

Basic Assessment for IDCNKE Holdings' proposed expansion of a chicken layer facility and vegetable production on Portion 348 of Kameeldrift Farm 313, Pretoria West, Gauteng.

DRAFT BASIC ASSESSMENT REPORT



MAY 2018

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Basic Assessment Process

DRAFT BASIC ASSESSMENT REPORT - PROPOSED EXPANSION OF A CHICKEN LAYER FACILITY AND VEGETABLE PRODUCTION

Portion 348 of Kameeldrift Farm 313, Pretoria West, Gauteng

DRAFT BASIC ASSESSMENT REPORT

May 2018

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IDCNKE Holdings

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report details

Title:	Basic Assessment for IDCNKE Holdings' proposed expansion of a chicken layer facility and vegetable production on Portion 348 of Kameeldrift Farm 313, Pretoria West, Gauteng.
Purpose of this report:	<p>The purpose of this BA Report is to:</p> <ul style="list-style-type: none">• 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; and• Provide an Environmental Management Programme (EMPr) for the proposed project. <p>This BA Report is the Draft Version submitted to the Gauteng Department of Agriculture and Rural Development (GDARD) for review.</p>
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Date:	May 2018
To be cited as:	CSIR, 2018. Draft Basic Assessment Report for IDCNKE Holdings' proposed expansion of a chicken layer facility and vegetable production on Portion 348 of Kameeldrift Farm 313, Pretoria West, Gauteng.

environmental assessment practitioner

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Project Team:

Name	Qualification & Expertise
Babalwa Mqokeli (Project Manager)	<ul style="list-style-type: none"> • MSc Ecological Science (University of KwaZulu-Natal) • 2 years' experience in the environmental management field (Terrestrial & Aquatic Ecology) • Over 2 years' experience conducting Environmental Assessments
Minnelise Levendal (Project Reviewer)	<ul style="list-style-type: none"> • MSc Biological Science (Botany) (Stellenbosch University) • 17 years of experience in Environmental Management • Inclusive of 11 years' experience in conducting Environmental Assessments

The Council for Scientific and Industrial Research has been one of the leading organisations in South Africa contributing to the development and implementation of environmental assessment and management methodologies. The CSIR's Environmental Management Services (EMS) unit has over 20 years of experience in environmental management practices, involving conducting environmental assessment and management studies in over 15 countries in Africa. Key sectors of CSIR's work include renewable energy, infrastructure, natural resource management, mining, industrial development and oil and gas. CSIR's environmental assessments are conducted with national legal requirements as well as those of international agencies such as the World Bank, International Finance Corporation and World Health Organisation.

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executive summary

Background description

IDCNKE Holdings is a small-scale poultry production and vegetable farm, located on 2 hectares of land on Portion 348 of Kameeldrift Farm 313, Pretoria West, Gauteng. The business consists of 2 members and they propose to expand on the existing chicken layer facility, as well as develop a vegetable production facility. The chicken layer facility expansion and proposed land for cultivation will encompass 1.06 ha of the 2 ha farm. The existing facility currently has 1,000 layer chickens, and proposes to expand by erecting two chicken housing structures, as well as utilise 0.2 ha of land within the farm for vegetable production. Each house will have a footprint of approximately 2 500 m² and accommodate a maximum of 40 000 chickens. The aim of IDCNKE is to supply big retailers and ensure a well-known brand for the business. It aims to provide a service to local communities in and around Kameeldrift, including employment opportunities for a number of local residents. The expansion foresees an even bigger contribution to the agro-industrial sector; including agricultural skills development, increase in egg production and employment.

Legal requirements and legislative process

As part of the proposed project, listed activities defined under the National Environmental Management Act, Act No. 107 of 1998 (NEMA, 1998), as amended, in terms of the Environmental Impact Assessment (EIA) Regulations, as amended, Government Notice (GNR) 326 of 7 April 2017, there under will take place. Relevant listed activities triggered by the proposed activities are indicated below:

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

GNR. 327 Activity 40: 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.

This Basic Assessment Report (BAR) aims to provide the necessary information relating to the proposed project activities, as required in terms of the amended NEMA EIA Regulations.

Anticipated impacts

The aim of the environmental assessment is to identify potential impacts associated with the development and to recommend methods to avoid or reduce adverse impacts and promote positive impacts. A summary of potential significant impacts that have been identified during the Basic Assessment process is as follows:

Summary of potential impacts	Significance rating of impacts before mitigation	Significance rating of impacts after mitigation
Impact on soil (erosion and dust)	Medium	Low
Loss of vegetation and faunal habitat	Medium	Low
Introduction and increase in alien invasive vegetation	Medium	Low
Impact on wetland habitat	High	Low
Potential for pollution of water sources	Medium	Low
Waste generation	Medium	Low
Impact of air quality	Medium	Low
Impact of pests and disease transmission	High	Low
Safety and security impacts	Medium	Low
Impact of increased traffic	Low	Low
Employment opportunities created	Medium (Positive)	High (Positive)

An Environmental Management Programme (EMPr) has been compiled (refer to Appendix H) for the proposed chicken layer facility expansion, with the aim of serving as an applicable document to follow in order to manage and mitigate identified potential negative impacts associated with the project. Implementing effective mitigation measures will assist in reducing the potential impacts on the surrounding environment during both the construction and operational phases of the proposed development. With the implementation of the mitigation measures as suggested in the EMPr, i.e. avoiding the wetland and its associated buffer area, as well as not encroaching on the moist grasslands area, the significance of most of the impacts associated with the proposed development will be reduced to Low.

EAPs Recommendation

Based on the findings of the Basic Assessment process for IDCNKE's proposed chicken layer facility expansion, it is recommended that this project be authorised, subject to the following conditions:

- 1) The EMPr of this proposed development must form part of the contractual agreement and be adhered to by both the contractors and the applicant.
- 2) The recommendations of the ecological and wetland specialists, including avoiding the wetland and moist grassland, must be implemented.
- 3) The applicant must ensure compliance with the conditions of the Environmental Authorisation and EMPr during all the phases of the project.
- 4) A Water Use Licence must be obtained from the Department of Water and Sanitation (DWS) for the water usage associated with the facility operations.

IDCNKE is being assisted *pro-bono* under the DEA Special Needs and Skills Development Programme, which is a programme aimed to assist small-medium scale emerging farmers/businesses who do not

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have the financial means to pay for environmental services, as such do not have the financial opportunity to have more than one alternative site available, it is therefore recommended by the EAP that the proposed site and layout be included in the Environmental Authorisation, should this be granted.

It is the opinion of the EAP that the proposed expansion will comply with current relevant environmental legislation, and that with the implementation of the mitigation measures suggested in this BAR, there are no negative environmental impacts of high significance identified after mitigation. An ecological and wetland assessment was conducted to inform the BA to ensure that the proposed layout avoids areas of high sensitivity. Based on the above, it is therefore recommended that the proposed development be granted Environmental Authorisation.

glossary

BA	Basic Assessment
BAR	Basic Assessment Report
CoT	City of Tshwane
DAFF	Department of Agriculture, Forestry and Fisheries
DEA	Department of Environmental Affairs
DWS	Department of Water and Sanitation
EAP	Environmental Assessment Practitioner
EIA	Environmental Impact Assessment
EMPr	Environmental Management Programme
GDARD	Gauteng Department of Agriculture and Rural Development
Ha	Hectare
HIA	Heritage Impact Assessment
I&APs	Interested and Affected Parties
IDP	Integrated Development Plan
NDP	National Development Plan
NEMA	National Environmental Management Act, Act No. 107 of 1998
NEM:WA	National Environmental Management: Waste Act, Act No. 59 of 2008
NHRA	National Heritage Resources Act, Act No. 25 of 1999
NSS	Natural Scientific Services
SAHRA	South African Heritage Resources Agency
SAHRIS	South African Heritage Resources Information System
SDF	Spatial Development Framework
WUL	Water Use Licence
NWA	National Water Act, Act No. 36 of 1998
WULA	Water Use Licence Application

Requirements according to Appendix 1 of GNR 982 of 4 December 2014- Scope of Assessment and Content of BAR.

Scope of Assessment and Content of BAR	SECTION IN BAR
1) A basic assessment report must contain all 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	Page 2
ii. the expertise of the EAP, including a curriculum vitae;	Page 2 Appendix I
(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;	Section A Appendix A
(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 (ii) on land where the property has not been defined, the coordinates within which the activity is to be undertaken;	Appendix A
(d) a description of the scope of the proposed activity, including- (i) all listed and specified activities triggered and being applied for; and (ii) a description of the activities to be undertaken including associated structures and infrastructure ;	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	Section A2

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Scope of Assessment and Content of BAR	SECTION IN BAR
(ii) how the proposed activity complies with and responds to the legislation and policy context, plans, guidelines, tools frameworks, and instruments;	Section E7
(f) a motivation for the need and desirability for the proposed development including the need and desirability of the activity in the context of the preferred location;	Section B9 Section E9
(g) a motivation for the preferred site, activity and technology alternative;	Section A3
<p>(h) a full description of the process followed to reach the proposed preferred alternative within the site, including:</p> <ul style="list-style-type: none"> (i) details of all the alternatives considered; (ii) details of the public participation process undertaken in terms of regulation 41 of the Regulations, including copies of the supporting documents and inputs; (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; (iv) the environmental attributes associated with the alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects; (v) the impacts and risks identified for each alternative, including the nature, significance, consequence, extent, duration and probability of the impacts, including the degree to which these impacts- <ul style="list-style-type: none"> (aa) can be reversed (bb) may cause irreplaceable loss of resources; and (cc) can be avoided, managed or mitigated; (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; (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; (viii) the possible mitigation measures that could be applied and level of residual risk; (ix) the outcome of the site selection matrix; (x) if no alternatives, including alternative locations for the activity were investigated, the motivation for not considering such; and (xi) a concluding statement indicating the preferred alternatives, including preferred location of the activity; 	<p>Section A3</p> <p>Appendix E</p> <p>Section B</p> <p>Appendix G</p> <p>Section E</p> <p>Appendix F</p>
<p>(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-</p> <ul style="list-style-type: none"> (i) a description of all environmental issues and risks that were identified during the environmental impact assessment process; <p>and</p>	<p>Section E,</p> <p>Appendix G</p> <p>Appendix H</p>

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Scope of Assessment and Content of BAR	SECTION IN BAR
(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;	
(j) an assessment of each identified potentially significant impact and risk, including- (i) cumulative impacts; (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;	Section E Appendix G
(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;	Appendix H
(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;	Section E Appendix A Appendix G
(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;	Section E Appendix G 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;	Appendix G
(o) a description of any assumptions, uncertainties, and gaps in knowledge which relate to the assessment and mitigation measures proposed;	Appendix G Section E
(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;	Appendix G Section E8
(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;	N/A
(r) an undertaking under oath or affirmation by the EAP in relation to:	Appendix I

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Scope of Assessment and Content of BAR	SECTION IN BAR
(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 (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	Section C Appendix E
(s) where applicable, details of any financial provisions for the rehabilitation, closure, and ongoing post decommissioning management of negative environmental impacts;	N/A
(t) any specific information that may be required by the competent authority; and	N/A
(u) any other matters required in terms of section 24(4)(a) and (b) of the Act.	N/A

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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.

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DEPARTMENTAL DETAILS

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

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

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

(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.

Not applicable. The submission of the Basic Assessment Report (BAR) to the Competent Authority will be within the 90 days from submission of the Application.

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 chicken facility has been operating for approximately a year and will continue to operate, and there are therefore no intended plans to close the facility. Should the Applicant decide to close the facility, an application for closure and decommissioning will be submitted to theCompetent Authority.

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.

Please refer to appendix E for a copy of the Interested and Affected Parties (I&APs) database.

Have State Departments including the competent authority commented? No

If no, why? This is the Draft BA Report which has been released for a 30-day review period to obtain comments from I&APs, including State Departments.

SECTION A: ACTIVITY INFORMATION

1. PROPOSAL OR DEVELOPMENT DESCRIPTION

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

Basic Assessment for the proposed expansion of a chicken layer facility for IDCNKE on Portion 348 of Kameeldrift Farm 313, in Pretoria West, Gauteng.

1.1 INTRODUCTION

IDCNKE Holdings is a small-scale poultry production and vegetable farm, located on 2 hectares (ha) of land on Portion 348 of Kameeldrift Farm 313, Pretoria West, Gauteng (see Figure 1.1). The business consists of 2 members and they propose to expand on the existing chicken layer facility, as well as develop a vegetable production facility. The chicken layer facility expansion and proposed land for cultivation will encompass 1.06 ha of the 2 ha farm. The existing facility currently has 1 000 layer chickens, and proposes to expand by erecting two additional chicken housing structures, as well as utilise 0.2 ha of land within the farm for vegetable production. Each house will have a footprint of approximately 2 500 m² and accommodate a maximum of 40 000 chickens.

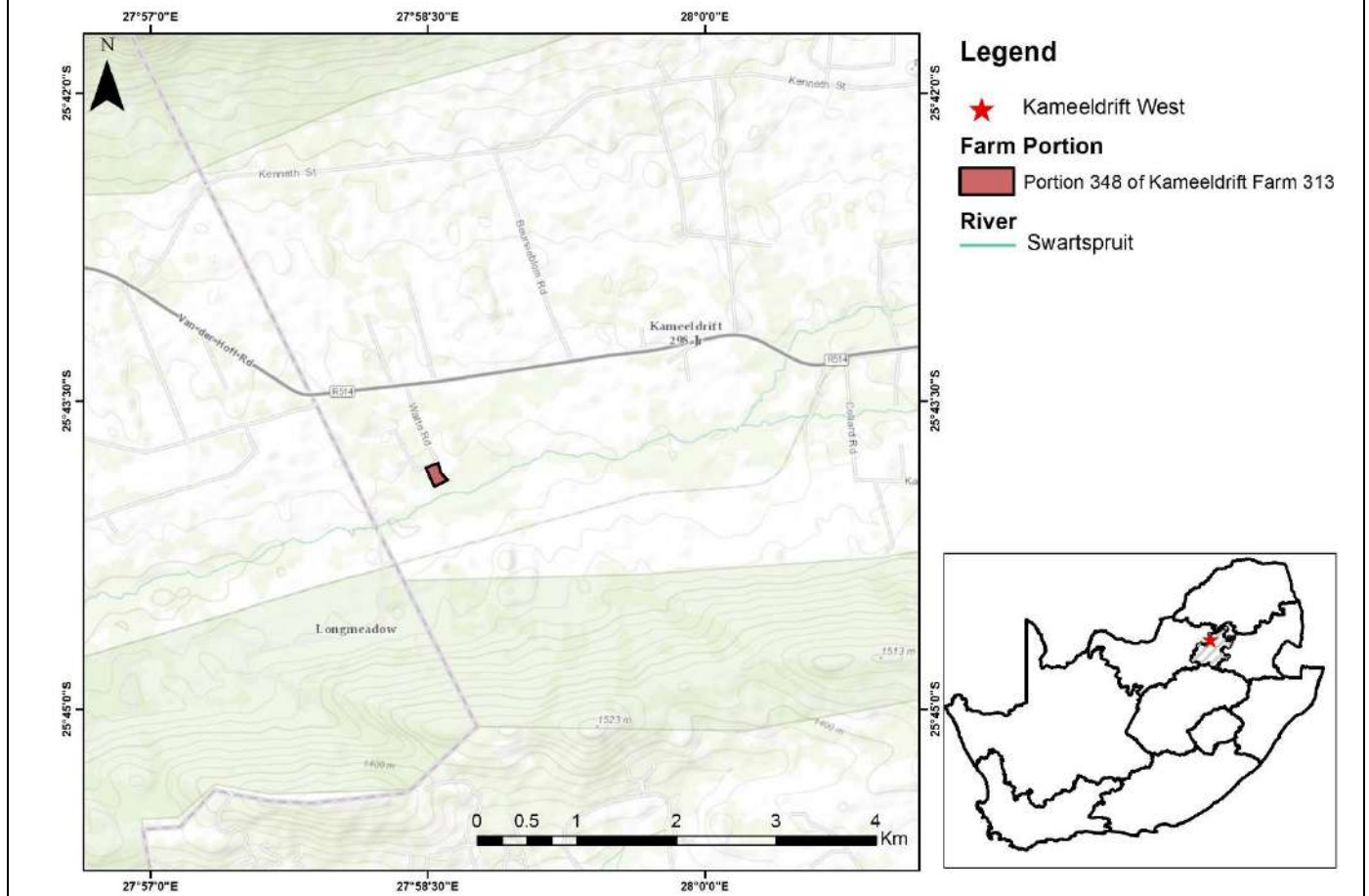


Figure 1.1: Location of the proposed expansion of a chicken layer facility of IDCNKE on Portion 348 of Kameeldrift Farm 313, Pretoria West, Gauteng.

The business currently has chicken layers producing 14-17 trays of eggs a day. These eggs are supplied to butchers, offices, local households and/or individuals in the area. The aim of IDCNKE is to supply big retailers and ensure a well-known brand for the business. The proposed business will have an economic benefit from the viability of egg production, as well as vegetable production. It aims to provide a service to local communities in and around Kameeldrift, including employment opportunities for a number of local residents. The expansion foresees an even bigger contribution to the agro-industrial sector; including agricultural skills development, increase in egg production and employment.

The proposed chicken layer facility will include the following infrastructure upon completion:

2 x Chicken house;
1 x Storage house; and
1 x Workers quarter.

Housing units will consist of concrete floors, to ensure adequate cleaning as they will be impermeable to water. Water for cleaning and drinking will be sourced from the existing onsite borehole. The application for use of the borehole water is in the process of being lodged with the Department of Water and Sanitation (DWS). The chicken feed will be stored in silos, and the proposed development will make use of manual and automated systems to provide feed and water.

Chicken waste (manure) will be collected and dried in an impervious container and thereafter sold for use in vegetable production facilities. The chicken houses will be well ventilated to ensure air circulation and to minimise odours. Housing will also include a storeroom for the sorting and packing of eggs.

