, because heritage resources are non-renewable, heritage surveys need to investigate an entire project area, or a representative sample, depending on the nature of the project. In the case of the proposed project the local extent of its impact necessitates a representative sample and only the footprint of the areas demarcated for development were surveyed. In all initial investigations, however, the specialists are responsible only for the identification of resources visible on the surface. This section describes the evaluation criteria used for determining the significance of archaeological and heritage sites. The following criteria were used to establish site significance with cognisance of Section 3 of the NHRA:

- The unique nature of a site;
- The integrity of the archaeological/cultural heritage deposits;
- The wider historic, archaeological and geographic context of the site;
- The location of the site in relation to other similar sites or features;
- The depth of the archaeological deposit (when it can be determined/is known);
- The preservation condition of the sites; and
- Potential to answer present research questions.

In addition to this criteria field ratings prescribed by SAHRA (2006), and acknowledged by ASAPA for the SADC region, were used for the purpose of this report. The recommendations for each site should be read in conjunction with section 10 of this report.

FIELD RATING	***GRADE***	***SIGNIFICANCE***	***RECOMMENDED MITIGATION***
National Significance (NS)	Grade 1	-	Conservation; national site nomination
Provincial Significance (PS)	Grade 2	-	Conservation; provincial site nomination
Local Significance (LS)	Grade 3A	High significance	Conservation; mitigation not advised
Local Significance (LS)	Grade 3B	High significance	Mitigation (part of site should be retained)
Generally Protected A (GP.A)	-	High/medium significance	Mitigation before destruction
Generally Protected B (GP.B)	-	Medium significance	Recording before destruction
Generally Protected C (GP.C)	-	Low significance	Destruction

3.6 Impact Assessment Methodology

The criteria below are used to establish the impact rating on sites:

- The **nature**, which shall include a description of what causes the effect, what will be affected and how it will be affected.
- The **extent**, wherein it will be indicated whether the impact will be local (limited to the immediate area or site of development) or regional, and a value between 1 and 5 will be assigned as appropriate (with 1 being low and 5 being high):
- The **duration**, wherein it will be indicated whether:
  - the lifetime of the impact will be of a very short duration (0-1 years), assigned a score of 1;
  - the lifetime of the impact will be of a short duration (2-5 years), assigned a score of 2;
  - medium-term (5-15 years), assigned a score of 3;
  - long term (> 15 years), assigned a score of 4; or
  - permanent, assigned a score of 5;
  - The **magnitude**, quantified on a scale from 0-10 where; 0 is small and will have no effect on the environment, 2 is minor and will not result in an impact on processes, 4 is low and will cause a slight impact on processes, 6 is moderate and will result in processes continuing but in a modified way, 8 is high (processes are altered to the extent that they temporarily cease), and 10 is very high and results in complete destruction of patterns and permanent cessation of processes.
  - The **probability of occurrence**, which shall describe the likelihood of the impact actually occurring. Probability will be estimated on a scale of 1-5 where; 1 is very improbable (probably will not happen), 2 is improbable (some possibility, but low likelihood), 3 is probable (distinct possibility), 4 is highly probable (most likely) and 5 is definite (impact will occur regardless of any prevention measures).
  - The **significance**, which shall be determined through a synthesis of the characteristics described above and can be assessed as low, medium or high; and
  - the **status**, which will be described as either positive, negative or neutral.
  - the degree to which the impact can be reversed.
  - the degree to which the impact may cause irreplaceable loss of resources.
  - the *degree* to which the impact can be mitigated.

The **significance** is calculated by combining the criteria in the following formula:

S=(E+D+M)P

S = Significance weighting

E = Extent

D = Duration

M = Magnitude

P = Probability

The **significance weightings** for each potential impact are as follows:

- < 30 points: Low (i.e., where this impact would not have a direct influence on the decision to develop in the area),
- 30-60 points: Medium (i.e., where the impact could influence the decision to develop in the area unless it is effectively mitigated),
- 60 points: High (i.e., where the impact must have an influence on the decision process to develop in the area).

3.7 Limitations and Constraints of the study

The authors acknowledge that the brief literature review is not exhaustive on the literature of the area. Due to the subsurface nature of archaeological artefacts, the possibility exists that some features or artefacts may not have been discovered/recorded during the survey and the possible occurrence of unmarked graves and other cultural material cannot be excluded. Similarly, the depth of the deposit of heritage sites cannot be accurately determined due its subsurface nature. This report only deals with the footprint area of the proposed development and consisted of non-intrusive surface surveys. This study did not assess the impact on medicinal plants and intangible heritage as it is assumed that these components would have been highlighted through the public consultation process if relevant. It is possible that new information could come to light in future, which might change the results of this Impact Assessment.

4 Description of Socio Economic Environmental

The 2012 – 2013 Integrated Development Plan highlighted the following Socio-Economic issues in the Ekhuruleni Metropolitan Municipality, the poverty rate was at 28.3% and the unemployment rate was at 30.7%. Reports also suggest that only 8% of Ekurhuleni's population has a post-matric qualification. This suggests a mismatch between the demand for labour and the skills available in the economy. Basic services such as water and sanitation as well as the provision of housing will provide much needed improvement of conditions as well as create employment opportunities.

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5 Description of the Physical Environment

The expansion and further development of a Chicken Broiler Facility and associated infrastructure is proposed on Plot 62, Mapleton near Boksburg. The property is situated approximately 12km south of the city of Boksburg, on the western fringes of the Vosloosrus Township within the Ekurhuleni Metropolitan Municipality in the East Rand of the Gauteng Province.

The original farms in the Mapleton area were at first commercial farms with their main focus on crop production and the raising of live-stock. Most of these farms were later sub-divided into smaller units and small holdings which support a wider range of businesses and agricultural activities. Most of these are now being turned into residential stands as well.

The prevailing vegetation type and landscape features of the area form part of the Carletonville Dolomite Grassland. It is described as slightly undulating plains dissected by prominent rocky chert ridges. Species-rich grasslands forming a complex mosaic pattern dominated by many species (Mucina & Rutherford, 2006).

Figure 6. General Site conditions.

Figure 7. General site conditions.

Figure 8. General site conditions.

Figure 9. General site conditions – existing structures.

6 Results of Public Consultation and Stakeholder Engagement:

6.1.1 Stakeholder Identification

Adjacent landowners and the public at large were informed of the proposed activity as part of the BA process. Site notices and advertisements notifying interested and affected parties were placed at strategic points and in local newspapers as part of the process.

The land owner, Mr.Zakhele Hlungwane, was interviewed during the site visit. He indicated that he didn't know about any graves or heritage sites within the indicated study area. Most of the property was previously disturbed due to the various developments all around.

7 Literature / Background Study:

7.1 Literature Review

The following reports were conducted in the general vicinity of the study area and were consulted for this report:

Author	Year	Project	Findings
Van Schalkwyk, J.	2007	Heritage Survey Of A Portion Of The Farm Tamboekiesfontein 173IR, Heidelberg Magisterial District, Gauteng Province	Cemeteries and a farmstead
Van der Walt, J.	2007	Archaeological Impact Assessment Link Northern Waterline Project At The Suikerbosrand Nature Reserve	Iron Age sites
Van Schalkwyk, J.	2003	Heritage Sites: Proposed Vosloorus Cultural Village	No heritage features were identified.

7.1.1 Genealogical Society and Google Earth Monuments

No known grave sites are indicated in the study area.

7.2 General History of the area

7.2.1 Archaeology of the area

7.2.1.1 The Stone Age

South Africa has a long and complex Stone Age sequence of more than 2 million years. The broad sequence includes the Later Stone Age, the Middle Stone Age and the Earlier Stone Age. Each of these phases contain sub-phases or industrial complexes, and within these we can expect regional variation regarding characteristics and time ranges. The three main phases can be divided as follows;

∗ Later Stone Age; associated with Khoi and San societies and their immediate predecessors. Recently to ~30 thousand years ago

∗ Middle Stone Age; associated with Homo sapiens and archaic modern humans. 30-300 thousand years ago.

∗ Earlier Stone Age; associated with early Homo groups such as Homo habilis and Homo erectus. 400 000-> 2 million years ago.

There is evidence of the use of the larger area by Stone Age communities for example along the Kliprivier where ESA and MSA tools were recorded. The greater study area is located in the vicinity of the Linksfield and Primrose Middle Stone Age terrains (Bergh 1999: 4-8). For the Later Stone Age some petroglyphs occur to the south at Redan as well as along the Vaal River (Bergh 1999).

7.2.1.2 The Iron Age

The Iron Age as a whole represents the spread of Bantu speaking people and includes both the pre-Historic and Historic periods. It can be divided into three distinct periods:

- The Early Iron Age: Most of the first millennium AD.
- The Middle Iron Age: 10th to 13th centuries AD
- The Late Iron Age: 14th century to colonial period.

The Iron Age is characterised by the ability of these early people to manipulate and work Iron ore into implements that assisted them in creating a favourable environment to make a better living.

Extensive Stone walled sites are recorded at Klipriviers Berg Nature reserve belonging to the Late Iron Age period. A large body of research is available on this area. These sites (Taylor's Type N, Mason's Class 2 & 5) are now collectively referred to as Klipriviersberg (Huffman 2007).

These settlements are complex in that aggregated settlements are common, the outer wall sometimes includes scallops to mark back courtyards, there are more small stock kraals, and straight walls separate households in the residential zone. These sites date to the 18th and 19th centuries and was built by people in the Fokeng cluster. In this area, the Klipriviersberg walling would have ended at about AD 1823, when Mzilikazi entered the area (Rasmussen 1978). This settlement type may have lasted longer in other areas because of the positive interaction between Fokeng and Mzilikazi.

7.2.2 Historical Information

The Difaqane (Sotho), or Mfekane ("the crushing" in Nguni) was a time of bloody upheavals in Natal and on the Highveld, which occurred around the early 1820's until the late 1830's (Bergh 1999: 10). It came about in response to heightened competition for land and trade, and caused population groups like gun-carrying Griquas and Shaka's Zulus to attack other tribes. (Bergh 1999: 14; 116-119) It seems that, in 1827, Mzilikazi's Ndebele started moving through the area where Johannesburg is located today. This group went on raids to various other areas in order to expand their area of influence. (Bergh 1999: 11). During the time of the Difaqane, a northwards migration of white settlers from the Cape was also taking place. Some travellers, missionaries and adventurers had gone on expeditions to the northern areas in South Africa, some already as early as the 1720's.

It was however only by the late 1820's that a mass-movement of Dutch speaking people in the Cape Colony started advancing into the northern areas. This was due to feelings of mounting dissatisfaction caused by economical and other circumstances in the Cape. This movement later became known as the Great Trek. This migration resulted in a massive increase in the extent of that proportion of modern South Africa dominated by people of European descent (Ross 2002: 39). By 1939 to 1940, farm boundaries were drawn up in an area that includes the present-day Johannesburg and Krugersdorp (Bergh 1999: 15).

7.2.2.1 Anglo-Boer War

Two incidents of the Anglo Boer War took place close to the study area.

An Anglo Boer War battle known as the Battle of Doornkop took place in the area on 29 May 1900. The British were advancing toward Johannesburg led by General John French. De La Rey and his men held the Klipriviersberg Ridge for the first two days but on the third day the Boers were outflanked by French's cavalry to the West, where General Sarel Oosthuizen's commando was forced to withdraw. This opened the road to Johannesburg and the British took the city peacefully on 30 May 1900 (Bikholtz 2014). Their route would have passed a few kilometers from the present study area.

Huffman (2008) recorded several sangers dating to the Boer war close to the study area on a ridge.

On 18 February 1901, a British train was held up by a Boer Commando along the railway line between the Klip River and Natalspruit Stations (www.vaalmeander.co.za) (Wallace, 1976). While Wallace (1976) states that the train was loaded with food and had been held up, the Vaal Meander website indicates that the train was derailed within the boundaries of the farm Palmietfontein after which a machine gun, cavalry greatcoats, saddles and other supplies were taken (Birkholtz 2014).

7.2.2.2 History of Vosloorus

During 1956 to 1959 the Boksburg Town Council acquired a portion of the farm Vlakplaats for an amount of £189,920 with the intention of establishing a new township on the land. The reason for the new township was to remove the black residents of Stirtonville near Boksburg to this new township in accordance with the policies of the Apartheid Government. The Council experienced a number of difficulties with the Vlakplaats property including the fact that a mineral rights owner came to the fore as well as the geographic reality that the property was located in the district of Heidelberg. Only by 1960 were the boundaries of the district of Boksburg altered to also include the newly acquired property (Bonner, 2001). Vosloorus was eventually only established in 1963. Stirtonville was renamed Reiger Park and has since become home to Boksburg's coloured community (www.sahistory.co.za).