Listed Activities

As part of the proposed chicken layer expansion, listed activities defined under the National Environmental Management Act, Act No. 107 of 1998 (NEMA, 1998), as amended, in terms of the amended Environmental Impact Assessment (EIA) Regulations, Government Notice (GNR) 326 of 7 April 2017, there under will take place. Relevant listed activities triggered by the proposed activities are described as follows:

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.*

GNR. 327 Activity 40: *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 5000 poultry per facility situated outside an urban area.*

Select the appropriate box

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

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

YES

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

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

YES

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

NO

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 (NEMA), 1998 (Act No. 107 of 1998 as amended).	National & Provincial	27 November 1998
NEMA Environmental Impact Assessment Regulations, as amended, GNR 326	National & Provincial	7 April 2017
National Water Act 36 of 1998	National & Provincial	26 August 1998
National Environmental Management Waste Act GNR 921	National & Provincial	29 November 2013
National Environmental Management Waste Act GNR 921	National & Provincial	29 November 2013
National Environmental Management Biodiversity Act 10 of 2004	National & Provincial	2004
National Heritage Resources Act 25 of 1999	National & Provincial	1999
National Development Plan	National	2012
City of Tshwane Metropolitan Municipality IDP and SDF	Provincial	2014/2015, 2011-2016 & 2017-2021
Gauteng Provincial Environmental Management Framework Revised in 2014	Provincial	26 November 2014
National Health Act, 2003 (Act No.61 of 2003)	National & Provincial	23 July 2004
Animal Health Act No. 7 of 2002	National	30 July 2002

Description of compliance with the relevant legislation, policy or guideline:	
Legislation, policy or guideline	Description of compliance
National Environmental Management Act (NEMA), 1998 (Act No. 107 of 1998 as amended).	An application for Environmental Authorisation for the proposed development is submitted in terms of GNR 326 of NEMA EIA Regulations, 7 April 2017, promulgated under NEMA.
GNR 982 of NEMA EIA Regulations, 4 December 2014	To promote integrated environmental management, contents of this BAR adhere to the requirements of the amended EIA Regulations.

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Description of compliance with the relevant legislation, policy or guideline:	
Legislation, policy of guideline	Description of compliance
	<p>Appendix H includes the Environmental Management Programme (EMPr) that the project will adhere to if authorisation is received.</p> <p>Appendix E refers to the Public participation followed thus far in undertaking this assessment.</p>
National Water Act, 1998 (Act 36 of 1998)	An application for the determination of the need for a Water Use Licence Application (WULA) has been lodged.
National Environmental Management: Waste Act (NEM:WA) GNR 921, 29 November 2013	Listed activities regarding the generation and storage of waste will not be triggered by the proposed Chicken Layer facility, however during the construction and operational phases of the facility, the Norms and Standards of the Waste Act will be adhered to, as well as the implementation of best practice waste management measures as included in the EMPr.
National Development Plan	<p>The South African Government through the Presidency has published a National Development Plan (NDP). The Plan aims to eliminate poverty and reduce inequality by 2030. The Plan has the target of developing people's capabilities to improve their lives through education and skills development, health care, better access to public transport, jobs, social protection, rising income, housing and basic services, and safety. It proposes to implement the following strategies to address the above goals:</p> <ol style="list-style-type: none"> 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. <p>The proposed project is therefore aligned with the goals of the NDP as it will create jobs and improve livelihoods.</p>
National Heritage Resources Act, 1999 (Act 25 of 1999)	An application for Heritage Resources review was submitted to SAHRA (Case ID: 12092) in terms of the National Heritage Resources Act, 1999 (Act No. 25 of 1999) as amended.
National Environmental Management: Biodiversity Act 10 of 2004	The National Environmental Management Biodiversity Act, 2004 (Act No. 10 of 2004) as amended (NEMBA) including all the pertinent legislation published in terms of this act was considered in undertaking this Basic Assessment process. This included the determination and assessment of the fauna and flora prevailing in the proposed project and the handling thereof in terms of NEMBA.
City of Tshwane Metropolitan Municipality IDP and SDF	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 re-engineer the urban and rural form. The SDF is the municipality's long-term vision of what it wishes to achieve spatially, and within the IDP programmes and projects. The SDF should not be interpreted as a blueprint or master plan aimed at controlling physical development, but

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Description of compliance with the relevant legislation, policy or guideline:	
Legislation, policy or guideline	Description of compliance
	rather the framework giving structure to an area while allowing it to grow and adapt to changing circumstances. The proposed project has considered and is guided by the Regions' SDF and IDP priorities of the area.
Gauteng Provincial Environmental Management Framework Revised in 2014	The Gauteng Provincial Environmental Management Framework has been used to assist in the determination of land use zones and to guide sustainable land use management.
National Health Act, 2003 (Act No.61 of 2003)	The chickens will be housed in a secure facility and kept in a healthy state.
Animal Health Act No. 7 of 2002	The proposed project aims to at all times prevent the spread of diseases resulting from the chicken facility. Mitigation measures have been included in the EMPr (included as Appendix H) that the project will adhere to in an effort to prevent the spread of diseases.

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

<p>The proposed alternative was considered based on the location of the existing chicken facility within land owned by the applicant and re-aligned accordingly to avoid areas of ecological importance and sensitivity as determined by the ecological specialist study undertaken as part of the Basic Assessment process. The farm falls within Zone 4 (Normal control zone), and as stipulated in the Gauteng Provincial Environmental Framework (GPEMF), this zone is dominated by agricultural uses outside the urban development zone. According to the City of Tshwane's town Planning Scheme, the land use zone of the area is undetermined; the town planning of the Municipality supports the use of land in this zone for agricultural purposes. The surrounding land uses are largely agricultural (cattle and sheep farming). No other additional location alternatives have been proposed for the project as this is the only site available for the applicant, which forms part of an existing development, with the farm also limited in terms of size.</p>
--

Provide a description of the alternatives considered

No.	Alternative type, either alternative: site on property, properties, activity, design, technology, energy, operational or other(provide details of "other")	Description
1	Proposal	The proposed project involves the expansion of an existing chicken layer facility on Portion 348 of Kameeldrift Farm 313, Pretoria West, Gauteng. The proposed chicken facility will occupy an area of approximately 1.06 of the 2 hectare farm. Two chicken

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No.	Alternative type, either alternative: site on property, properties, activity, design, technology, energy, operational or other(provide details of "other")	Description
		<p>houses will be constructed adjacent to each other and separated a storage house.</p> <p>The proposed development expansion aims to improve current chicken layer facility and egg production, and exercise best practices that are in line with new legislation and standards on poultry welfare. This is aimed through the expansion and upgrade of the facility, with the business increasing operations from 1000 chicken layers to 40 000.</p> <p>The associated infrastructure for the facility will include, but not limited to, the following:</p> <ul style="list-style-type: none"> • Packing and storage area; • Water storage unit; • Feed silos; • Temporary stockpile area for manure; • Ablution facilities; • Biosecurity access control <p>Natural ventilation is used in the existing housing unit, and will also be used in the proposed units.</p>
2	Property Alternative	Alternative properties or locations for the proposed activity have not been identified, due to the fact that the proposed development is for the expansion of an existing facility. The owners were only able to acquire this land parcel, and it would not be economically feasible for the business to find and or purchase new property. Environmental impacts would be significantly higher if a new facility was to be established compared to expanding an existing facility. Therefore, no alternate properties have been investigated in the Basic Assessment.
3	Activity Alternative	The chicken layer facility is an existing operation on site and therefore an alternative activity has not been assessed or identified. It would not be economically feasible or practical for the applicant to embark on a different activity on the site.
4	Design or Layout Alternative	The proposed design and layout of the activity is based on available and suitable land on the 2 hectare farm and avoids areas of ecological importance. It is also a biosecurity measure, allows for more effective management of egg production as it lessens the risk of diseases through strict access control.
5	Technology to be used	Natural ventilation is used in the existing housing unit, and will also be used in the proposed units.

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

<p>MOTIVATION:</p> <p>Site location and layout alternatives</p>

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IDCNKE has been identified as a client under the "Special Needs and Skills Development Programme", which is a pro bono programme aimed at providing environmental services to small-medium scale businesses, Community Trusts etc who do not have the financial means to comply with the EIA Regulations. The Department of Environmental Affairs (DEA) commissioned the Council for Scientific and Industrial Research (CSIR) to manage the Programme to assist these clients with undertaking Basic Assessments to obtain Environmental Authorisation for their proposed developments.

The proposed development is for the expansion of an existing chicken layer facility and as such, IDCNKE has not identified an alternative location or property due to the fact that this is the only land parcel they could acquire. The layout of the proposed project avoids sensitivities (as guided by the Ecological Impact Assessment) and is a biosecurity measure aimed to exercise strict access to the chicken facility thus minimising the spread of diseases. Environmental impacts associated with this development would be exacerbated in establishing a new facility compared to expanding on an already existing facility.

Activity Alternative

When conducting due diligence for a suitable enterprise, IDCNKE considered an enterprise that would be suitable for the relatively small size of the farm as well as one that would maximize on quality and demand of the product and display good potential for growth along the value chain. Egg production was considered as the industry is growing, with the potential for opportunities in the rural markets.

Design & Technology Alternatives

Ventilation

Natural ventilation is used and proposed on all the housing units, the houses are designed with curtains on both of the long sides. The side curtains are used to control the amount of airflow through the units and manually opened and closed when required.

The proposed development will therefore not utilise intensive technologies, which require high energy demand. The proposed development will require very little energy and will use resource saving techniques.

In conclusion, as the proposed development is an expansion of an existing facility, and also considering the abovementioned factors of the industry and the proposed technological techniques and farming methods, IDCNKE proposes these preferred alternatives to be taken forward during the Assessment of this project.

4. PHYSICAL SIZE OF THE ACTIVITY

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

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

Size of the activity:

Approximately 1.06 ha

Alternatives:

Alternative 1 (if any)

Alternative 2 (if any)



Ha/ m²

or, for linear activities:

Proposed activity

Length of the activity:

N/A

Alternatives:

Alternative 1 (if any)



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Alternative 2 (if any)

	m/km
--	------

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

Proposed activity

Size of the site/servitude:	2 ha
------------------------------------	------

Alternatives:

Alternative 1 (if any)

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

N/A	m
-----	---

Describe the type of access road planned:

N/A: existing access

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

Alternative 1

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

YES	
-----	--

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

	m
--	---

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?

YES	
-----	--

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

	m
--	---

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).

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

Section A 6-8 has been duplicated

0

Number of times

(only complete when applicable)

6. LAYOUT OR ROUTE PLAN

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

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

Note from CSIR: A Locality map depicting the current and proposed chicken layer facility on the farm has been included as Appendix A. Photographs indicating sensitivities on site can also be found in the Vegetation and Fauna Specialist Reports attached in Appendix G.

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

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

7. SITE PHOTOGRAPHS

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

Note from CSIR: Site photographs in the eight major compass directions have been included as Appendix B. Photographs indicating sensitive features on site can also be found in the Vegetation and Fauna Specialist Report 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: An illustration of the structures for the current and proposed activities on site has been included as Appendix C.

SECTION B: DESCRIPTION OF RECEIVING ENVIRONMENT

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

Instructions for completion of Section B for linear activities

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

Section B has been duplicated for sections of the route times

N/A

Instructions for completion of Section B for location/route alternatives

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

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

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

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

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

N/A

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

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

1. PROPERTY DESCRIPTION

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

Portion 348 of Kameeldrift Farm 313, Pretoria West, Gauteng

2. ACTIVITY POSITION

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

Alternative:

Latitude (S):	Longitude (E):
-25.730893°	27.975620°

In the case of linear activities:

Alternative:

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

Latitude (S):	Longitude (E):

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

Addendum of route alternatives attached N/A

The 21 digit Surveyor General code of each cadastral land parcel

PROPOSAL	T	O	J	R	0	0	0	0	0	0	0	0	0	3	1	3	0	0	3	4	8
Alt. 1																					
Alt. 2																					
etc.																					

3. GRADIENT OF THE SITE

Indicate the general gradient of the site.

	1:50 – 1:20	
--	-------------	--

4. LOCATION IN LANDSCAPE

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

	Plain X	
--	------------	--

5. GROUNDWATER, SOIL AND GEOLOGICAL STABILITY OF THE SITE

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

- Shallow water table (less than 1.5m deep)
- Dolomite, sinkhole or doline areas
- Seasonally wet soils (often close to water bodies)

	NO
	NO
YES	

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- Unstable rocky slopes or steep slopes with loose soil
- Dispersive soils (soils that dissolve in water)
- Soils with high clay content (clay fraction more than 40%)
- Any other unstable soil or geological feature
- An area sensitive to erosion

YES	
	NO
	NO
	NO
	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. GROUND COVER

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 % = 80	Building or other structure % = 20
--	---------------------------------------

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

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

	NO
--	----

If YES, specify and explain:

NOTE FROM CSIR: According to the Vegetation study undertaken as part of this assessment and included in Appendix G, No Threatened or protected Plant Species (TOPS) are expected to occur on the site. Species of Conservation Concern with a high likelihood of occurrence on site have been included in the Terrestrial Fauna Impact Assessment Report included in Appendix G.

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.

	NO
--	----

If YES, specify and explain:

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

YES	
-----	--

If YES, specify and explain:

A wetland (flood plain) is present on the southern boundary of the site and is identified as a sensitive habitat (Wetland Assessment Specialist Report – Appendix G3). Although completely transformed, the wetland is connected to the river further downstream of the site.

Was a specialist consulted to assist with completing this section

YES	
-----	--

If yes complete specialist details

Name of the specialist:	Dimela Eco Consulting Contributors and Authors: Antoinette Eyssell-Knox and Barbara Kasl		
Qualification(s) of the specialist:	MSc Environmental Science (2010) PhD (Animal, Plant and Environmental Sciences)		
Postal address:	389 Rossouw Street De Wilgers Pretoria		
Postal code:	0001		
Telephone:		Cell:	083 642 6295
E-mail:	antoinette@dimela-eco.co.za	Fax:	
Are any further specialist studies recommended by the specialist?			Yes
If YES, specify:	Wetland Assessment		
If YES, is such a report(s) attached?			Yes
If YES list the specialist reports attached below	Wetland Assessment Report by Unohemu Environmental Solutions		

Signature of specialist: See Note Below Date:

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Note from CSIR: Please see the Specialist Declarations as per Appendix 6 of the NEMA EIA Regulations 2014 (as amended) included in the relevant Specialist Reports attached in Appendix G.

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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

Was a specialist consulted to assist with completing this section	<input type="checkbox"/> YES <input checked="" type="checkbox"/>
If yes complete specialist details	
Name of the specialist:	Unohemu Environmental Solutions Contributors and Authors: Mncedi Nkosi
Qualification(s) of the specialist:	MSc Environmental Science (2005)
Postal address:	04 Flatcrown Road Mkamba Gardens Lincoln Pietermaritzburg
Postal code:	3201
Telephone:	<input type="checkbox"/> Cell: 084 676 9667
E-mail:	unohemuenviro@gmail.com Fax: <input type="checkbox"/>
Are any further specialist studies recommended by the specialist?	<input type="checkbox"/> No
If YES, specify:	<input type="checkbox"/>
If YES, is such a report(s) attached?	<input type="checkbox"/> No
If YES list the specialist reports attached below	
<input type="checkbox"/>	

8. LAND USE CHARACTER OF SURROUNDING AREA

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

1. Vacant land	2. River, stream, wetland	<input type="checkbox"/>	
<input type="checkbox"/>	7. Agriculture	<input type="checkbox"/>	
<input type="checkbox"/>	33. Spoil heap or slimes dam ^A	34. Small Holdings	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>		

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

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NORTH						
	34/7	34	34	34/1	1	
	34/7	7/1	34	1	1	
WEST	34	34/7	Site	34/1	1	EAST
	1	2	1/2	33/2	1	
	34	1	1	1	1	
SOUTH						

Note from CSIR: The proposed development is surrounded by a few holdings with some agricultural practices and the dwellings are fairly spaced apart. The land east of the site includes soil mining and heaps on the most southerly border. There is vacant land south of the site and borders the Swartspruit river. There is also the presence of a wetland (as indicated by the Wetland Specialist) from the southern boundary of the site towards the Swartspruit river.

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

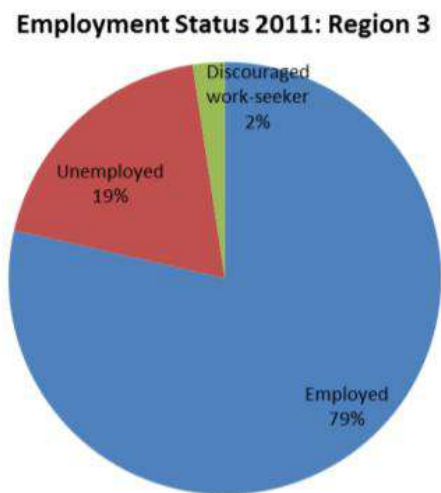
If yes indicate the type of reports below

- Appendix G1: Vegetation Assessment for the proposed expansion of a chicken layer facility, on Portion 348 of Kameeldrift Farm 313, Kameeldrift West, Pretoria, Gauteng.
- Appendix G2: Terrestrial Fauna Impact Assessment & Management Plan in terms of a NEMA Application for the Proposed Chicken Farm On Portion 348 Of Kameeldrift 313 Jr, Gauteng Province.
- Appendix G3: Wetland Assessment Report for the proposed expansion of a chicken layer facility, on Portion 348 of Kameeldrift Farm 313, Kameeldrift West, Pretoria, Gauteng.

9. SOCIO-ECONOMIC CONTEXT

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

IDCNKE is located in Ward 55, which falls within Region 3 of the City of Tshwane's (CoT) Metropolitan Municipality. Kameeldrift is in the western area of Tshwane commonly known as Pretoria West. Region 3 includes the CBD of Tshwane, the Brooklyn and Hatfield metropolitan nodes. According to the 2011 Stat SA Census, Ward 55 accounts for 4% of this Region's total population of 585 160 people. Approximately 19% of Region 3's economically active persons are permanently unemployed, as stated in the CoT's Region 3: Regional Integrated Development Plan 2014-2015.



(Source: StatSA Census 2011)

The CoT is facing high levels of unemployment, exacerbating inequality and lowest form of poverty. Overall information provided in the CoT Integrated Development Plan (IDP) of 2017 – 2021 indicates that the Municipality has not created enough jobs to sustain the growing population. Agriculture is the lowest sector in terms of contributing to employment in Tshwane. The economy of the CoT is driven by industrial development and remains to be the largest economic contributor of this metropolitan. According to the 2017-2021 IDP, “revitalising and supporting Tshwane’s entrepreneurs” is one of the CoT’s priorities that that include the aim to support smallholding agricultural producers with industry-specific business skills. The Gauteng Province is the largest producer of eggs in South Africa IDCNKE has thus identified an opportunity as the proposed chicken layer expansion will add great socio-economic value to the poultry industry in the area, to the consumer, the business, and to allow local employment opportunities, as well as contributing greatly to the farming industry of South Africa. This opportunity is an outcome of the identified gap in the market, and also the increased demand for eggs as a result of population growth and high protein consumption to satisfy certain dietary requirements. The business currently has chicken layers producing 14-17 trays (30 eggs in each tray) of eggs a day. These eggs are supplied to butchers, offices, local households and/or individuals in the area. The aim of IDCNKE is to supply big retailers and ensure a well-known brand for the business. The proposed business will have an economic benefit from the viability of egg production, as well as vegetable production. It aims to provide a service to local communities in and around Kameeldrift, including employment opportunities for a number of local residents. The expansion foresees an even bigger contribution to the agro-industrial sector; including agricultural skills development, increase in egg production and employment.