According to Bonner (2001) the removal from Stirtonville to Vosloorus was only accomplished in 1964. He also indicates that the name Vosloorus was decided upon by the authorities in honour of the then chairman of the Boksburg Council's Committee of Non-European Affairs, W.I. Vosloo. A local authority was established in 1983 when Vosloorus was given full municipal status. Vosloorus Extension 2 was established during November 1987. The new extension comprised 200 houses (Bonner, 2001).

In 1988, the town councils of Vosloorus and Reiger Park staged a consumer boycott in Boksburg on the East Rand. The boycott by black and coloured residents followed the reintroduction of petty apartheid measures of the Boksburg Town Council which at the time was controlled by the Conservative Party (CP). In the local elections of October 1988, the CP won 12 of 20 council seats. At its first meeting, the new Council decreed that it would begin rigorously enforcing the Separate Amenities Act, a by-then largely ignored law that re-established whites-only toilets, parks and sports facilities. The two-consumer boycott found enthusiastic corporate support. A number of multinational companies like Colgate-Palmolive, American Cyanamid and Unilever provided buses to ferry shoppers to shops in neighbouring towns, cancelled expansion plans and ran advertisements denouncing the racist Council. The economy of the town suffered and several businesses had to close down (http://www.sahistory.org.za/dated-event/vosloorus-and-reiger-park-call-consumer-boycott).

Vosloorus was one of the townships in the East Rand that was seriously affected by the political violence that occurred in the late 1980s and early 1990s (Birkholtz 2014).

7.3 Cultural Landscape

The property under investigation is located about 2 km to the east of Vosloorus in Ekurhuleni Municipality, Gauteng Province.

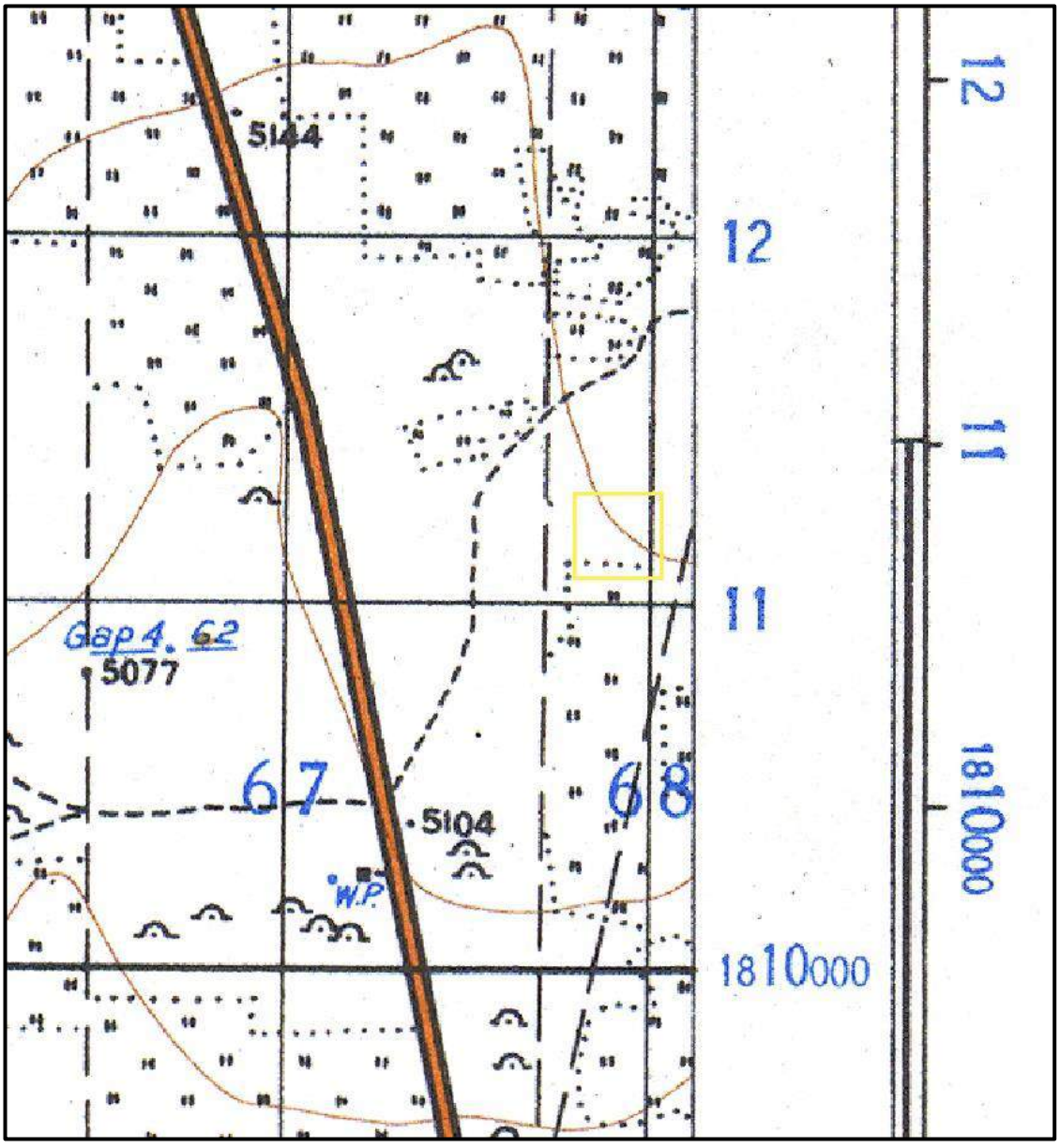

Figure 10. 1939 Topographical map of the site under investigation. The approximate study area is indicated with a yellow border. No buildings are visible within the study area, but one can see what seems to be the border fence of a property, and some cultivated lands to the south. A farm road and main road can be seen to the west of the site. (Topographical Map 1939)

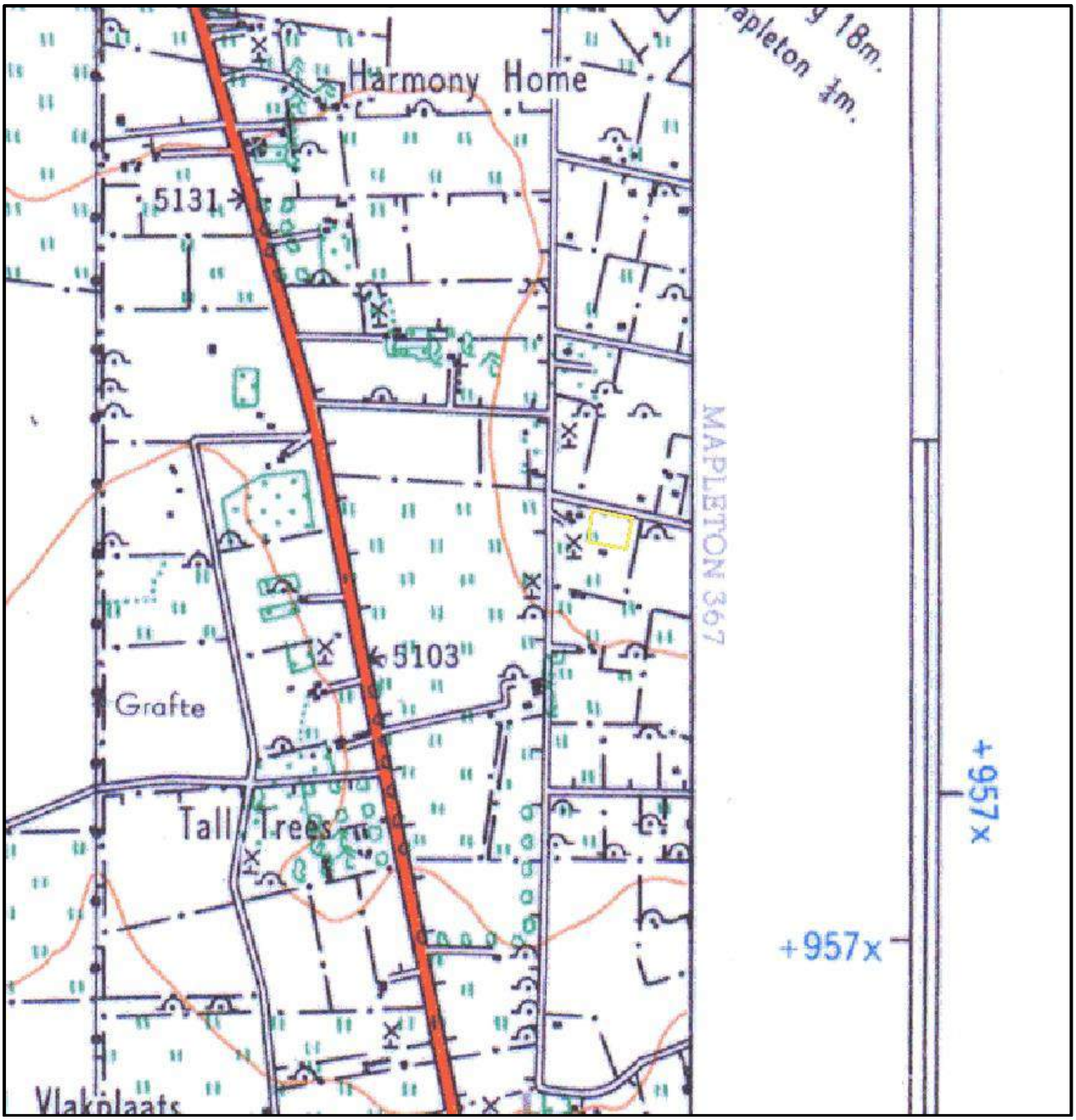

Figure 11. 1957 Topographical map of the site under investigation. The approximate study area is indicated with a yellow border. It seems that the development of the Mapleton Agricultural Holdings (as it would be known by 1979) was underway. One can see that the land to the east of the main road had been subdivided and that sections of land were fenced off. Several farm roads had been constructed, connecting these holdings. The portion under investigation formed part of one of these holdings. The property was used as cultivated lands. No buildings can be seen within the study area, but four buildings and a windmill are visible on the holding, and a traditional hut / kraal can be seen to the east of the portion under investigation. (Topographical Map 1957)