The table below highlights the anticipated socio-economic values associated with the project:

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Anticipated CAPEX value of the project on completion	Approximately R3.05 million
What is the expected annual income to be generated by or as a result of the project?	Approximately R650 000
New skilled employment opportunities created in the construction phase of the project	Bricklaying, Welding and power tools operations (approximately 2 + 1 supervisor - number will depend on the contractors executing the work)
New skilled employment opportunities created in the operational phase of the project	1 part-time multi-skilled labour for electrical and mechanical work
New un-skilled employment opportunities created in the construction phase of the project	1 Farm manager
New un-skilled employment opportunities created in the operational phase of the project	1 facility supervisor + 1 crops supervisor
What is the expected value of the employment opportunities during the operational and construction phase?	General labour (approximately 6 - quantity dependent on the contractors executing work)
What percentage of this value that will accrue to previously disadvantaged individuals?	10 General Labour
What percentage of this value that will accrue to previously disadvantaged individuals?	5 Seasonal workers for vegetables.
The expected current value of the employment opportunities during the first 10 years	R700 000 per annum for operational (Current Value)
What percentage of this value that will accrue to previously disadvantaged individuals?	R150 000 for construction

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?

	NO
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DRAFT BASIC ASSESSMENT REPORT

Basic Assessment for IDCNKE Holdings' proposed expansion of a chicken layer facility and vegetable production on Portion 348 of Kameeldrift Farm 313, Pretoria West, Gauteng.

If YES, explain:

N/A

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:

According to the Heritage Impact Assessment undertaken as part of the BA Process, the study area is entirely transformed by previous agricultural activities and in terms of the archaeological component of Section 35 of the NHRA Act 25 of 1999 no raw material suitable for stone tool manufacture occurs in the study area and no ceramics or stone walls attributed to the Iron Age were recorded. Therefore, no further mitigation prior to construction is recommended in terms of the archaeological component of Section 35 for the proposed development to proceed. Based on the SAHRA Palaeontological Sensitivity map the area is of high paleontological significance and further work will be needed during the construction phase of the project. 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 study area is surrounded by existing developments and infrastructure and the proposed development will not impact negatively on significant cultural landscapes or views.

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

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
	NO

SECTION C: PUBLIC PARTICIPATION

- 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?

Note from CSIR: The draft report has been submitted to the local authority for comment during the 30-day reviewing Process (the current stage of the project).

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

Note from CSIR: It is anticipated that comments will be received during the 30-day reviewing Process (the current stage).

	NO
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DRAFT BASIC ASSESSMENT REPORT

Basic Assessment for IDCNKE Holdings' proposed expansion of a chicken layer facility and vegetable production on Portion 348 of Kameeldrift Farm 313, Pretoria West, Gauteng.

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

This Draft report is hereby released for a 30-day commenting period. The comments will be incorporated into the final BA Report which will be submitted to GDARD for decision-making.

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

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

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Basic Assessment for IDCNKE Holdings' proposed expansion of a chicken layer facility and vegetable production on Portion 348 of Kameeldrift Farm 313, Pretoria West, Gauteng.

A number of comments were received during the Project Initiation Phase, that is, in response to the circulation of the Background Information Document, the public site notice erected on the property as well as the newspaper advert notification placed in the Pretoria News on 23 November 2017. The issues and comments received are summarised as follows:

Name	Comment
Mrs Helene Ferreira-Fensham (Trust of Troy)	<ul style="list-style-type: none"> • There is a servitude for the use of the borehole, however the applicant has prevented access to borehole use. • Building laws bypassed by the applicant. • Use of water for chickens. • Water pollution. • Odour emanating from the chicken facility. • Farming should be done far from residents. • Increased water use. • Road servitude issues. • Potential health impacts from goat farming. • Increase in road traffic and potential impact on neighbouring access, and noise pollution. • Requirements: <ul style="list-style-type: none"> - Restoration of access to borehole - Fencing around servitude - Fencing to partition road servitude - Maintenance of road to our property (a tar road and separate entrance of at least 50 m away from our property)) - Installation of sound filters to prevent noise - Installation of air filters to prevent air pollution - Full medical insurance for us • Proof of insurance for: <ul style="list-style-type: none"> - Protection against fire - Compensation and protection against loss for property value - Protection and insurance for water supply - Theft on our property, due to increase of workers - Invasion of privacy due to many workers - Insurance on the maintenance/ repair of our fence - Full medical insurance for all affected on our plot
Mabule Ramodike (Department of Agriculture, Forestry and Fisheries)	<ul style="list-style-type: none"> • Proposed project will contribute to agricultural production and assist in addressing poverty as the mandate of DAFF. • Department will issue written comments upon receipt of formal application.
Marinda Engelbrecht	<ul style="list-style-type: none"> • Deed does not allow that big farming. • Increase in noise and smell. • Close proximity to house and borehole. • Crime escalate, theft of chickens. • No toilets available for workers. • Smallholding too small.
Francina M.O (Department of Agriculture, Forestry and Fisheries)	<ul style="list-style-type: none"> • Requesting Title deed for application.

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

N/A

4. GENERAL PUBLIC PARTICIPATION REQUIREMENTS

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

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

5. APPENDICES FOR PUBLIC PARTICIPATION

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

Appendix 1 – Proof of site notice

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

Appendix 3 – Proof of newspaper advertisements

Appendix 4 – Communications to and from interested and affected parties

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

Appendix 6 - Comments and Responses Report

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

Appendix 8 –Comments from I&APs on amendments to the BA Report - **N/A at this stage of the BA process**

Appendix 9 – Copy of the register of I&APs

SECTION D: RESOURCE USE AND PROCESS DETAILS

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

Instructions for completion of Section D for alternatives

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

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

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

1. WASTE, EFFLUENT, AND EMISSION MANAGEMENT

Solid waste management

Will the activity produce solid construction waste during the construction/initiation phase? YES
 If yes, what estimated quantity will be produced per month? 15 – 20 m³

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

Anticipated construction solid waste to be produced includes building rubble, packaging material, overburden material and general litter from construction staff. It is recommended that construction waste/rubble will be collected and stored temporarily in designated containers for the different waste types, and thereafter disposed of at the nearest appropriate licenced waste disposal site.

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

Waste will be disposed of at an appropriate licenced landfill site, possibly the Ga-Rankuwa Landfill Site in Ga-Rankuwa which is the nearest landfill site to dispose of building rubble.

Will the activity produce solid waste during its operational phase? YES
 If yes, what estimated quantity will be produced per month? Chicken waste = ≈ 30m³
Other waste = 1.5m³

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

Solid waste generated during the operational phase will be stored in suitable bins and transported to the nearest licenced disposal site. Chicken waste will be placed on an impermeable surface and dried to prevent odour, and thereafter packed in bags and sold as manure to farmers and nurseries.

Any mortalities should be immediately assessed by a veterinarian to determine the cause of death, and thereafter disposed accordingly.

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

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

All waste generated, except for chicken waste, will always be disposed of at a registered disposal site.

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

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

The chicken manure will be collected and stored on a concrete surface and composted. It will then be subjected to the aerobic composting to reduce its odour and moisture. The solid waste will thereafter be recycled and sold for use as fertiliser. Recyclable waste such as plastic, glass, paper etc will be taken to the nearest recycling warehouse.

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? **NO**

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

If yes, has the municipality confirmed that sufficient capacity exist for treating / disposing of the liquid effluent to be generated by this activity(ies)? **NO**

Will the activity produce any effluent that will be treated and/or disposed of on site? **NO**
 If yes, what estimated quantity will be produced per month?

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

N/A

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? **NO**
 If yes, provide the particulars of the facility:

Facility name:	N/A		
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:

N/A

Liquid effluent (domestic sewage)

Will the activity produce domestic effluent that will be disposed of in a municipal sewage system? **NO**

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

If yes, has the municipality confirmed that sufficient capacity exist for treating / disposing of the domestic effluent to be generated by this activity(ies)? **NO**

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

YES NO

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

N/A

Emissions into the atmosphere

Will the activity release emissions into the atmosphere?

YES NO

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

YES 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:

Emissions from the proposed expansion of the facility will include dust from vehicles using the gravel access road; this will however be minimal as the proposed development will not result in a significant increase of traffic. Dust will also be as a result of preparing the land and/or due to construction. Emissions will also include odour from the chicken waste and may cause a nuisance to the receptors. Management actions as stipulated in the EMPr will help minimise this impact. It should also be noted that the odour from chickens does not constitute an air quality emission, it is however considered and not underestimated as a nuisance and possible impact on the quality of life.

2. WATER USE

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

groundwater

other

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:

~ 200 000 litres

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

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

YES NO

If yes, list the permits required

The proposed activity will require the use of approximately 1500 litres per day to be obtained from ground water sources and rainwater harvesting. Water requirements will incorporate domestic water use, water to be used for chickens and to wash the chicken houses. Therefore a water use licence is required for the facility as it triggers Section 21(a) and (b) of the National Water Act 36 of 1998 (NWA).

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

YES NO

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

YES NO

3. POWER SUPPLY

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

Municipality power supply.

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

N/A

4. ENERGY EFFICIENCY

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

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The facility will make use of natural ventilation and therefore minimising impacts associated with energy use. The farm will make use of energy efficient light bulbs for lighting.

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

None

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.

Issues relevant to the BA Process raised by Interested and Affected Parties following the release of the Background Information Document, prior to the release of the Draft Basic Assessment Report, are summarised as follows:

- Potential impacts on water;
- Odour emanating from the chicken facility;
- Distance of facility from residents;
- Potential health impacts from goat farming;
- Increase in road traffic and potential impact on neighbouring access, and noise pollution;
- Impacts on agricultural production and poverty alleviation;
- Concerns regarding type of activity and/or land use proposed for the farm;
- Safety impacts and potential crime escalates; and
- Ablution facilities for workers.

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):

Mitigation measures and management actions have been recommended in this Report and EMPr that address the concerns raised by stakeholders. The responses to the issues raised are as follows:

- **Potential impacts on water** - There is an existing borehole on site for water abstraction intended to be used for the proposed development. A Water Use Licence Application (WULA) has been lodged with DWS and runs in parallel with this BA Process. Water requirements have been specified in this application and should the licence be granted, the conditions of the WULA will specify the terms of use and/or amount to be used. Water consumption will be kept to a minimum to avoid any significant impacts on the water availability. Water conservation techniques such as rainwater harvesting and water recycling are management actions included in the EMPr to manage and reduce water use.
- **Odour and health risks** - Appropriate measures will be applied to reduce odours generated by the operation, these have also been included in the EMPr included as Appendix H of this Report. The operational phase of the project should ensure good housekeeping. Cages and the facility will be cleaned on a regular basis to avoid foul smell that impact on neighbours. A Public Complaints Register must also be maintained at the facility to record all complaints received as well as the actions taken to rectify.

This assessment takes cognisance of the concern regarding health risks posed by the proposed project. The construction and operational phases of the project will be guided by the management actions of the EMPr to minimise health risks and water contamination. The recommendations included in this Report and EMPr to manage these impacts must be adhered to. Strict biosecurity measures will be in place to prevent diseases and the spread of diseases.

- **Distance of facility from residents** - The construction and operational phases of the project will be guided by the management actions of the EMPr to minimise disturbance and/or intrusion on the neighbours. Best management practices will be implemented, as suggested in this Report and EMPr, in terms of general waste management, odour control, waste water management, noise and prevention of water resource contamination.
- **Potential health impacts from goat farming** – Goat farming no longer forms part of the proposed development, that is, the applicant will no longer be undertaking a goat farming operation, and therefore impacts associated with goat farming are no longer applicable.
- **Increase in road traffic and impacts on access road** – It is anticipated that the proposed facility expansion will result in a slight increase in traffic in the area during the construction and operational phases of the project. The traffic impact during the construction phase is temporary and is not expected to be significant as the number of construction trips will be kept to a minimum. Increase in vehicular traffic during the operation phase will also not be significant as this will occur during the transportation of eggs; the eggs will be transported twice a day and the operation will make use of one truck for transportation. Only one truck will be used to transport the chickens, and that will occur at the start of each cycle, that is when new chickens arrive at the site and are kept for approximately a year for egg production. Mitigation measures and management actions recommended in this Report and EMPr to restrict and/or control access to the site must be adhered to. Any noise complaints must be recorded in the Complaints Register, as well as the actions taken to rectify or address the complaint.
- **Impacts on agricultural production and poverty alleviation** – The proposed expansion foresees a contribution to the agricultural sector through agricultural skills development, increase in egg production for food provision and employment opportunities. This is a positive impact that can be enhanced through management actions suggested in the EMPr. These actions aim to alleviate poverty in the area through job creation and employment of local people, as well as adding a positive contribution to the South African poultry farming industry through decreasing the gap between the demand and supply of eggs locally.
- **Type of activity and/or land use impacts** - The site falls within an area zoned as Class 4: Normal control zone under the Gauteng Provincial Environmental Management Framework Zones. This zone is dominated by agricultural use outside the urban development zone as defined in the Gauteng SDF. Land uses that are compatible with the intention of this zone include animal production, agricultural infrastructure, and farm worker accommodation.
- **Safety or crime impacts** – The applicant will take the necessary precautionary measures to minimise crime incidents in the area that are associated with the proposed development. The applicant will also hire the services of a security guard to monitor the proposed facility. Chickens will be housed in an enclosed safe area to prevent incidents of theft.
- **Ablution facilities for workers** - The workers quarters proposed will include ablution facilities for use by the employees on site. These facilities must be maintained in a hygienic manner and serviced regularly. Management actions are recommended in the EMPr regarding the use and management of facilities by staff on site.

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 Ecological Assessment, for incorporation into their specialist assessment:

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);
- Medium 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);
- Medium (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; however, should a proposed development destroy unique wetland systems for example, these may be considered irreplaceable and thus be described as high. 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).

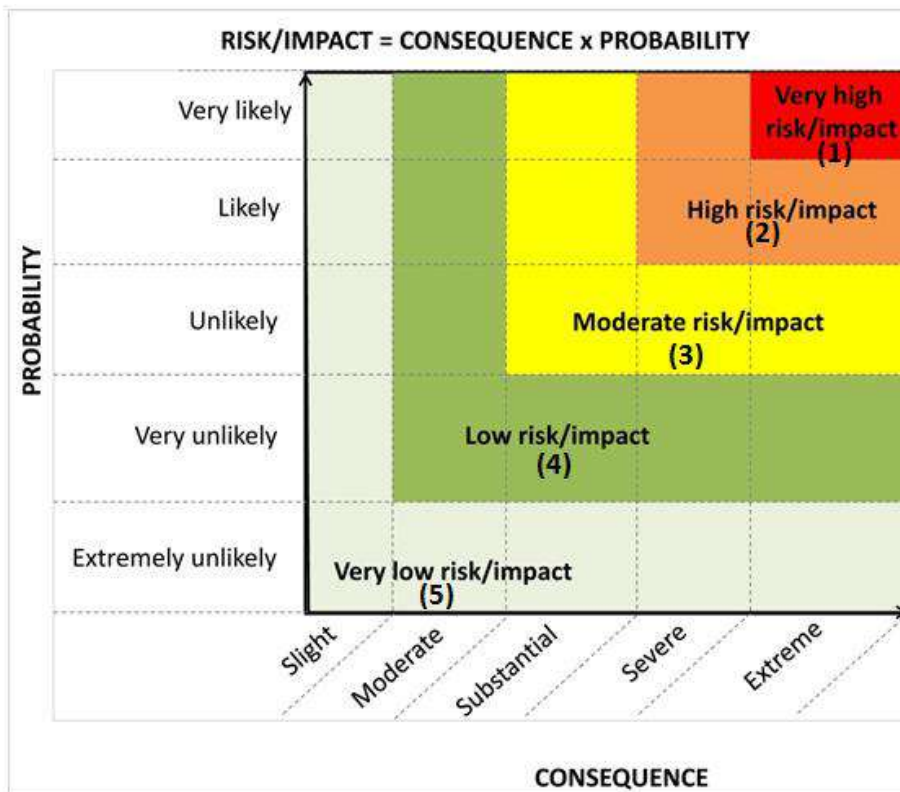


Figure 2-1: Guide to assessing risk/impact significance as a result of consequence and probability.

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;
- Medium; 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;
- **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:** 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, medium or high impact.

Mitigation:

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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. Environmental impacts would be significantly higher if a new facility were to be established compared to expanding an existing facility. The chicken facility is an existing operation on site and therefore an alternative activity has not been assessed or identified. It would not be economically feasible or practical for the applicant to embark on a different activity on the site. The No-Go alternative will be considered.

PROPOSAL

Table 2-1: Impacts associated with the proposed Chicken layer facility expansion of IDCNKE

CONSTRUCTION PHASE												
Potential Impact Description	Extent	Duration	Consequence	Probability	Reversibility	Irreplaceability	Significance Rating (Positive or Negative)	Degree of Confidence	Can impact be avoided?	Can impact be managed or mitigated?	Proposed Mitigation	Significance Rating after Mitigation
PROPOSAL (preferred alternative)												
Direct Impacts												
<ul style="list-style-type: none"> Loss of vegetation and faunal habitat. 	Site specific	Long term	Substantial	Very likely	Moderate	Moderate	Medium (Negative)	High	No	Yes	<ul style="list-style-type: none"> Development planning must ensure loss of vegetation and disturbance is restricted to the recommended expansion site layout footprint. Activities should be restricted to the modified and <i>Themeda-Eragrostis</i> grassland on the site. Clearly demarcate or fence in the construction site. Relocate specimens that are situated in the construction footprint, according to the advice of an appropriate specialist. Development must be planned for areas that are already transformed. Limit hard impervious surfaces. Instead, retain grassland vegetation to ensure water infiltration. Construction camps and storage of equipment should be planned in areas of low sensitivity as far as possible, or at least as far as possible from the moist grassland south of the site. No construction activities may cause deterioration of the moist grassland south of the site. 	Low
<ul style="list-style-type: none"> Destruction of moist grassland south of the site. 	Local	Long term	Severe	Likely	Moderate	Moderate	High (Negative)	Medium	Yes	Yes	<ul style="list-style-type: none"> It is recommended that the need for a wetland assessment be assessed. Protective buffer areas around wetlands (as delineated by a wetland specialist) should be adhered to. Such buffer areas may intrude into the site. No development or related activities should take place within the moist grassland south of the site without authorization from the Department of Water and Sanitation. No vehicles may drive in the moist grassland. No access routes are allowed in the moist grassland. Remove only the vegetation where essential for construction and do not allow any disturbance to the adjoining natural vegetation cover. 	Medium

CONSTRUCTION PHASE												
Potential Impact Description	Extent	Duration	Consequence	Probability	Reversibility	Irreplaceability	Significance Rating (Positive or Negative)	Degree of Confidence	Can impact be avoided?	Can impact be managed or mitigated?	Proposed Mitigation	Significance Rating after Mitigation
											<ul style="list-style-type: none"> - Trucks and equipment should only be washed in dedicated areas and the dirty water is not allowed to discharge into the Swartspruit or surrounding natural vegetation. - A temporary fence or demarcation must be erected around the operations area to prevent access to the moist grassland. 	
<ul style="list-style-type: none"> • Introduction and spread of alien invasive vegetation. 	Local	Long term	Substantial	Very likely	Moderate	Low	Medium (Negative)	High	No	Yes	<ul style="list-style-type: none"> - Alien invasive species, that were identified within the study area should be removed (prioritizing category 1 species), prior to construction. This will prevent the spread of seeds into disturbed soils. - All alien seedlings and saplings must be removed as they become evident for the duration of construction. - Regulate / limit access by potential vectors of alien plants. - Manual or mechanical removal should be done as opposed to chemical removal. - All construction vehicles and equipment, as well as construction material should be free of soil and plant material. Therefore, all equipment and vehicles should be thoroughly cleaned prior to access on to the study area. - By law, remove and dispose of Category 1b alien species on site. All Category 2 species that remain on site require a permit. - Prohibit the introduction of domestic animals such as dogs and cats. 	Low
<ul style="list-style-type: none"> • Destruction of burrowing/fossorial fauna (Giant Bullfrog). 	National	Permanent	Substantial	Likely	Low	High	Medium (Negative)	Medium	Yes	Yes	<ul style="list-style-type: none"> - Excavation footprints must be kept small. - Complete all excavation activities when Bullfrogs are more likely to be breeding in the local water bodies. 	Low
<ul style="list-style-type: none"> • Loss and displacement of fauna on site, and resulting influx of fauna to neighbouring areas. 	Local	Temporary	Moderate	Very likely	High	Low	Low (Negative)	High	No	Yes	<ul style="list-style-type: none"> - After construction consider planting local indigenous bushes and trees around the site to improve habitat for fauna and attract indigenous fauna to the site. Consider establishing bat or bird boxes around the fence perimeter to provide roosting/nesting habitats. - Keep needless noise to a minimum. Keep vehicle and pedestrian traffic to the site only. 	Low
<ul style="list-style-type: none"> • Hindrance, trapping, killing of fauna. 	Site specific	Permanent	Moderate	Likely	Moderate	Low	Low (Negative)	High	Yes	Yes	<ul style="list-style-type: none"> - All contractors on site must undergo environmental awareness training which must include the prohibition of any harm or hindrance to any fauna species. - Contracts with contractors must specify actions that will be taken against contractors 	Low

CONSTRUCTION PHASE												
Potential Impact Description	Extent	Duration	Consequence	Probability	Reversibility	Irreplaceability	Significance Rating (Positive or Negative)	Degree of Confidence	Can impact be avoided?	Can impact be managed or mitigated?	Proposed Mitigation	Significance Rating after Mitigation
											who do not conduct activities in line with the EMPr. - Should any fauna be accidentally trapped within the development area, activities will cease to provide the animal opportunity to escape or specialists contracted to safely remove the animals from site.	
<ul style="list-style-type: none"> Loss of wetlands. 	Local	Long term	Severe	Very likely	Moderate	Moderate	High (Negative)	High	Yes	Yes	<ul style="list-style-type: none"> Development planning to re-align area set aside for chicken layer expansion to avoid the wetland and associated wetland buffer, as per the specialists' recommendation. Re-align the proposed expansion in a north-easterly direction as opposed to the southerly direction proposed. No construction should be planned within the sensitive environment (wetlands). 	Low
<ul style="list-style-type: none"> Increased use of electricity and groundwater during construction activities. 	Local	Long term	Substantial	Likely	Non-reversible	Moderate	Medium (Negative)	High	No	Yes	<ul style="list-style-type: none"> Minimise electricity use to only when necessary and make use of renewable energy as a source of electricity where possible. Regular inspection and maintenance of all boreholes, tanks, reservoirs, toilets, water pipes, valves and taps should be conducted, to prevent wasting water. Apply water saving techniques, such as re-use of water. 	Low
<ul style="list-style-type: none"> Possible soil and water contamination due to temporary fuel storage on site. 	Local	Long term	Substantial	Likely	Non-reversible	Moderate	Medium (Negative)	Low	Yes	Yes	<ul style="list-style-type: none"> Hazardous chemicals and materials to be stored in a designated area. Ensure that any spilled fuel is effectively cleaned using the appropriate products. 	Low
<ul style="list-style-type: none"> Soil and surface water pollution as a result of spillage, improper handling, storage, mixing or disposal of cement and concrete. 	Local	Long term	Substantial	Likely	Non-reversible	Moderate	Medium (Negative)	Low	Yes	Yes	<ul style="list-style-type: none"> Prevent spillage of construction material and other pollutants, contain and treat any spillages immediately, strictly prohibit any pollution/littering according to the recommendations of the EMPr. No vehicles may be washed on the property, except in suitably designed and protected areas as to prevent polluted water reaching the Swartspruit south of the site. No vehicles may be serviced or repaired on the property, unless it is an emergency situation in which case adequate spillage containment must be implemented. Mixing of cement or concrete must not take place on the soil surface, to be undertaken on designated areas. 	Low

CONSTRUCTION PHASE												
Potential Impact Description	Extent	Duration	Consequence	Probability	Reversibility	Irreplaceability	Significance Rating (Positive or Negative)	Degree of Confidence	Can impact be avoided?	Can impact be managed or mitigated?	Proposed Mitigation	Significance Rating after Mitigation
											- Establish appropriate emergency procedures for accidental contamination of the surroundings.	
• Construction activities may disturb or destroy sites or features of heritage importance.	Site specific	Permanent	Severe	Very unlikely	Non-reversible	High	Low (Negative)	Medium	Yes	Yes	- Should any features of heritage be identified on site, these should not be disturbed and would be immediately reported to a Heritage specialist and Gauteng Heritage Resources Authority.	Low
• Potential deterioration of the existing gravel road due to use by heavy construction vehicles.	Local	Short term	Substantial	Likely	Moderate	Low	Medium (Negative)	Medium	No	Yes	- Limit vehicles coming to the site and limit to a temporary minimal duration. - Maintain and/or upgrade the gravel road.	Medium
• Potential impact of traffic.	Local	Short term	Substantial	Likely	Moderate	Low	Medium (Negative)	Medium	No	Yes	- Effective signage and traffic control measures along the route. - Traffic should be restricted to the designated access roads and haul roads to avoid impact on the surrounding environment.	Low
• Generation of construction waste.	Site specific	Short term	Substantial	Very likely	High	Low	Medium (Negative)	High	No	Yes	- Any waste generated during construction must be stored in such a manner that it prevents pollution and amenity impacts.	Low
• Potential of soil erosion due to exposed soil.	Local	Long term	Substantial	Likely	Moderate	Low	Medium (Negative)	Medium	No	Yes	- Limit vehicles, people and materials to the construction site. - Construction to preferably be undertaken in winter, when there is minimal risk of erosion. - Revegetate denude area with indigenous flora as soon as possible - Take action before erosion develops to a large scale. - Retain vegetation and soil in position for as long as possible, removing it immediately ahead of construction / earthworks in that area (DWAF, 2005). - Limit vegetation removal to only the construction area, avoid disturbance to other areas. - Protect all areas susceptible to erosion (especially stockpiled soils and materials such as sand and tar) and ensure that there is no undue soil erosion resultant from activities within and adjacent to the construction camp and work areas.	Low
• Degradation of ambient air quality as a result of dust	Local	Long term	Substantial	Likely	Moderate	Low	Medium (Negative)	Medium	No	Yes	- Exposed areas should be re-vegetated with locally indigenous flora. If the soil is compacted, it should be ripped, and fertilised.	Low

CONSTRUCTION PHASE												
Potential Impact Description	Extent	Duration	Consequence	Probability	Reversibility	Irreplaceability	Significance Rating (Positive or Negative)	Degree of Confidence	Can impact be avoided?	Can impact be managed or mitigated?	Proposed Mitigation	Significance Rating after Mitigation
and other emissions generated.											<ul style="list-style-type: none"> - Implement effective and environmentally-friendly dust control measures, such as mulching or periodic wetting of the entrance road. - A complaints register should be kept on site, with records of complaints received and manner in which the complaint was addressed. 	
<ul style="list-style-type: none"> • Noise disturbances as a result of construction activities. 	Local	Long term	Substantial	Likely	Moderate	Low	Medium (Negative)	Medium	No	Yes	<ul style="list-style-type: none"> - Activities that will generate the most noise should be limited to during the day in order to minimise disturbance to the neighbours. - The noise created by the proposed development is not expected to be problematic. If required, noise reduction measures will have to be implemented in compliance with the Gauteng Noise Regulations. - No sound amplification equipment to be used on site, except in emergency situations. - Limit vehicles travelling to and from the site to minimise traffic noise to the surrounding environment. - A complaints register should be kept on site, with records of complaints received and manner in which the complaint was addressed. 	Low
Indirect Impacts												
<ul style="list-style-type: none"> • Destruction or damage to potential habitat for the Near Threatened <i>Stenostelma umbelluliferum</i> (edge effects) 	Site specific	Short term	Substantial	Likely	Moderate	Moderate	Medium (Negative)	Medium	Yes	Yes	<ul style="list-style-type: none"> - The plant was not recorded by the Ecological Specialist on the site or south of the site. However, this species is inconspicuous if not in flower or in seed and could have been overlooked. - This species could be present in clay soils on the southern boundary of the site or south thereof. Therefore, it is recommended to limit development and construction related activities in the clay soils along the southern boundary of the site. - If development proceed on the southern boundary, the area should be scanned again to verify the absence of this species. If recorded, these species must be conserved in situ and a buffer of up to 400m may be applicable (GDARD, 2006). - The buffer zone as recommended by a wetland assessment will likely include this species habitat. 	Low

CONSTRUCTION PHASE												
Potential Impact Description	Extent	Duration	Consequence	Probability	Reversibility	Irreplaceability	Significance Rating (Positive or Negative)	Degree of Confidence	Can impact be avoided?	Can impact be managed or mitigated?	Proposed Mitigation	Significance Rating after Mitigation
<ul style="list-style-type: none"> Degradation of adjacent natural vegetation and moist grasslands (edge effects). 	Local	Short term	Substantial	Likely	Moderate	Moderate	Medium (Negative)	Medium	Yes	Yes	<ul style="list-style-type: none"> The site and construction footprint must be fenced, and no deleterious edge effects are allowed beyond the project boundary. No construction activities may cause deterioration of the Swartspruit and moist grassland south of the site. Protect all areas susceptible to erosion (especially stockpiled soils and materials such as sand and tar) and ensure that there is no undue soil erosion resultant from activities within and adjacent to the construction camp and work areas. 	Low
<ul style="list-style-type: none"> Disturbance to fauna through noise, vibration, dust. 	Local	Temporary	Substantial	Very likely	High	Low	Medium (Negative)	High	No	Yes	<ul style="list-style-type: none"> Utilise noise friendlier equipment where feasible. Ensure dust suppression is applied during high dust generation. Any noisy point-sources should be enclosed, and all equipment / machinery fitted with silencers. All equipment / machinery will be serviced and maintained within operating specifications to prevent excessive noise. Cease dusty activities when very windy. 	Low
<ul style="list-style-type: none"> Increased storm water runoff/soil erosion. 	Local	Medium term	Substantial	Likely	Non-reversible	Moderate	Medium (Negative)	Medium	Yes	Yes	<ul style="list-style-type: none"> Efficient drainage must be provided on site prior to construction. Effectively channel storm water on site. Discharge points of the storm water system must be monitored. 	Low
<ul style="list-style-type: none"> The creation of new employment opportunities and skills development. 	Municipal Area	Short term	Substantial	Very likely	High	High	Medium (Positive)	Medium	No	Yes	<ul style="list-style-type: none"> Ensure maximisation of job creation and promote local employment and skills training. 	High (Positive)
NO-GO ALTERNATIVE												
<p>DIRECT IMPACTS:</p> <ul style="list-style-type: none"> None of the impacts mentioned above will occur. The site will remain with existing structures, no new clearance will occur which will result in no clearance of indigenous vegetation and no clearance of present alien species. Customers of the proposed chicken layer facility will not be provided with an increase in egg supply on a local scale. <p>INDIRECT IMPACTS:</p> <ul style="list-style-type: none"> If the proposed project does not proceed, increased income and economic benefits associated with the expansion will not be realised. No new employment opportunities will be created. If the proposed project does not proceed, the local industries that rely on the supply of eggs could experience hindered economic growth potential. 												

OPERATIONAL PHASE												
Potential Impact Description	Extent	Duration	Consequence	Probability	Reversibility	Irreplaceability	Significance Rating (Positive or Negative)	Degree of Confidence	Can impact be avoided?	Can impact be managed or mitigated?	Proposed Mitigation	Significance Rating after Mitigation
PROPOSAL (preferred alternative)												
Direct Impacts												
<ul style="list-style-type: none"> Loss of the ecological function and degradation of the moist grasslands. 	Local	Long term	Severe	Likely	Moderate	Moderate	High (Negative)	Medium	Yes	Yes	<ul style="list-style-type: none"> Engineer a method whereby accidental release of effluent can be contained and diverted to be treated. Prevent disturbances to the moist grassland area by e.g. vehicles. Place and maintain erosion control barriers as appropriate to prevent sedimentation. 	Medium-Low
<ul style="list-style-type: none"> Deterioration of water quality and impact on downstream aquatic ecology. 	Regional	Long term	Severe	Likely	Low	Moderate	High (Negative)	Low	Yes	Yes	<ul style="list-style-type: none"> Layer facilities must be lined and bunded to avoid any run-off of polluted water onto unprotected soil. Chicken waste must be stored in an enclosed and impermeable waste storage. Medical waste must be stored in suitable containers and disposed of accordingly. Divert dirty water (water used to clean the facility and from the disinfection area) to a septic tank and nowhere else. This water must not be allowed to seep into the soil or run towards the watercourse south of the site of the proposed development. 	Low
<ul style="list-style-type: none"> Impact on sensitive areas such as the wetland and sensitive flora. 	Local	Long term	Substantial	Likely	Non-reversible	High	Medium (Negative)	Medium	Yes	Yes	<ul style="list-style-type: none"> Limit human activity on areas that are close to sensitive sites. Layer facility activities must be undertaken away from these areas and associated buffers. 	Low
<ul style="list-style-type: none"> Poisoning predators (including threatened birds) – directly or indirectly through contaminated/poisoned food/prey. 	National	Permanent	Substantial	Likely	Low	High	Moderate (Negative)	High	Yes	Yes	<ul style="list-style-type: none"> Utilise natural alternatives for pest control, rather than chemicals. Where chemical control is utilised, do so only as specified in instructions. Remove any small vertebrate (rodents for example) carcasses from site and dispose of as medical waste. Any chickens suspected of dying of disease / poison must be disposed of as medical waste and must not be placed outside. 	Low
<ul style="list-style-type: none"> Impact on ambient air quality from chickens. 	Local	Long term	Severe	Very likely	Non-reversible	High	High (Negative)	Medium	No	Yes	<ul style="list-style-type: none"> The facility must be kept clean as far as possible to minimise odour emissions, regularly flush housing units. Implement best practices in terms of waste storage and practice good housekeeping of the housing units. Avoiding unnecessary build-up of waste in the housing units and waste storage facilities. 	Medium

OPERATIONAL PHASE												
Potential Impact Description	Extent	Duration	Consequence	Probability	Reversibility	Irreplaceability	Significance Rating (Positive or Negative)	Degree of Confidence	Can impact be avoided?	Can impact be managed or mitigated?	Proposed Mitigation	Significance Rating after Mitigation
											<ul style="list-style-type: none"> - Ensure sufficient ventilation of the housing units. - Subject the chicken solid waste to the aerobic process to reduce its odour. 	
<ul style="list-style-type: none"> • Impact of dust and vehicle emissions generated during use of the gravel road when transporting eggs during operation. 	Local	Long term	Moderate	Unlikely	Non-reversible	Moderate	Low (Negative)	Medium	No	Yes	<ul style="list-style-type: none"> - Vehicles transporting to and from the farm must keep at minimum speed to reduce dust generation. - Vehicles that are used must be roadworthy and regularly inspected in order to prevent unwanted emissions. - Traffic dust will be minimal considering that the facility will make use of one vehicle thus no significant increase in traffic. 	Low
<ul style="list-style-type: none"> • Impact on biosecurity and transmission of diseases. 	Local	Long term	Severe	Likely	Moderate	Low	High (Negative)	Medium	Yes	Yes	<ul style="list-style-type: none"> - Training of workers to effectively handle sick and dead animals. - Ensure effective pest management measures. - Regularly clean the facility to minimise influx of pests. - Dead chickens must be removed from the facility as soon as possible, at all times. - Restrict access to the facility and use disinfectant sprays on vehicles and personnel entering the site. - Feeding areas must be regularly cleaned to prevent the attraction of flies. - Facility must have security fencing around it to prevent access of other animals such as dogs. 	Low
<ul style="list-style-type: none"> • Potential injury to employees working with biological waste and Potential for workers' safety being compromised due to handling hazardous material and biomedical substances. 	Site specific	Very short term	Substantial	Likely	Non-reversible	Moderate	Medium (Negative)	Medium	Yes	Yes	<ul style="list-style-type: none"> - Biological waste such as syringes must be collected and disposed of in a responsible, appropriate manner; preferably through the assistance of a veterinarian. - Training of workers to safely store biological equipment. - Worker to wear Personal Protective Equipment (PPE). - Hazardous material must be correctly labelled and handled in a safe manner. 	Low
<ul style="list-style-type: none"> • Impact on groundwater due to use and spillage of chemicals on site, such as disinfectants. 	Regional	Long term	Substantial	Likely	Low	Moderate	Medium (Negative)	Low	Yes	Yes	<ul style="list-style-type: none"> - Chemicals must be used in the recommended amount and area, and stored in a designated area. These areas must be regularly monitored. - In the event of spills, the area to be cleaned immediately using bioremediation products. - Ensure that any accidental spills do not move beyond the designated storage area. 	Low
<ul style="list-style-type: none"> • Increased water usage due to abstraction from 	Local	Long term	Substantial	Likely	Non-reversible	High	Medium (Negative)	Medium	No	Yes	<ul style="list-style-type: none"> - Water saving strategies should be practiced such as re-use and raising water conservation awareness. 	Low