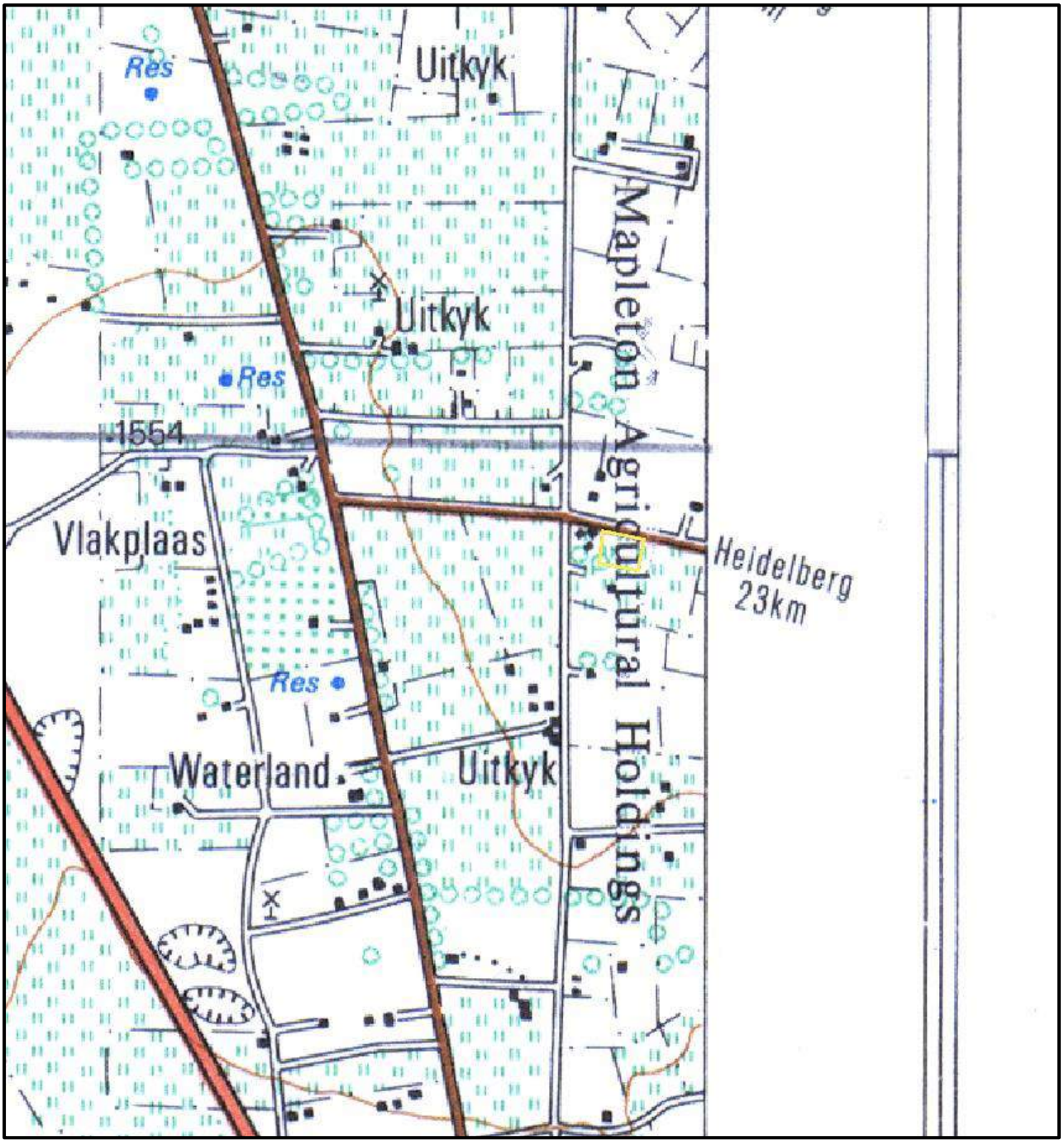

Figure 12. 1979 Topographical map of the site under investigation. The approximate study area is indicated with a yellow border. The area under investigation formed part of the Mapleton Agricultural Holdings. The study area formed part of a holding that was used as cultivated lands. No buildings can be seen within the site under investigation, but three buildings are visible to the west and one to the south thereof. A secondary road formed the northern boundary of the study area. (Topographical Map 1979)

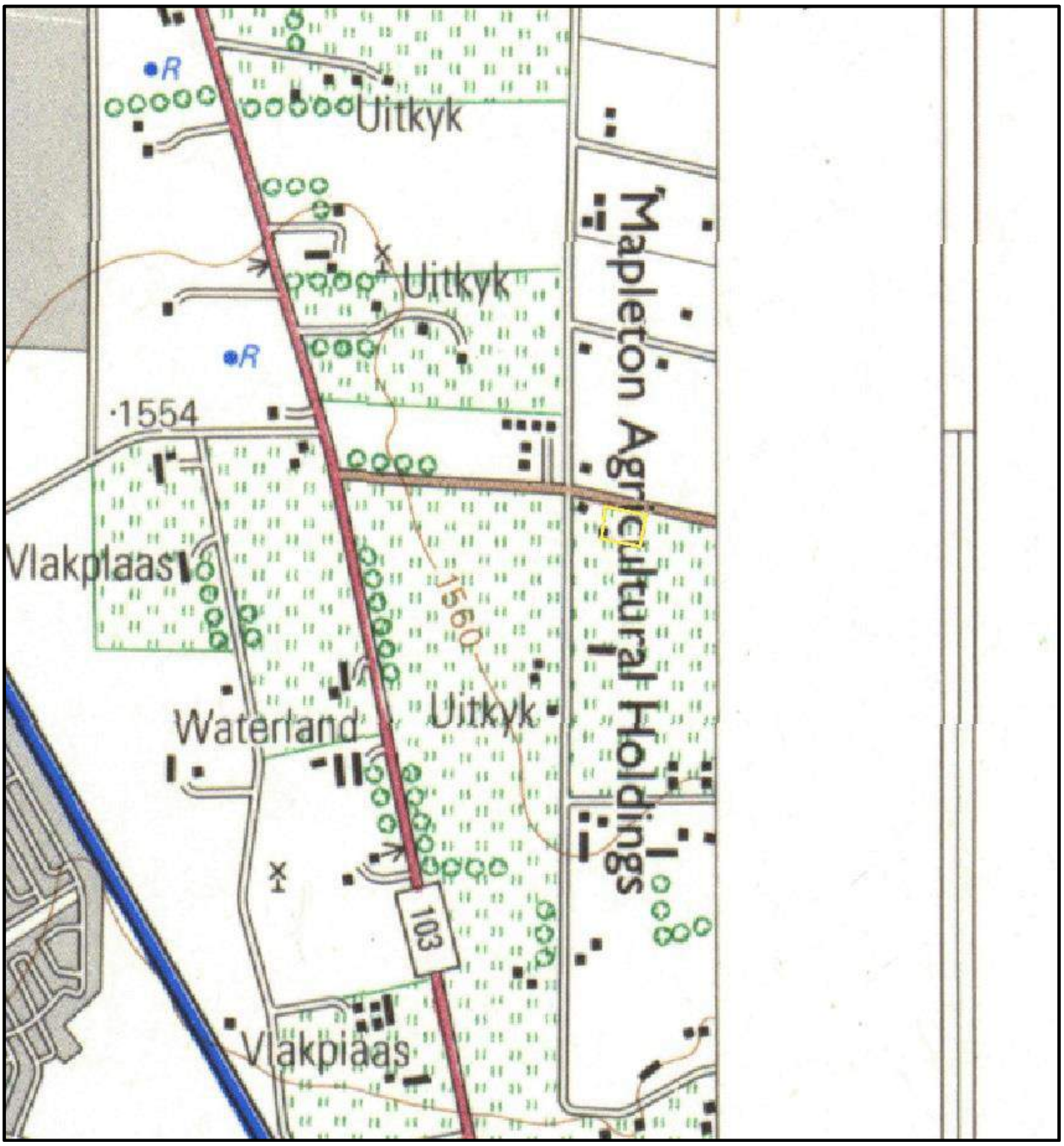

Figure 13. 1995 Topographical map of the site under investigation. The approximate study area is indicated with a yellow border. The study area formed part of a holding that was used as cultivated lands. One building possibly fell within the study area, and one building can be seen to the west thereof. (Topographical Map 1995)