OPERATIONAL PHASE												
Potential Impact Description	Extent	Duration	Consequence	Probability	Reversibility	Irreplaceability	Significance Rating (Positive or Negative)	Degree of Confidence	Can impact be avoided?	Can impact be managed or mitigated?	Proposed Mitigation	Significance Rating after Mitigation
the borehole for water requirements of the facility.											<ul style="list-style-type: none"> - Create awareness on the importance of these resources and implement energy and water saving mechanisms. - Also make use of rain water from the existing tank to minimise abstraction demands. - Make use of renewable energy. - Prevent wasting of water such as leaving running taps. - Regular inspection of use should be conducted, including regular inspection of the borehole, water tanks, for any leaks. 	
<ul style="list-style-type: none"> • Introduction and spread of alien species. 	Local	Long term	Severe	Likely	Low	Moderate	High (Negative)	High	No	Yes	<ul style="list-style-type: none"> - Control or limit access by potential vectors of alien plants. - Remove and dispose of Category 1b alien species on site and obtain permit to remove Category 2 species on site. - Manual or mechanical removal of alien invasives should be done as opposed to chemical removal. - Carefully regulate / limit access by vehicles and materials to the site. - By law, remove and dispose of Category 1b alien species on site. All Category 2 species that remain on site require a permit. - Prohibit the introduction of domestic animals such as dogs and cats. 	Low
<ul style="list-style-type: none"> • Impact of operational activities on fauna. 	Local	Long term	Substantial	Likely	Low	Moderate	Medium (Negative)	High	No	Yes	<ul style="list-style-type: none"> - Minimize or eliminate lighting, to reduce the disturbance of nocturnal fauna. - All outside lighting should be directed away from sensitive areas. - Minimize noise to limit its impact on sensitive fauna. Utilise quieter equipment where feasible. - All equipment / machinery will be serviced and maintained within operating specifications to prevent excessive noise. - Create awareness on the importance of fauna and ecosystem functioning. 	Low
<ul style="list-style-type: none"> • Potential for fires to occur. 	Local	Long term	Substantial	Likely	Moderate	Low	Medium (Negative)	High	Yes	Yes	<ul style="list-style-type: none"> - Ensure effective fire management plans. - Create safe storage on the premises for flammable materials. If artificial burning is considered necessary, establish and implement a fire management plan with emergency fire procedures. - Maintain an effective fire break between the development area. - Educate workers about the plan and emergency procedures with regular training and notices. 	Low

OPERATIONAL PHASE												
Potential Impact Description	Extent	Duration	Consequence	Probability	Reversibility	Irreplaceability	Significance Rating (Positive or Negative)	Degree of Confidence	Can impact be avoided?	Can impact be managed or mitigated?	Proposed Mitigation	Significance Rating after Mitigation
• Noise from operational activities and chickens.	Local	Long term	Moderate	Very likely	Low	Moderate	Low (Negative)	High	No	Yes	<ul style="list-style-type: none"> - Activities that generate the most noise to be limited to during the day. - No sound amplification equipment to be used on site, except in emergency situations. - Limit vehicles travelling to and from the site to minimise traffic noise to the surrounding environment - Avoid unnecessary disturbance of the chickens, to prevent excessive noise from the chickens. 	Low
• Generation of operational waste.	Regional	Long term	Substantial	Very likely	Low	Moderate	Medium (Negative)	Low	No	Yes	<ul style="list-style-type: none"> - All waste produced to be disposed of in permitted designated waste disposal site. - Waste must be stored in designated areas for storage. - Clearly demarcate appropriate storage for the different types of waste. - Ensure regular removal of waste on site to prevent attraction of pests and disposal of waste in a permitted disposal site. 	Low
• Potential impact of traffic.	Local	Long term	Substantial	Likely	Low	Moderate	Medium (Negative)	Medium	Yes	Yes	<ul style="list-style-type: none"> - Limit the amount of vehicles using this route. - Increase in vehicular traffic during the operation phase will also not be significant as this will occur during the transportation of eggs; the eggs will be transported twice a day and the operation will make use of one truck for transportation. Only one truck will be used to transport the chickens, and that will occur at the start of each cycle, that is when new chickens arrive at the site and are kept for approximately a year for egg production. 	Low
• Potential impact on heritage resources.	Local	Long term	Substantial	Very unlikely	Non-reversible	High	Low (Negative)	High	Yes	Yes	<ul style="list-style-type: none"> - The site does not have any heritage resources, however should any archaeological features be discovered on site then a qualified Heritage specialist and SAHRA will be notified. 	Low
Indirect Impacts												
• Loss of the ecological function and degradation of the moist grasslands.	Local	Long term	Severe	Likely	Moderate	Moderate	High (Negative)	Medium	Yes	Yes	<ul style="list-style-type: none"> - Prevent disturbances to the moist grassland area by e.g. vehicles. - Place and maintain erosion control barriers as appropriate to prevent sedimentation. 	Low
• Increased storm water runoff.	Site specific	Long term	Substantial	Likely	Non-reversible	Moderate	Medium (Negative)	Medium	Yes	Yes	<ul style="list-style-type: none"> - Storm water should be effectively channelled to avoid water retention on site. - The storm water system must be monitored through inspection and repaired when necessary. 	Low
• Security and safety impacts.	Local	Long term	Substantial	Likely	Non-reversible	Low	Medium (Negative)	Medium	Yes	Yes	<ul style="list-style-type: none"> - The applicant must take precautionary measures to minimise crime incidents in the 	Low

OPERATIONAL PHASE												
Potential Impact Description	Extent	Duration	Consequence	Probability	Reversibility	Irreplaceability	Significance Rating (Positive or Negative)	Degree of Confidence	Can impact be avoided?	Can impact be managed or mitigated?	Proposed Mitigation	Significance Rating after Mitigation
											area that are associated with the proposed development. - The applicant will also hire the services of a security guard to monitor the proposed facility. - Security should be vigilant as to who gains access to the site. - Chickens to be housed in an enclosed safe area to prevent incidents of theft.	
<ul style="list-style-type: none"> The proposed expansion has the potential to create local employment and skills development. 	Local	Long term	Substantial	Very likely	High	High	Medium (Positive)	Medium	Yes	Yes	<ul style="list-style-type: none"> Maximise job creation and promote local employment and skills training. 	High
<ul style="list-style-type: none"> The proposed project will contribute to the local economic market through the supply of eggs to local stores and buyers. 	Local	Long term	Substantial	Likely	High	High	Medium (Positive)	Medium	Yes	Yes	<ul style="list-style-type: none"> Ensure that local butcheries are utilized as consumers. 	High
NO-GO ALTERNATIVE												
Potential Impact Description						Significance Rating (Positive or Negative)						
Direct Impacts												
<ul style="list-style-type: none"> Potential impact on vegetation and faunal habitats. 						No impact						
<ul style="list-style-type: none"> Impact on soil erosion and dust. 						No impact						
<ul style="list-style-type: none"> Impact on water quality and downstream aquatic ecology. 						Medium (Negative)						
<ul style="list-style-type: none"> Potential for groundwater impact. 						High (Negative) – Existing facility and current practices have the potential to impact groundwater.						
<ul style="list-style-type: none"> Air quality impact. 						High (Negative) – Existing facility, the status quo will continue with regards to odour from chickens and dust generated by farm vehicles.						
<ul style="list-style-type: none"> Waste generation. 						Low (Negative) – Existing facility, any impact created in construction has already occurred.						
Indirect Impacts												
<ul style="list-style-type: none"> If the proposed project does not proceed, increased income and economic benefits associated with the expansion will not be realised. No new employment opportunities will be created. If the proposed project does not proceed, the local industries that rely on the supply of eggs could experience hindered economic growth potential. 												

DRAFT BASIC ASSESSMENT REPORT

Basic Assessment for IDCNKE Holdings' proposed expansion of a chicken layer facility and vegetable production on Portion 348 of Kameeldrift Farm 313, Pretoria West, Gauteng.

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

- Vegetation Assessment for the proposed expansion of a chicken layer facility on Portion 348 of Kameeldrift Farm 313, Kameeldrift West, Pretoria, Gauteng.
- Terrestrial Fauna Impact Assessment & Management Plan in terms of a NEMA application for the proposed chicken farm on portion 348 of Kameeldrift 313 JR, Gauteng Province
- Wetland Assessment Report

All Reports included in Appendix G

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

Uncertainties form part of any proposed development with regards to the actual degree of impact that the development will have on the immediate environment. Any actual and/or site specific results will only be determined once development has commenced and throughout the life cycle of the proposed project.

It is important to note that the absence of species on site does not conclude that the species is not present at the site.

Vegetation studies should be conducted during the growing season of all plant species that may potentially occur. This may require more than one season's survey with two visits undertaken preferably during November and February. However, this report relied on a single site visit undertaken on the 24th of January 2018. Some species may have been dormant at the time of the assessment. In addition, the grassland on the site was grazed which hampered the identification of some species.

No trapping was completed. The nature of the site deemed this unnecessary. Trapping would increase costs significantly and can cause severe stress to animals trapped, without necessarily providing additional insight to the overall fauna biodiversity.

The preceding evening and morning rainfall would have washed out any animal tracks.

The site is surrounded by developments on all sides (crop farming, buildings, gravel roads, historical chrome mining, quarries, chicken farm) except to the south. The neighbouring southern property overlaps with the Swartspruit wetland (approximately overlying the Ecological Support Area (ESA)) and buffer zone and provides the only connection to natural areas.

Wetland mapping was based on the brief in-field survey as well as aerial imagery. Positioning of the wetland may not be exact due to potential georeferencing errors displayed in Google Earth, GPS accuracy in field as well as the age of the aerial image.

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

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

Note from the CSIR: Decommissioning and/or closure phase is not expected to occur for the proposed chicken layer facility. Should there be plans to close down the facility; a closure plan will be submitted to the competent authority for approval and it will comply to the relevant legislation at the time of closure.

DRAFT BASIC ASSESSMENT REPORT

Basic Assessment for IDCNKE Holdings' proposed expansion of a chicken layer facility and vegetable production on Portion 348 of Kameeldrift Farm 313, Pretoria West, Gauteng.

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

- Vegetation Assessment for the proposed expansion of a chicken layer facility on Portion 348 of Kameeldrift Farm 313, Kameeldrift West, Pretoria, Gauteng.
- Terrestrial Fauna Impact Assessment & Management Plan in terms of a NEMA application for the proposed chicken farm on portion 348 of Kameeldrift 313 JR, Gauteng Province
- Wetland Assessment Report

All Reports included in Appendix G

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

N/A

4. CUMULATIVE IMPACTS

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

Vehicles transporting material to and from the site will potentially increase traffic load along the internal gravel access road and potentially add to the noise and dust level to the nearby residents. Potential exists for additional traffic during the construction phase, this is however of a temporal duration and impact. Increase in vehicular traffic during the operation phase will also not be significant as this will occur during the transportation of eggs; the eggs will be transported twice a day and the operation will make use of one truck for transportation. Only one truck will be used to transport the chickens, and that will occur at the start of each cycle, that is when new chickens arrive at the site and are kept for approximately a year for egg production.

There is likely to be increased on services such as water. Large amount of abstraction of water from different sources, coupled with water abstraction for this expansion, could result in decreased ground water availability of adjacent properties. This study will however apply water saving strategies such as the re-use of water for cleaning purposes in the facility. It will also make use of surface water stored in the tank for other domestic purposes.

The proposed expansion has the potential to impact the socio economic status of the local area through job creation, skills development and increased egg production for the local market. This impact will not be mitigated as mitigation will not improve the local socio-economic situation.

5. ENVIRONMENTAL IMPACT STATEMENT

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

Proposal

The proposed expansion area is mostly transformed as a result of past agricultural practices and current existing chicken and vegetable farming. The main environmental impacts associated with the proposed project include:

Site preparation and clearance

Site clearance cannot be avoided during the construction phase. This phase will result in exposed soil, which could result in soil erosion and wind-blown dust. Erosion can lead to destruction of natural habitats and sedimentation

of nearby watercourses. All reasonable measures need to be implemented to minimise erosion during the construction phase. This impact will however be of temporary duration and have a low probability of occurrence with implemented mitigation measures and ultimately low impact.

Vegetation and habitat loss

Vegetation loss is unavoidable during the construction and operational phase. The majority of the site proposed for the expansion, however, has been transformed and very little natural vegetation remains. Development planning must ensure loss of vegetation and disturbance is restricted to the recommended expansion site layout. It is not expected that activities associated with the expansion will impact the natural fauna and flora to any significant level.

Waste

Waste will be generated during the construction and operational phase; the latter will therefore be of permanent duration. There will however be a system to effectively store/contain and remove waste following legal disposal measures. Waste impacts will be of low probability post mitigation and ultimately of low impact with effective mitigation measures and monitoring. Recycling of waste is also encouraged to reduce impacts as well as reducing the amount of waste incurred by disposal sites.

Socio-economic

The proposed expansion will contribute to the local economy during both the construction and operational phases as local labourers will be employed and the eggs will also be supplied to local markets. Increased productivity as a result of the impact will lead to the creation of employment opportunities and skills development in the area. The impact will be of temporal nature during the construction phase and permanent for the operational phase. The probability of this impact occurring is high and as such a potential high positive impact.

Based on the environmental assessment presented, it is a conclusion of this Basic Assessment that the proposed project will have relatively low impacts on the environment. With the effective implementation of the management and mitigation measures recommended in this report and those of the specialist reports, the significance of most impacts on site from an environmental perspective are considered to be of **low significance**. There will be potential impacts on vegetation and habitat, water quality, soil, dust, and odour as a result of earthworks associated with the activity, influx of vehicles, waste generated by the chicken layer facility as a whole. As a result of the ecological sensitivities identified in close proximity to the site, it was recommended by the Ecological and Wetland Specialists that the proposed expansion be moved away from the identified sensitive biodiversity features and associated buffers. It is the specialists opinions that based on the brief field scan of the site and on the available information to date, there are no fatal flaws associated with the project and that provided the mitigation set out is adhered to, the Specialists have no objections to the project going forward. This includes moving away from the moist grassland, the wetland area and associated buffer area. The Environmental Management Programme supporting this BA outlines adequate methods and mitigation measures that need to be implemented in order for the identified impacts to not pose any environmental flaws associated with the proposed upgrading and expansion of the chicken layer facility and associated infrastructure.

Alternative 1

N/A

Alternative 2

N/A

No-go (compulsory)

The no-go option would mean that the status quo would remain. Egg production on the farm will not be increased, the current operations will not be altered and the type of technology will still be the same. The facility will therefore not be able to develop increased profit and increase production to supply the poultry industry. The

DRAFT BASIC ASSESSMENT REPORT

Basic Assessment for IDCNKE Holdings' proposed expansion of a chicken layer facility and vegetable production on Portion 348 of Kameeldrift Farm 313, Pretoria West, Gauteng.

opportunity to improve the local socio-economic situation and to use best practice poultry farming methods, including improved poultry welfare, will not be realised. Waste management, odour and pest control problems associated with the existing facility will not be improved. Environmental impacts would not be impacted on any further than the current situation. The environmental impacts associated with the proposed expansion are considered to be of an acceptable level and can be effectively managed with the implementation of effective mitigation methods as discussed in the EMPr.

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Basic Assessment for IDCNKE Holdings' proposed expansion of a chicken layer facility and vegetable production on Portion 348 of Kameeldrift Farm 313, Pretoria West, Gauteng.

6. IMPACT SUMMARY OF THE PROPOSAL OR PREFERRED ALTERNATIVE

For proposal:

- Impact on soil (erosion and dust);
- Loss of vegetation and faunal habitat;
- Introduction and increase in alien invasive vegetation;
- Impact on wetland habitat;
- Potential for pollution of water sources;
- Waste generation;
- Impact on air quality;
- Impact of pests and disease transmission;
- Safety and security;
- Impact of traffic; and
- Employment opportunities created.

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.

The proposed development is for the expansion of an existing chicken layer facility and all the proposed structures associated with the expansion and/upgrade are designed to follow GDARD and the DAFF's guidelines in terms of best practices associated with poultry farming, and to adhere to environmental legislation advocating minimal environmental impacts. Environmental impacts associated with this development would be exacerbated in establishing a new facility compared to expanding an existing facility located in an area of low environmental impacts, provided that the management methods and/or mitigation measures stipulated in this report are implemented. The proposed location of the facility will ensure that development occurs in already transformed land, minimising impact on undisturbed land within the remainder of the farm.

7. SPATIAL DEVELOPMENT TOOLS

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

The SDF is the legislated component of the municipality's IDP that prescribes development strategies and policy guidelines to restructure and reengineer the urban and rural form. The SDF is the municipality's long-term vision of what it wishes to achieve spatially, and within the IDP programmes and projects. The SDF should not be interpreted as a blueprint or master plan aimed at controlling physical development, but rather the framework giving structure to an area while allowing it to grow and adapt to changing circumstances. The proposed project has considered and is guided by the Regions SDF and IDP priorities of the area. It aims to empower the local economy, which is individuals and local business in terms of job creation and skills development. The proposed project falls within Region 3 in the City of Tshwane, (Figure below).

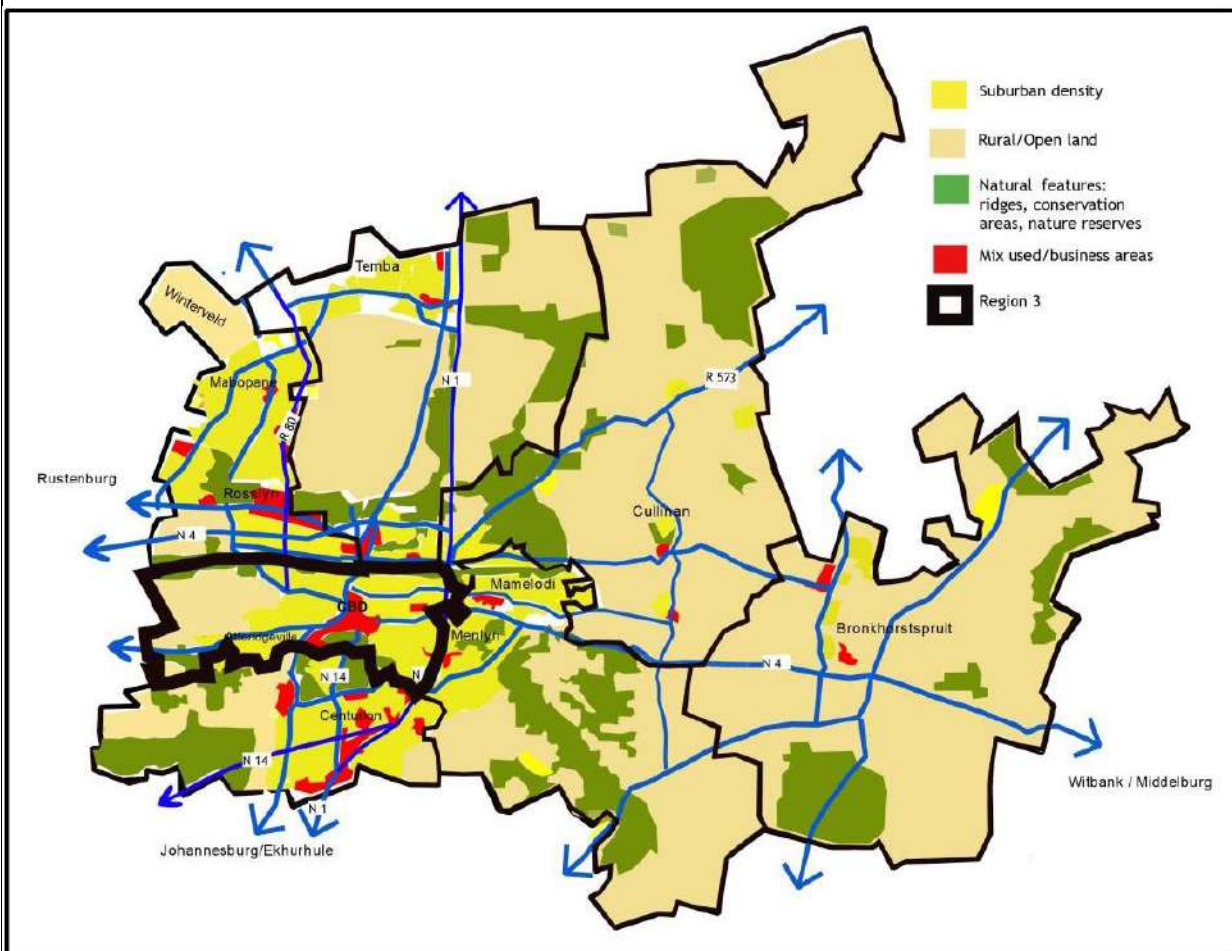


Figure 7-1: The location of Region 3 in the City of Tshwane (Source: Region 3: Regional Integrated Development Plan 2014 - 2015)

The proposed project falls within an area determined as Rural/Open Land, and the SDF's intention is to create vibrant equitable and sustainable rural communities. This can be achieved through food provision as well as providing work opportunities in these areas. The figure below indicates the key developmental features of Region 3.

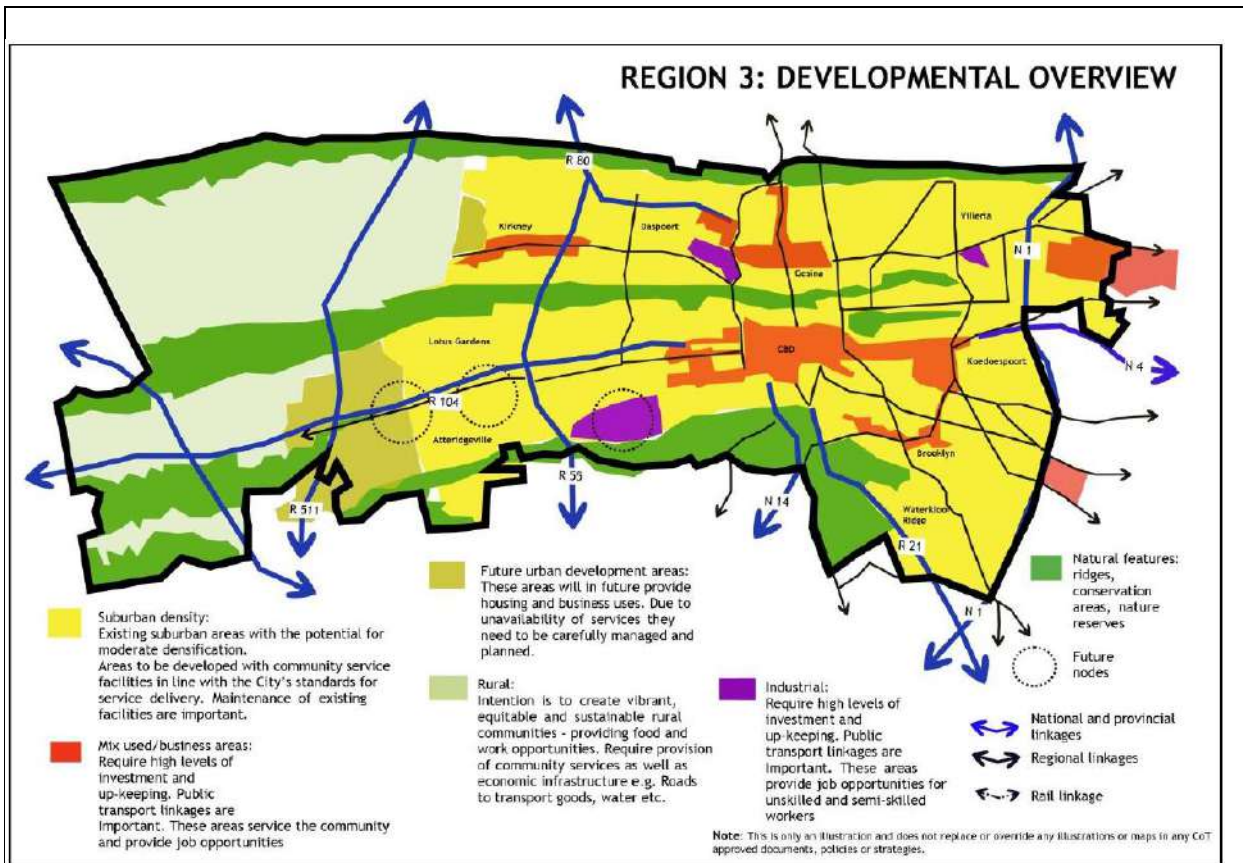


Figure 7-2: Regional Developmental Overview for Region 3 (Source: Region 3: Regional Integrated Development Plan 2014 - 2015)

In terms of the spatial development, some of the weaknesses identified for the region include:

- High poverty levels in the western part of this region.
- There is a lack of private sector investment in the west.

This 2014-2015 IDP also states that the current socio-economic and development situation in the region, as well as the region's spatial/developmental opportunities, strengths, weaknesses and threats should help inform a service delivery response relevant to the regions conditions and ultimately the City of Tshwane's vision. The proposed project could therefore contribute to the local economic opportunities, ultimately impacting socio-economic development of the area; in support of the region's spatial development opportunities.

8. RECOMMENDATION OF THE PRACTITIONER

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

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

N/A

DRAFT BASIC ASSESSMENT REPORT

Basic Assessment for IDCNKE Holdings' proposed expansion of a chicken layer facility and vegetable production on Portion 348 of Kameeldrift Farm 313, Pretoria West, Gauteng.

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:

This BAR provides a detailed analysis of the potential impacts associated with the proposed development project. The proposed development will have an overall impact of low significance, provided that the mitigation measures proposed in this report and the EMPr are effectively implemented. It is therefore recommended that the proposed project is approved, subject to the following conditions and mitigation measures:

- The EMPr of this proposed development must form part of the contractual agreement and be adhered to by both the contractors and the applicant.
- The recommendations of the specialist, including avoidance of the wetland area and buffer, must be implemented.
- The applicant to ascertain that there is representation of the applicant on site, at all times of the project phases, ensuring compliance with the conditions of the EMPr and Environmental Authorisation thereof.
- A Water Use Licence must be obtained for the water usage associated with the chicken layer facility operations.

It is the opinion of the EAP that the proposed expansion and/or upgrade will comply with current relevant legislation, and that with the implementation of the mitigation measures suggested in this BAR, there are no environmental impacts identified as highly detrimental to the environment. Specialist studies including Heritage, Terrestrial Ecology (including fauna and flora) and wetland assessments were conducted as part of the BA. These studies recommended that the areas proposed for development must exclude areas of sensitivity, i.e. the wetland and buffer area, and moist grasslands. It is therefore recommended that this be adhered to and following that, the proposed development be granted Environmental Authorisation.

9. THE NEEDS AND DESIRABILITY OF THE PROPOSED DEVELOPMENT (AS PER NOTICE 792 OF 2012, OR THE UPDATED VERSION OF THIS GUIDELINE)

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 site falls within an area zoned as Class 4: Normal control zone under the Gauteng Provincial Environmental Management Framework Zones. This zone is dominated by agricultural uses outside the urban development zone as defined in the Gauteng Spatial Development Framework. Land uses that are compatible with the intention of this zone include animal production, agricultural infrastructure, farm worker accommodation. The zoning certificate for this property in terms of Tshwane Town-Planning Scheme indicates that it is within Use Zone 19: Undetermined, and does support agricultural purposes for which land and buildings may be erected and used. The proposed land use is in line with the Municipal Spatial Development Framework's Strategic Objective 2 of Economic growth and development. As part of this objective, emphasis is also placed on Rural development programmes to improve livelihoods and stimulate employment.

DRAFT BASIC ASSESSMENT REPORT

Basic Assessment for IDCNKE Holdings' proposed expansion of a chicken layer facility and vegetable production on Portion 348 of Kameeldrift Farm 313, Pretoria West, Gauteng.

Questions (Notice 792, NEMA, 2012)		Answer
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 activity will result in optimal use of rural land. According to the Region 3: Regional Spatial Development Framework, 2017, the proposed project falls within an area which is demarcated as "rural", and the intention of development in this area is to create vibrant, equitable and sustainable rural development which provides food and work opportunities.
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 current operations of the business supply eggs to butchers, offices, local households and/or individuals in the area, and with the proposed expansion, the company aims to supply big retailers and ensure a well-known brand for the business. The business therefore aims to assist in addressing the unemployment difficulties in the area, demonstrate the significant role that the youth could contribute in agriculture. This opportunity is expected to be of economic benefit and contribution to the agro-industrial sector; including agricultural skills development, increase in egg production and employment.
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 proposed development can be adequately serviced by the existing infrastructure and planned infrastructure which is not of municipal service. The proposed project will make use of borehole water, for which a water use licence application is currently in process.
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)?	No. The proposed development is not provided for in the infrastructure planning of the municipality as it is a small development of local importance. There is potential for a slight increase in terms of electricity. It is a small operation and will therefore not impact greatly to municipal services. Therefore, the proposed project will not have major implications for the infrastructure planning.
6.	Is the project part of a national programme to address an issue of national concern or importance?	<p>Although this project draws from no specific objectives of the National Development Plan of South Africa, the proposed chicken layer facility would however contribute to the country's collective objective of promoting sustainable food security.</p> <p>With this contribution to small and medium sized agricultural initiatives in the area, it is hoped to result in growing of the poultry farming industry in the area, resulting in the growth of jobs and the growth of the area's economic base resulting in poverty alleviation. The proposed project will also have a positive contribution towards food safety and security in South Africa.</p>
PART II: DESIRABILITY		

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Basic Assessment for IDCNKE Holdings' proposed expansion of a chicken layer facility and vegetable production on Portion 348 of Kameeldrift Farm 313, Pretoria West, Gauteng.

Questions (Notice 792, NEMA, 2012)		Answer
1.	Is the development the best practicable environmental option for this land/site?	Yes. The proposed development is for an expansion of an existing land use in the form of a chicken layer facility. The historical use of the site included crop farming, and according to the Gauteng Agricultural Potential Atlas (GAPA 4) the site does not have high crop agricultural potential. Due to its' small size, as well as previous and current land use practices, the site is ideal for small-scale poultry and vegetable farming, and the environmental impacts associated with this use are minimal as the area is not high of high environmental sensitivity. The facility is located in a rural area with and according to the Municipality's Town Planning Scheme agricultural land use is supported in this area.
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 intends to align its' objectives with that of the Regions SDF, which are directly linked to Tshwane's 2017 -2021 IDP and 2055 vision. It aims to be aligned to the following Tshwane Rural Vision: <ul style="list-style-type: none"> • Promote an effective response to rural poverty; • Ensure food security by maximizing the use and management of natural and other resources; • Create vibrant, equitable and sustainable rural communities; • Contribute towards the redistribution and sustainable use of all potential agricultural land; • Create employment and business opportunities for the existing rural population;
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 agricultural sector is one of the identified targeted for sectors in the Gauteng Growth and Development Strategy. The proposed development falls within areas demarcated for agriculture, as identified in the 2014 Gauteng Provincial EMF, and therefore the integrity of the existing environmental management priorities for the area will not be compromised by this development. It is also evident in view of the provincial SDF that there is also an emphasis on preserving a strong agricultural base.
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 site falls within an area demarcated for agricultural development in the greater framework of the province. This is also attributed to agriculture having a strong social element in that it provides employment and housing to a significant proportion of the population, creating a unique social environment associated within rural areas.
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 project will exert an impact on the environment; but based on the findings of the Ecological and Wetland Impact Assessments (Appendix G), and as per the Specialists recommendations and the locality of the site, the impacts associated with this proposed development can be mitigated and in implementing those measures effectively can have a significantly low impact.

DRAFT BASIC ASSESSMENT REPORT

Basic Assessment for IDCNKE Holdings' proposed expansion of a chicken layer facility and vegetable production on Portion 348 of Kameeldrift Farm 313, Pretoria West, Gauteng.

Questions (Notice 792, NEMA, 2012)		Answer
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.)?	This is an existing facility, with the neighbours also engaged in farming activities therefore the visual character and sense of place aesthetics in the area is associated to agricultural activities and the proposed activity will not have a high significant impact in this regard.
7.	Will the proposed activity or the land use associated with the activity being applied for, result in unacceptable opportunity costs?	No. The South Africa egg industry is growing; retaining eggs as the 4 th largest animal product in agriculture in the country. This industry also presents opportunities in that there is a huge potential in the rural markets and exports to the SADEC region, with Mozambique being the main importer of South African eggs.
8.	Will the proposed land use result in unacceptable cumulative impacts?	No. The proposed project and associated activities has identified 3 cumulative impacts, with two of these having a low significant impact upon mitigation. The socio-economic impact will not be mitigated as mitigation will not result in job creation and improvement of the local socio-economic status. The measures outlined in the attached EMP _r serve as mitigation methods to prevent the current and proposed project from having any serious long term cumulative impacts on the receiving environment.

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

The Environmental Authorisation is required for a minimum of 20 years.
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11. ENVIRONMENTAL MANAGEMENT PROGRAMME (EMP_r) (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

EMP_r attached

YES

SECTION F: APPENDICES

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)
Appendix B	Photographs
Appendix C	Facility illustration(s)
Appendix D	Route position information - N/A
Appendix E	Public participation information
Appendix F	Water use license(s) authorisation - Not applicable at this stage SAHRA information Service letters from municipalities - Not applicable at this stage Water supply information - Not applicable at this stage
Appendix G	Specialist Reports
Appendix H	Environmental Management Programme
Appendix I	CVs of the EAPs (project team who prepared the report)

Basic Assessment for IDCNKE Holdings' proposed expansion of a chicken layer facility and vegetable production on Portion 348 of Kameeldrift Farm 313, Pretoria West, Gauteng.

SECTION F: APPENDICES



SECTION F: APPENDICES

Basic Assessment for IDCNKE Holdings' proposed expansion of a chicken layer facility and vegetable production on Portion 348 of Kameeldrift Farm 313, Pretoria West, Gauteng.

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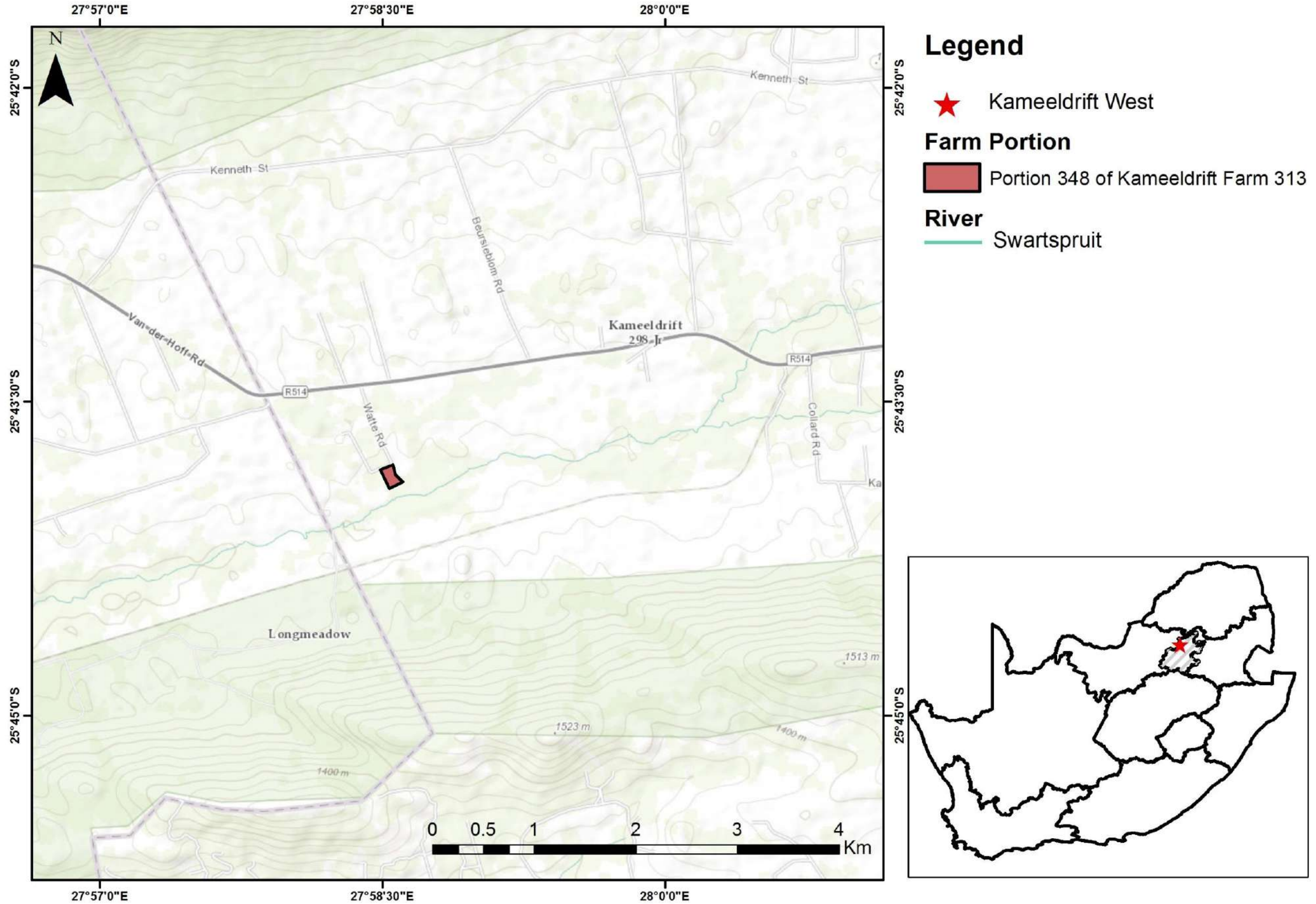
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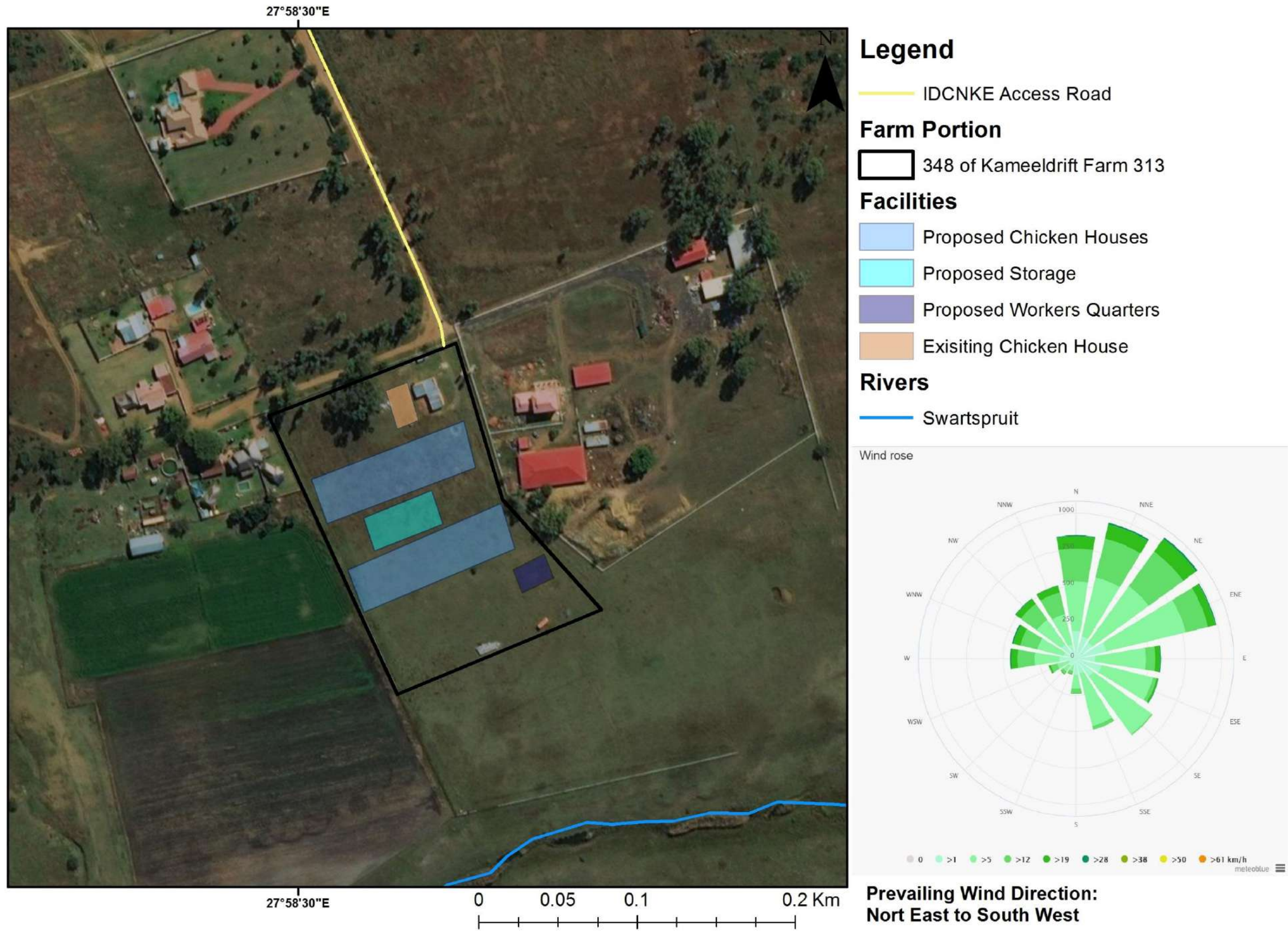
SECTION F: APPENDICES