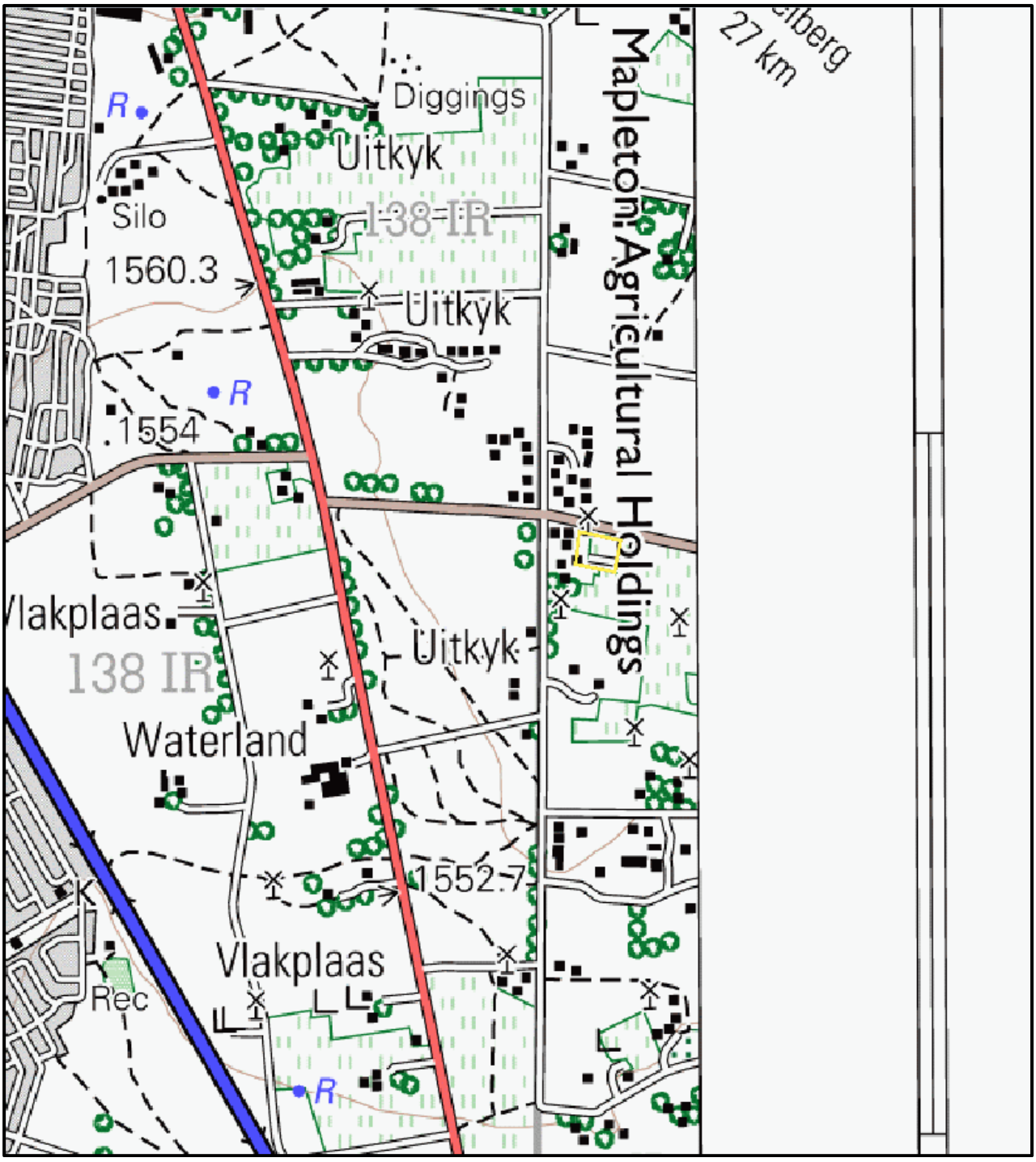

Figure 14. 2002 Topographical map of the site under investigation. The approximate study area is indicated with a yellow border. The site under investigation formed part of a holding that was used mainly for the cultivation of fields. Developments in the study area included a farm road, and possibly a building. Five more buildings can be seen directly to the west of this portion, and two more to the south. (Topographical Map 2002)

Figure 15. 2017 Google Earth image showing the study area in relation to Vosloorus, the M35 Main Road, Katlehong, Palm Ridge and other sites. (Google Earth 2017)

8 Findings of the Survey

It is important to note that only Plot 62 was surveyed. The study area was surveyed over a period of 1 day.

The study area is situated approximately 1,5km east of the N3 highway to the south of Boksburg. The property is situated adjacent and on the southern side of Diana Road within the Mapleton Agricultural Holdings area. Diana Road forms the northern boundary of the site. The proposed site is situated amongst and is bordered with properties with the various agricultural and business intents on all the other sides. The proposed site is fairly flat.

The property is fenced off with a high metal palisade on the northern, eastern and western sides. A wire fence is situated along the southern boundary of the property. A homestead is situated within the south-eastern corner of the proposed property. Two chicken houses are situated next to the homestead in the south-western corner of the property. These will form part of the proposed project.

Small scale dumping of building material is situated in between the homestead and the chicken houses. These materials seem to be set for recycling. The rest of the site is clear and also clear of any trees. A small number of cattle and a few sheep are being kept on the rest of the property.

The land owner, Mr.Zakhele Hlungwane, was interviewed during the site visit. He indicated that he didn't know about any graves or heritage sites within the indicated study area. Most of the property was previously disturbed due to the various developments all around.

No sites or finds of heritage value or significance were identified within the investigated area.

Figure 16. Dumped material

Figure 17. Fencing

8.1 Built Environment (Section 34 of the NHRA)

No standing structures older than 60 years occur in the study area.

8.2 Archaeological and palaeontological resources (Section 35 of the NHRA)

No archaeological sites or material was recorded during the survey. Therefore, no further mitigation prior to construction is recommended in terms of the archaeological component of Section 35 of the NHRA for the proposed development to proceed.

Rossouw (2017) conducted an independent paleontological study and concluded that:
"*The site is underlain by palaeontologically insignificant volcanic rocks of the Karoo Dolerite Suite, capped by degraded and geologically recent residual soils. Potential impact on palaeontological remains within the development footprint is considered to be negligible and it is recommended that the planned development is exempt from a full Phase 1 Palaeontological Impact Assessment. "* .

8.3 Burial Grounds and Graves (Section 36 of the NHRA)

In terms of Section 36 of the Act no burial sites were recorded.

8.4 Cultural Landscapes, Intangible and Living Heritage.

Long term impact on the cultural landscape is considered to be low as the surrounding area is rural in character with some road developments. Visual impacts to scenic routes and sense of place are also considered to be low as the development is in line with the rural character of the area.

8.5 Battlefields and Concentration Camps

There are no battlefields or concentration camp sites in the study area.

8.6 Potential Impact

The chances of impacting unknown archaeological sites in the study area is considered to be negligible. Any direct impacts that did occur would be during the construction phase only and would be of very low significance. Cumulative impacts occur from the combination of effects of various impacts on heritage resources. The importance of identifying and assessing cumulative impacts is that the whole is greater than the sum of its parts. In the case of the development, it will, with the recommended mitigation measures and management actions, not impact any heritage resources directly. However, this and other projects in the area could have an indirect impact on the larger heritage landscape. The lack of any heritage resources in the immediate area and the extensive existing development surrounding the study area minimises additional impact on the landscape.

8.6.1 Pre-Construction phase:

It is assumed that the pre-construction phase involves the removal of topsoil and vegetation as well as the establishment of infrastructure needed for the construction phase. These activities can have a negative and irreversible impact on heritage sites. Impacts include destruction or partial destruction of non-renewable heritage resources.

8.6.2 Construction Phase

During this phase, the impacts and effects are similar in nature but more extensive than the pre-construction phase. These activities can have a negative and irreversible impact on heritage sites. Impacts include destruction or partial destruction of non-renewable heritage resources.

8.6.3 Operation Phase:

No impact is envisaged during this phase.

Table 5. Impact Assessment table.

Nature: During the construction phase activities resulting in disturbance of surfaces and/or sub-surfaces may destroy, damage, alter, or remove from its original position archaeological material or objects.		
	Without mitigation	**With mitigation (Preservation/ excavation of site)**
Extent	Local (1)	Local (1)
Duration	Permanent (5)	Permanent (5)
Magnitude	Low (2)	Low (2)
Probability	Not probable (2)	Not probable (2)
Significance	**16 (Low)**	**16 (Low)**
Status (positive or negative)	Negative	Negative
Reversibility	Not reversible	Not reversible
Irreplaceable loss of resources?	No resources were recorded	No resources were recorded.
Can impacts be mitigated?	Yes, a chance find procedure should be implemented.	Yes
Mitigation: Due to the lack of apparent significant archaeological resources no further mitigation is required prior to construction.		
Cumulative impacts: Since no heritage significant resources occur in the study area cumulative impacts are considered to be low.		
Residual Impacts: If sites are destroyed this results in the depletion of archaeological record of the area. However, if sites are recorded and preserved or mitigated this adds to the record of the area.		

9 Conclusion and recommendations

HCAC was appointed to conduct a Heritage Impact Assessment for the Mthunzi Chicken Supplier Facility. During the survey, no archaeological sites or material was recorded. A paleontological desktop study was conducted by Rossouw (2017) that concluded: "*The site is underlain by palaeontologically insignificant volcanic rocks of the Karoo Dolerite Suite, capped by degraded and geologically recent residual soils. Potential impact on palaeontological remains within the development footprint is considered to be negligible and it is recommended that the planned development is exempt from a full Phase 1 Palaeontological Impact Assessment.*". No further mitigation prior to construction is recommended in terms of the archaeological and paleontological components of Section 35 for the proposed development to proceed.

In terms of the built environment of the area (Section 34), no standing structures older than 60 years occur within the study area. In terms of Section 36 of the Act no burial sites were recorded. If any graves are located in future they should ideally be preserved *in-situ* or alternatively relocated according to existing legislation. No public monuments are located within or close to the study area. The area is rural in character and the proposed project is in line with the current land use and will not impact negatively on significant cultural landscapes or viewscapes. During the public participation process conducted for the project no heritage concerns was raised.

Due to the lack of significant heritage resources in the study area the impact of the proposed project on heritage resources is considered low and it is recommended that the proposed project can commence on the condition that the following chance find procedure are implemented as part of the EMPr and based on approval from SAHRA

9.1. Chance Find Procedures

The possibility of the occurrence of subsurface finds cannot be excluded. Therefore, if during construction any possible finds such as stone tool scatters, artefacts or bone and fossil remains are made, the operations must be stopped and a qualified archaeologist must be contacted for an assessment of the find and therefor chance find procedures should be put in place as part of the EMP. A short summary of chance find procedures is discussed below.

This procedure applies to the developer's permanent employees, its subsidiaries, contractors and subcontractors, and service providers. The aim of this procedure is to establish monitoring and reporting procedures to ensure compliance with this policy and its associated procedures. Construction crews must be properly inducted to ensure they are fully aware of the procedures regarding chance finds as discussed below.

- If during the pre-construction phase, construction, operations or closure phases of this project, any person employed by the developer, one of its subsidiaries, contractors and subcontractors, or service provider, finds any artefact of cultural significance or heritage site, this person must cease work at the site of the find and report this find to their immediate supervisor, and through their supervisor to the senior on-site manager.
- It is the responsibility of the senior on-site Manager to make an initial assessment of the extent of the find, and confirm the extent of the work stoppage in that area.
- The senior on-site Manager will inform the ECO of the chance find and its immediate impact on operations. The ECO will then contact a professional archaeologist for an assessment of the finds who will notify the SAHRA.

9.2 Reasoned Opinion

The impact of the proposed project on heritage resources is considered low and no further pre-construction mitigation in terms of archaeological resources is required based on approval from SAHRA. Furthermore, the socio-economic benefits also outweigh the possible impacts of the development if the correct mitigation measures (i.e. chance find procedure) are implemented for the project.