Map 1A: IDCNKE Holdings Site Location on Portion 348 of Kameeldrift Farm 313, Pretoria West, Gauteng.



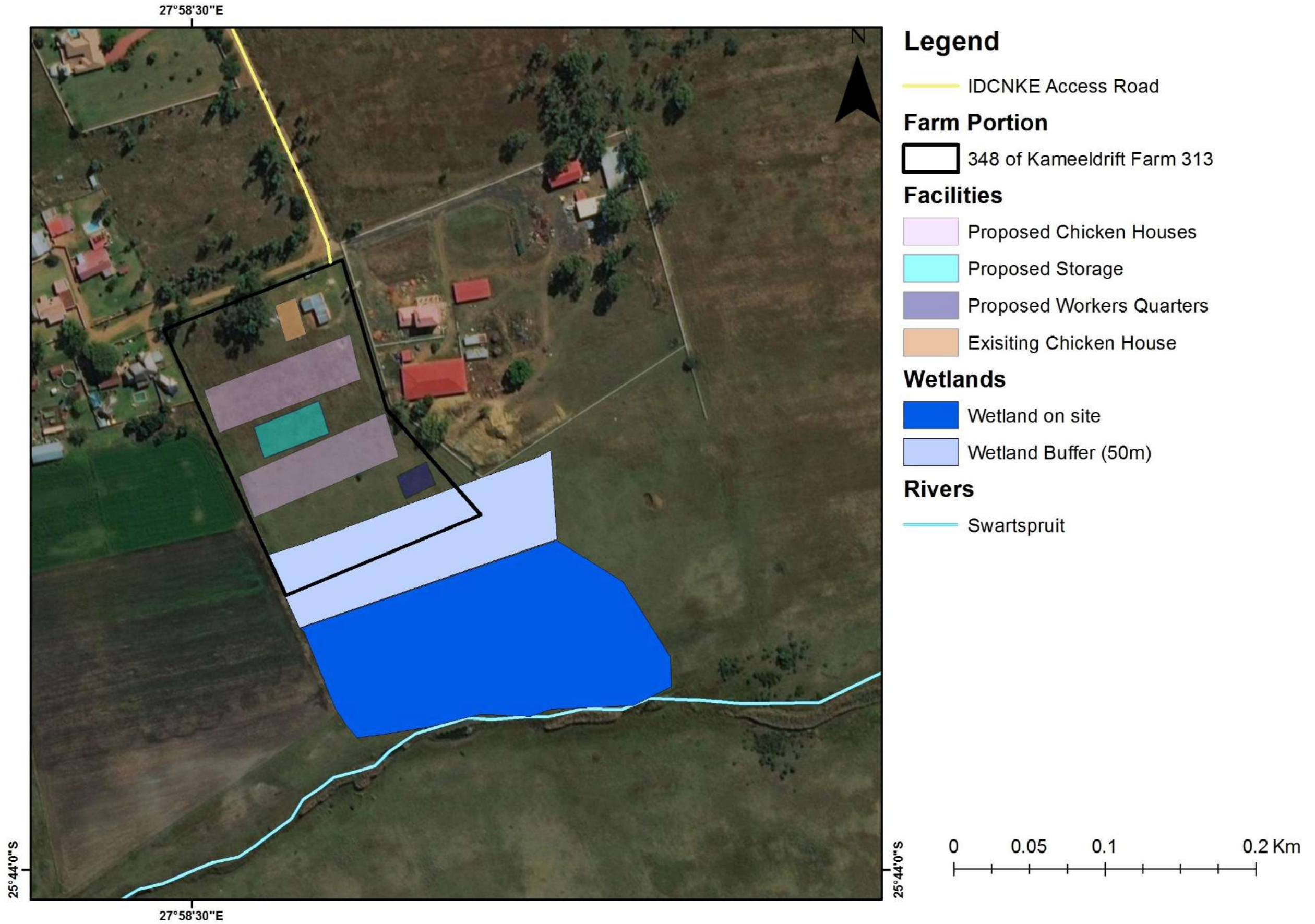
SECTION F: APPENDICES

Map 1B: IDCNKE Holdings Site Layout of current and proposed chicken housing infrastructure.



SECTION F: APPENDICES

Map 1C: IDCNKE Holdings Site Layout of current and proposed chicken housing infrastructure, including sensitivities on site



SECTION F: APPENDICES

Basic Assessment for IDCNKE Holdings' proposed expansion of a chicken layer facility and vegetable production on Portion 348 of Kameeldrift Farm 313, Pretoria West, Gauteng.

BASIC ASSESSMENT REPORT

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IDCNKE Site Photographs taken in the eight major compass directions



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Basic Assessment for IDCNKE Holdings' proposed expansion of a chicken layer facility and vegetable production on Portion 348 of Kameeldrift Farm 313, Pretoria West, Gauteng.

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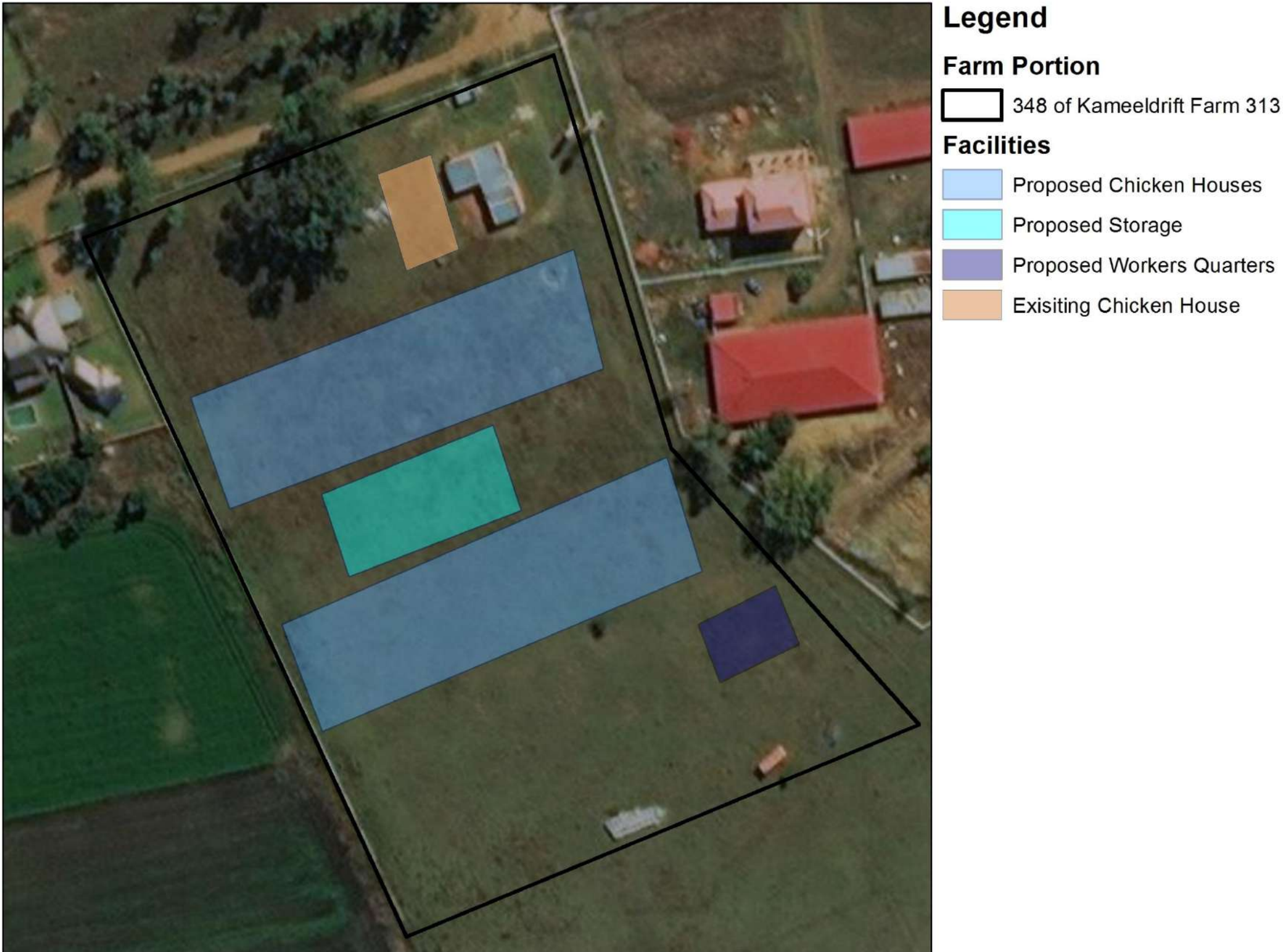
APPENDIX C: FACILITY ILLUSTRATION(S)

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SECTION F: APPENDICES

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



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Basic Assessment for IDCNKE Holdings' proposed expansion of a chicken layer facility and vegetable production on Portion 348 of Kameeldrift Farm 313, Pretoria West, Gauteng.

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SECTION F: APPENDICES

Basic Assessment for IDCNKE Holdings' proposed expansion of a chicken layer facility and vegetable production on Portion 348 of Kameeldrift Farm 313, Pretoria West, Gauteng.

Appendix E1: Proof of Site Notice

*English and SeTswana Site notices placed at the entrance of the proposed expansion site
(Site Notice GPS location: 25°43'49"S 27°58'32"E)*



SECTION F: APPENDICES

Basic Assessment for IDCNKE Holdings' proposed expansion of a chicken layer facility and vegetable production on Portion 348 of Kameeldrift Farm 313, Pretoria West, Gauteng.

Contents of the English Site notice

IDCNKE (Portion 348 of Kameeldrift Farm 313, Kameeldrift West, Pretoria, Gauteng)

NOTICE OF A BASIC ASSESSMENT (BA) PROCESS

Notice is hereby given, in terms of the 2014 Environmental Impact Assessment (EIA) Regulations, as amended, under sub-regulation 41 (2), of the National Environmental Management Act 1998 (Act No. 107 of 1998), that the **IDCNKE Holdings**, proposes the **expansion of a chicken layer facility and cultivation to plant vegetables, on Portion 348 of Kameeldrift Farm 313, Kameeldrift West, Pretoria, Gauteng.**

The Council for Scientific and Industrial Research (CSIR) has been appointed by IDCNKE Holdings to undertake the required Basic Assessment process for the proposed project. The project will be registered with the Gauteng Department of Agriculture and Rural Development (GDARD). The need for a Basic Assessment is triggered by the following project activities listed in Government Notice Regulations (GNR) 327 of 7 April 2017.

Government Notice	Listed Activity Number
GNR 327, 7 April 2017	27
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 the Project Manager below:



Ms Babalwa Mqokeli
 P.O. Box 320, Stellenbosch, 7599
 Tel: 021 888 2432
 Fax: 021 888 2963
 Email: bmqokeli@csir.co.za

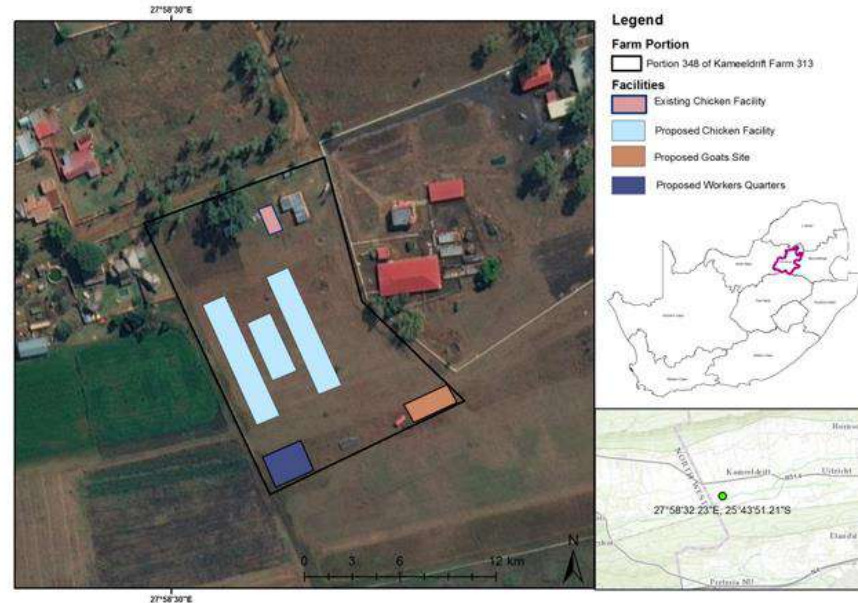


Fig. 1. Location of IDCNKE Holdings on Portion 348 of Kameeldrift Farm 313, with proposed expansion sites.

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Basic Assessment for IDCNKE Holdings' proposed expansion of a chicken layer facility and vegetable production on Portion 348 of Kameeldrift Farm 313, Pretoria West, Gauteng.

Contents of the SeTswana Site notice

IDCNKE (Portion 348 of Kameeldrift Farm 313, Kameeldrift West, Pretoria, Gauteng)

KITSISO YA TIRELO YA BASIC ASSESSMENT (BA)

Le itsisiwe gore, go ya ka melao ya 2014 ya Tlhatlhobo ya Tikologo (EIA), ka fa tlase ga molawana o o fetotsweng wa 41(2), wa Molao wa Leggotla la Taolo ya Tikologo, 1998 (Molao 107 wa 1998), gore **IDCNKE Holdings**, e eletsa go otolosa moago wa leruo la dikgogo tsa go beela mae le go simolola go lerna merogo, fa **karolong ya 348 ya Tshimo ya Kameeldrift 313, Kameeldrift West, Pretoria, Gauteng**.

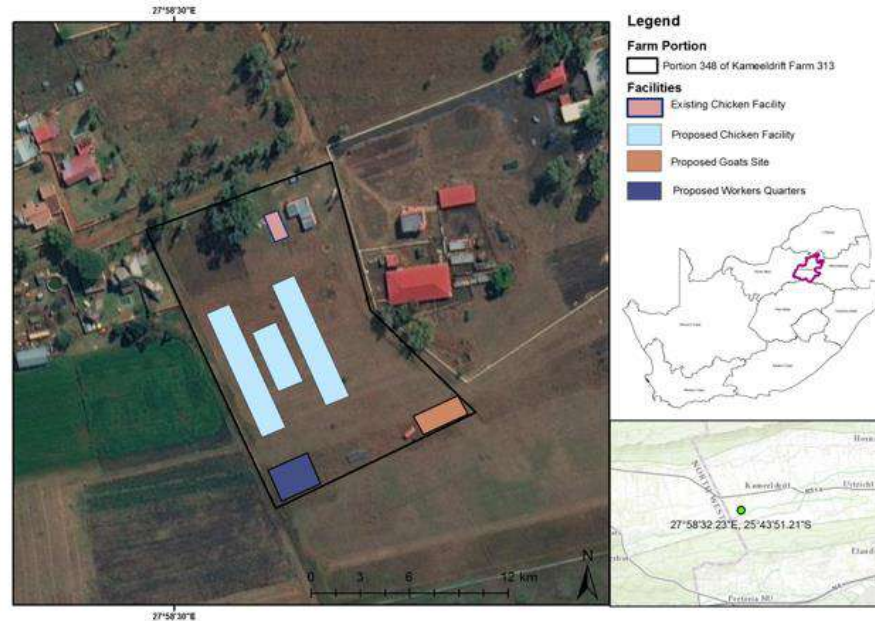
Leggotla la Dipatlisiso tsa Saense le Indasteri (Council for Scientific & Industrial Research -CSIR), le tlophile ke IDCNKE Holdings go laola tsamaiso ya tlhatlhobo ya tikologo ya projeke. Projeke e tla kwadisiwa le Lefapha la Temo le Tlhabologo ya Dinagamagae la Gauteng (GDARD). Tlhatlhobo ya tikologo e tlhokagala gonne e tsoitse ditiro tse di latelang tsa Kitsiso ya Melao wa Mmuso (GNR) 327 ya 7 Moranang 2017.