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11. Appendices:

Curriculum Vitae of Specialist

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Archaeologist

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Education:

Particulars of degrees/diplomas and/or other qualifications:

Name of University or Institution:		University of Pretoria
Degree obtained	**:**	BA Heritage Tourism & Archaeology
Year of graduation	**:**	2001
Name of University or Institution:		University of the Witwatersrand
Degree obtained	**:**	BA Hons Archaeology
Year of graduation	**:**	2002
Name of University or Institution	**:**	University of the Witwatersrand
Degree Obtained	**:**	MA (Archaeology)
Year of Graduation	:	2012
Name of University or Institution	**:**	University of Johannesburg
Degree	**:**	PhD
Year	:	Currently Enrolled

EMPLOYMENT HISTORY:

2011 – Present:	**Owner – HCAC (Heritage Contracts and Archaeological Consulting CC)**.
2007 – 2010 :	**CRM Archaeologist,** Managed the Heritage Contracts Unit at the University of the Witwatersrand.
2005 - 2007:	**CRM Archaeologist**, Director of Matakoma Heritage Consultants
2004:	**Technical Assistant**, Department of Anatomy University of Pretoria
2003:	**Archaeologist**, Mapungubwe World Heritage Site
2001 - 2002:	**CRM Archaeologists,** For R & R Cultural Resource Consultants, Polokwane
2000:	**Museum Assistant**, Fort Klapperkop.

Countries of work experience include:

Republic of South Africa, Botswana, Zimbabwe, Mozambique, Tanzania, The Democratic Republic of the Congo, Lesotho and Zambia.

SELECTED PROJECTS INCLUDE:

Archaeological Impact Assessments (Phase 1)

Heritage Impact Assessment Proposed Discharge Of Treated Mine Water Via The Wonderfontein Spruit Receiving Water Body Specialist as part of team conducting an Archaeological Assessment for the Mmamabula mining project and power supply, Botswana

Archaeological Impact Assessment Mmamethlake Landfill

Archaeological Impact Assessment Libangeni Landfill

Linear Developments

Archaeological Impact Assessment Link Northern Waterline Project At The Suikerbosrand Nature Reserve

Archaeological Impact Assessment Medupi – Spitskop Power Line,

Archaeological Impact Assessment Nelspruit Road Development

Renewable Energy developments

Archaeological Impact Assessment Karoshoek Solar Project

Grave Relocation Projects

Relocation of graves and site monitoring at Chloorkop as well as permit application and liaison with local authorities and social processes with local stakeholders, Gauteng Province.

Relocation of the grave of Rifle Man Maritz as well as permit application and liaison with local authorities and social processes with local stakeholders, Ndumo, Kwa Zulu Natal.

Relocation of the Magolwane graves for the office of the premier, Kwa Zulu Natal

Relocation of the OSuthu Royal Graves office of the premier, Kwa Zulu Natal

Phase 2 Mitigation Projects

Field Director for the Archaeological Mitigation For Booysendal Platinum Mine, Steelpoort, Limpopo Province. Principle investigator Prof. T. Huffman

Monitoring of heritage sites affected by the ARUP Transnet Multipurpose Pipeline under directorship of Gavin Anderson.

Field Director for the Phase 2 mapping of a late Iron Age site located on the farm Kameelbult, Zeerust, North West Province. Under directorship of Prof T. Huffman.

Field Director for the Phase 2 surface sampling of Stone Age sites effected by the Medupi – Spitskop Power Line, Limpopo Province

Heritage management projects

Platreef Mitigation project – mitigation of heritage sites and compilation of conservation management plan.

MEMBERSHIP OF PROFESSIONAL ASSOCIATIONS:

- Association of Southern African Professional Archaeologists. Member number 159

  Accreditation:
  - Field Director Iron Age Archaeology
  - Field Supervisor Colonial Period Archaeology, Stone Age Archaeology and Grave Relocation
- Accredited CRM Archaeologist with SAHRA
- Accredited CRM Archaeologist with AMAFA
- Co-opted council member for the CRM Section of the Association of Southern African Association Professional Archaeologists (2011 – 2012)

PUBLICATIONS AND PRESENTATIONS

- A Culture Historical Interpretation, Aimed at Site Visitors, of the Exposed Eastern Profile of K8 on the Southern terrace at Mapungubwe.
  - J van der Walt, A Meyer, WC Nienaber
  - Poster presented at Faculty day, Faculty of Medicine University of Pretoria 2003
- 'n Reddingsondersoek na Anglo-Boereoorlog-ammunisie, gevind by Ifafi, Noordwes-Provinsie. South-African Journal for Cultural History 16(1) June 2002, with A. van Vollenhoven as co-writer.
- Fieldwork Report: Mapungubwe Stabilization Project.
  - WC Nienaber, M Hutten, S Gaigher, J van der Walt
  - Paper read at the Southern African Association of Archaeologists Biennial Conference 2004
- A War Uncovered: Human Remains from Thabantšho Hill (South Africa), 10 May 1864.
  - M. Steyn, WS Boshoff, WC Nienaber, J van der Walt
  - Paper read at the 12th Congress of the Pan-African Archaeological Association for Prehistory and Related Studies 2005
- Field Report on the mitigation measures conducted on the farm Bokfontein, Brits, North West Province .
  - J van der Walt, P Birkholtz, W. Fourie
  - Paper read at the Southern African Association of Archaeologists Biennial Conference 2007
- Field report on the mitigation measures employed at Early Farmer sites threatened by development in the Greater Sekhukhune area, Limpopo Province. J van der Walt
  - Paper read at the Southern African Association of Archaeologists Biennial Conference 2008
- Ceramic analysis of an Early Iron Age Site with vitrified dung, Limpopo Province South Africa.
  - J van der Walt. Poster presented at SAFA, Frankfurt Germany 2008

- Bantu Speaker Rock Engravings in the Schoemanskloof Valley, Lydenburg District, Mpumalanga (*In Prep)*
    - J van der Walt and J.P Celliers
- Sterkspruit: Micro-layout of late Iron Age stone walling, Lydenburg, Mpumalanga. W. Fourie and J van der Walt. A Poster presented at the Southern African Association of Archaeologists Biennial Conference 2011
- Detailed mapping of LIA stone-walled settlements' in Lydenburg, Mpumalanga. J van der Walt and J.P Celliers
    - Paper read at the Southern African Association of Archaeologists Biennial Conference 2011
- Bantu-Speaker Rock engravings in the Schoemanskloof Valley, Lydenburg District, Mpumalanga. J.P Celliers and J van der Walt
    - Paper read at the Southern African Association of Archaeologists Biennial Conference 2011
- Pleistocene hominin land use on the western trans-Vaal Highveld ecoregion, South Africa, Jaco van der Walt.
    - J van der Walt. Poster presented at SAFA, Toulouse, France. Biennial Conference 2016

REFERENCES:

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