Kitsiso ya Mmuso	Nomoro ya Tiro
GNR 327, 7 Moranang 2017	27
GNR 327, 7 Moranang 2017	40 (ii)

Go fithelela dikitsiso tse di amanang le projeke le tsamaiso ya tlhatlhobo ya tikologo, ikwadise jaaka mokgathegi le moamegi wa projeke. Kopantshe le:



Ms Babalwa Mqokeli
 P.O. Box 320, Stellenbosch, 7599
 Tel: 021 888 2432
 Fax: 021 888 2963
 Email: bmqokeli@csir.co.za



Setshwantsho. 1. Lefelo la IDCNKE Holdings fa Karolong ya 348 ya Tshimo ya Kameeldrift 313, o o bontshang lefelo la go otoloswa.

SECTION F: APPENDICES

Basic Assessment for IDCNKE Holdings' proposed expansion of a chicken layer facility and vegetable production on Portion 348 of Kameeldrift Farm 313, Pretoria West, Gauteng.

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

Letter sent (07/12/17) to I&APs as part of Project Announcement



Environmental Management Services
PO Box 320
Stellenbosch
7599
South Africa
Tel: +27 21 888 2432
Fax: +27 21 888 2693
Email: bmqokeli@csir.co.za

04 December 2017

Dear Interested and/or Affected Party,

PROJECT ANNOUNCEMENT

BASIC ASSESSMENT FOR IDCNKE HOLDINGS' PROPOSED EXPANSION OF A CHICKEN LAYER FACILITY ON PORTION 348 OF KAMEELDRIFT FARM 313, PRETORIA WEST, GAUTENG

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. IDCNKE has been identified as an eligible client for this service and is proposing the expansion of a chicken layer facility, as well as develop a vegetable production facility and goat farm on Portion 348 of Kameeldrift Farm 313 in Pretoria West, Gauteng

In terms of the Environmental Impact Assessment (EIA) Regulations, as amended, published in Government Notice Regulation (GNR) 326, Environmental Authorisation from the Competent Authority, in this case the Gauteng Department of Agriculture and Rural Development (GDARD), is required prior to the undertaking of any activity triggered within GNR 327, 325 and/or 324. 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 amended EIA 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 **29 January 2018** to register and submit your comments for this project. To register and submit comments for the project please complete the Registration Form. Please include 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.

Should you require further information in another language, please do not hesitate to contact the CSIR and we will assist.

Yours sincerely,

A handwritten signature in blue ink, appearing to be 'B. Mqokeli', is written over a light blue rectangular background.

Ms. Babalwa Mqokeli (Project Manager)
Postal address: PO Box 320, Stellenbosch, 7599, South Africa
Tel: 021 888 2432
Fax: 021 888 2693
E-mail: bmqokeli@csir.co.za
Website: <https://www.csir.co.za/environmental-impact-assessment>

SECTION F: APPENDICES

Basic Assessment for IDCNKE Holdings' proposed expansion of a chicken layer facility and vegetable production on Portion 348 of Kameeldrift Farm 313, Pretoria West, Gauteng.

Email sent (07/12/17) to I&APs as part of Project Announcement

From: Babalwa Mqokeli
To: mrabothata@environment.gov.za; SHlela@environment.gov.za; tnenarude@environment.gov.za; bonginkosi.zulu@drrlr.gov.za; mashuduma@daff.gov.za; thokob@daff.gov.za; mohapin@dws.gov.za; steven.mukhola@gauteng.gov.za; karabo.mohatla@gauteng.gov.za; phuti.matlamela@gauteng.gov.za; musekenem@dws.gov.za; rakgothot@dws.gov.za; bethuel.netshiswinzhe@gauteng.gov.za; phindile.mbanjwa@gauteng.gov.za; Tebogo Molokomme (GPSports); Zingisa.Smale@gauteng.gov.za; celiam@tshwane.gov.za; Tshinadzo A. Mphedu; fwwwyk3@gmail.com; mamseym@yahoo.com; janniebrecht@gmail.com; elainep@tshwane.gov.za; trustoftroy@gmail.com; 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: 07/12/2017 16:27
Subject: Notification of Release of BID for Basic Assessment for the Proposed Expansion of a Chicken Layer Facility on Portion 348 of Kameeldrift Farm 313, Pretoria West in Gauteng
Attachments: Letter to I&APs_BID.pdf; Background Information Document.pdf; IDCNKE Form Register I&APs_Disclosure of interest_ENGLISH.docx

Good day,

You are hereby notified about the release of the Background Information Document (BID) regarding a Basic Assessment for the proposed expansion of a Chicken Layer Facility on Portion 348 of Kameeldrift Farm 313, Pretoria West in Gauteng. Please find attached the BID, which has been released for 30-day review, and the Registration/ Comment Form. Please return the form on or before **29 January 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. Babalwa Mqokeli

Email: bmqokeli@csir.co.za

Tel: 021 888 2432

Fax: 021 888 2693

Postal: PO Box 320

Stellenbosch

7599

South Africa

SECTION F: APPENDICES







Basic Assessment for IDCNKE Holdings' proposed expansion of a chicken layer facility and vegetable production on Portion 348 of Kameeldrift Farm 313, Pretoria West, Gauteng.

Proof email delivery sent on 07 December 2017

Message Id:	5A294FBF.B23 : 119 : 306		
Subject:	Notification of Release of BID for Basic Assessment for the Proposed Expansion of a Chicken Layer Facility on Portion 348 of Kameeldrift Farm 313, Pretoria West in Gauteng		
Created By:	<u>BMqokeli@csir.co.za</u>		
Scheduled Date:			
Creation Date:	07/12/2017 16:27		
From:	Babalwa Mqokeli		
Recipients:			
Recipient	Action	Date & Time	Comment
birdlife.org.za	Transferred	07/12/2017 16:27	
BC: advocacy@birdlife.org.za(advocacy@birdlife.org.za)	Delivered	07/12/2017 16:27	
daff.gov.za	Transferred	07/12/2017 16:27	
BC: mashuduma@daff.gov.za(mashuduma@daff.gov.za)			
BC: thokob@daff.gov.za(thokob@daff.gov.za)			
drdlr.gov.za	Transferred	07/12/2017 16:27	
BC: bonginkosi.zulu@drdlr.gov.za(bonginkosi.zulu@drdlr.gov.za)	Delivered	07/12/2017 16:27	
dws.gov.za	Transferred	07/12/2017 16:27	
BC: mohapin@dws.gov.za(mohapin@dws.gov.za)	Transferred	07/12/2017 16:31	2.0.0 message relayed
BC: musekenem@dws.gov.za(musekenem@dws.gov.za)	Transferred	07/12/2017 16:31	2.0.0 message relayed
BC: rakgothot@dws.gov.za(rakgothot@dws.gov.za)	Transferred	07/12/2017 16:31	2.0.0 message relayed
environment.gov.za	Transferred	07/12/2017 16:27	
BC: mrabothata@environment.gov.za(mrabothata@environment.gov.za)	Transferred	07/12/2017 16:27	2.0.0 message relayed
BC: SHlela@environment.gov.za(SHlela@environment.gov.za)	Transferred	07/12/2017 16:27	2.0.0 message relayed
BC: tnamarude@environment.gov.za(tnamarude@environment.gov.za)	Transferred	07/12/2017 16:27	2.0.0 message relayed
ewt.org.za	Transferred	07/12/2017 16:27	
BC: adamp@ewt.org.za(adamp@ewt.org.za)	Delivered	07/12/2017 16:27	
BC: ewt@ewt.org.za(ewt@ewt.org.za)	Delivered	07/12/2017 16:27	


SECTION F: APPENDICES

Basic Assessment for IDCNKE Holdings' proposed expansion of a chicken layer facility and vegetable production on Portion 348 of Kameeldrift Farm 313, Pretoria West, Gauteng.

 gauteng.gov.za	Transfere d	07/12/201 7 16:27	
BC: bethuel.netshiswinzhe@gauteng.gov.za(bethuel.netshiswinzhe@gauteng.gov.za)	Transfere d	07/12/201 7 16:27	2.0.0 message relayed
BC: karabo.mohatla@gauteng.gov.za(karabo.mohatla@gauteng.gov.za)	Transfere d	07/12/201 7 16:27	2.0.0 message relayed
BC: phindile.mbanjwa@gauteng.gov.za(phindile.mbanjwa@gauteng.gov.za)	Transfere d	07/12/201 7 16:27	2.0.0 message relayed
BC: phuti.matlamela@gauteng.gov.za(phuti.matlamela@gauteng.gov.za)	Transfere d	07/12/201 7 16:27	2.0.0 message relayed
BC: steven.mukhola@gauteng.gov.za(steven.mukhola@gauteng.gov.za)	Transfere d	07/12/201 7 16:27	2.0.0 message relayed
BC: Tebogo Molokomme(GPSPORTS)(Tebogo.Molokomme@gauteng.gov.za)	Transfere d	07/12/201 7 16:27	2.0.0 message relayed
BC: Zingisa.Smale@gauteng.gov.za(Zingisa.Smale@gauteng.gov.za)	Transfere d	07/12/201 7 16:27	2.0.0 message relayed
 geoscience.org.za	Transfere d	07/12/201 7 16:27	
BC: Sfoya@geoscience.org.za(Sfoya@geoscience.org.za)	Transfere d	07/12/201 7 16:32	2.0.0 message relayed
 gmail.com	Transfere d	07/12/201 7 16:27	
BC: fwvwyk3@gmail.com(fwvwyk3@gmail.com)	Transfere d	07/12/201 7 16:27	2.0.0 message relayed
BC: janniebrecht@gmail.com(janniebrecht@gmail.com)	Transfere d	07/12/201 7 16:27	2.0.0 message relayed
BC: trustoftroy@gmail.com(trustoftroy@gmail.com)	Transfere d	07/12/201 7 16:27	2.0.0 message relayed
 nra.co.za	Transfere d	07/12/201 7 16:27	
BC: Khathutshelo Ramavhoya (HO)(RamavhoyaK@nra.co.za)	Transfere d	07/12/201 7 16:32	2.0.0 message relayed
BC: Victoria Bota (HO)(BotaV@nra.co.za)	Transfere d	07/12/201 7 16:32	2.0.0 message relayed
 sanparks.org	Transfere d	07/12/201 7 16:27	
BC: howard.hendricks@sanparks.org(howard.hendricks@sanparks.org)	Transfere d	07/12/201 7 16:27	2.0.0 message relayed
 tshwane.gov.za	Transfere d	07/12/201 7 16:27	
BC: celiam@tshwane.gov.za(celiam@tshwane.gov.za)	Transfere d	07/12/201 7 16:27	2.0.0 message relayed
BC: elainep@tshwane.gov.za(elainep@tshwane.gov.za)	Transfere d	07/12/201 7 16:27	2.0.0 message relayed

SECTION F: APPENDICES

Basic Assessment for IDCNKE Holdings' proposed expansion of a chicken layer facility and vegetable production on Portion 348 of Kameeldrift Farm 313, Pretoria West, Gauteng.

BC: Tshinyadzo A. Mphephu(TshinyadzoM@tshwane.gov.za)	Transferre d	07/12/201 7 16:27	2.0.0 message relayed
 yahoo.com	Transferre d	07/12/201 7 16:27	
BC: mamseym@yahoo.com(mamseym@yahoo.com)	Transferre d	07/12/201 7 16:27	2.0.0 message relayed

SECTION F: APPENDICES

Basic Assessment for IDCNKE Holdings' proposed expansion of a chicken layer facility and vegetable production on Portion 348 of Kameeldrift Farm 313, Pretoria West, Gauteng.

Postal List for mail sent 04/12/17: Project Announcement documents (BID, Letter dated 04 December 2017, and Registration/Comment Form)

Department of Environmental Affairs- National Mmatlala Rabothata Private Bag X447 Pretoria 0002	Department of Rural Development and Land Reform Bonginkosi Zulu Private Bag X833 Pretoria 0001	Department of Health Albert Marumo Private Bag X35 Johannesburg 2000
Department of Agriculture, Forestry and Fisheries Mashudu Marubini Private Bag X138 Pretoria 0001	Department of Agriculture, Forestry & Fisheries Ms Thoko Buthelezi Private Bag X120 Pretoria 0001	National Department of Water & Sanitation Namisha Muthraparsad Private Bag X313 Pretoria 0001
Department of Agriculture & Rural Development Steven Mukhola PO Box 8769 Johannesburg 2000	Department of Agriculture & Rural Development Phuti Matlamela PO Box 8769 Johannesburg 2000	Department of Agriculture & Rural Development Karabo Mohatla PO Box 8769 Johannesburg 2000
The Provincial Heritage Resources Authority Gauteng Tebogo Molokomme Private Bag X33 Johannesburg 2000	Gauteng Department of Infrastructure Development Bethuel Netshiswinzhe Private Bag X83 Marshalltown 2107	Gauteng Department of Economic Development Phindile Mbanjwa Private Bag X091 Marshalltown 2107
Gauteng Department of Agriculture & Rural Development Zingisa Smale PO Box 8769 Johannesburg 2000	Ms Celia M City of Tshwane Metropolitan Municipality PO Box 1454 Pretoria 0001	Department of Water and Sanitation Ms T Rakgotho Private Bag X313 Pretoria 0001
Tshinyadzo Mpephu City of Tshwane Metropolitan Municipality PO Box 1454 Pretoria 0001	AgriLand Anneliza Collett Private Bag X120 Pretoria 0001	Department of Water & Sanitation Ms M Musekene Private Bag X313 Pretoria 0001

SECTION F: APPENDICES

Basic Assessment for IDCNKE Holdings' proposed expansion of a chicken layer facility and vegetable production on Portion 348 of Kameldrift Farm 313, Pretoria West, Gauteng.

Appendix E3: Proof of newspaper advertisement

Newspaper advertisement in English published in Pretoria News on 23 November 2017



SECTION F: APPENDICES

Basic Assessment for IDCNKE Holdings' proposed expansion of a chicken layer facility and vegetable production on Portion 348 of Kameeldrift Farm 313, Pretoria West, Gauteng.

[Contents of the Newspaper advertisement in English published in the Pretoria News on 23/11/17](#)

Notice of Basic Assessment

**IDCNKE - Portion 348 of Kameeldrift Farm 313,
Kameeldrift West, Pretoria, Gauteng**

Notice is given of a Basic Assessment (BA) process being undertaken on behalf of IDCNKE (the Project Applicant) for the proposed expansion of a chicken layer facility, cultivation of land for vegetable production, and goat farm, on Portion 348 of Kameeldrift Farm 313, Pretoria West, Gauteng.

In terms of the 2014 NEMA EIA Regulations, as amended, published in Government Notice Regulation (GNR) 327 on 7 April 2017 Government Gazette 40772, a BA process is required as the project triggers the following listed activities: GNR 327 Activity 27 and GNR 327 Activity 40 (ii).

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 on the project and/or to register as an I&AP, please provide your full name, full postal address, phone numbers, email address and state your area of interest and/or concern to: **Ms. Babalwa Mqokeli, CSIR, PO Box 320, Stellenbosch 7599, Phone: (021) 888 2432, Fax: (021) 888 2693 or Email: bmqokeli@csir.co.za.** Please contact the indicated person **within 30 days** of this notification.



CSIR
our future through science

SECTION F: APPENDICES

Basic Assessment for IDCNKE Holdings' proposed expansion of a chicken layer facility and vegetable production on Portion 348 of Kameeldrift Farm 313, Pretoria West, Gauteng.

Appendix E4: Communications to and from interested and affected parties

(In response to Project Announcement documents)

1.

(Archive) - Mail From: Trust of Troy <trustoftroy@gmail.com>

File Edit View Actions Tools Window Help Retain

Close Reply Reply All Forward

Mail Properties Message Source Discussion Thread

Trust of Troy <trustoftroy@gmail.com> 11/12/2017 11:04 AM

Re: Notification of Release of BID for Basic Assessment for the Proposed Expansion of a Chicken Layer Facility on Portion 348 of Kameeldrift
to: Babalwa Mqokeli; Dylan Fensham; Pieter Bignaut

Dear Ms Mqokeli
Please find attached the completed form as requested; as well as your basic assessment proposal document where the map is :On Page 4 on the map, I have made notes and indicated the servitutes.

regards
Helene Ferreira-Fensham
082 308 6701

On Thu, Dec 7, 2017 at 4:27 PM, Babalwa Mqokeli <BMqokeli@csir.co.za> wrote:
Good day,

You are hereby notified about the release of the Background Information Document (BID) regarding a Basic Assessment for the proposed expansion of a Chicken Layer Facility on Portion 348 of Kameeldrift Farm 313, Pretoria West in Gauteng. Please find attached the BID, which has been released for 30-day review, and the Registration/ Comment Form. Please return the form on or before **29 January 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. Babalwa Mqokeli
Email: bmqokeli@csir.co.za
Tel: 021 888 2432
Fax: 021 888 2693
Postal: PO Box 320
Stellenbosch
7599
South Africa

Message IDCNKE Form Register I&... Background Information... kameeldrif servitute.TIF

SECTION F: APPENDICES

Basic Assessment for IDCNKE Holdings' proposed expansion of a chicken layer facility and vegetable production on Portion 348 of Kameeldrift Farm 313, Pretoria West, Gauteng.

Basic Assessment for the proposed expansion of a chicken layer facility, and vegetable production, Portion 348 of Kameeldrift Farm 313, Pretoria West, Gauteng

COMMENT AND REGISTRATION FORM

Name: Mrs Helene Ferreira-Fensham	Telephone: 082 308 6701
Organisation: Trust of Troy	Fax:
Position: Trustee	Email: trustoftroy@gmail.com
Physical address: Kameeldrift Farm Plot 71, Portion 7 of Kameeldrift Farm 313	Postal address: PO Box 32844, Totiusdal, 0134

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	Yes
NO	
Please indicate if you have any interest (business, financial, personal or other) in the application for Environmental Authorisation:	
Personal – directly affected	

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

- We have a servitude to the borehole on Mr Taukobong's property. This is registered on our title Deed. Thus registered with the Surveyor General and the Deeds office. The borehole is for our domestic use. Mr Taukobong however has disconnected on 20 May 2017 illegally our water pipes and electricity to the borehole which has our equipment in. This is our plot's main source for water. Mr Taukobong has a borehole on his property for his sole use but refuses to equip the borehole and use it.
2. Due to Mr Taukobong's actions regarding our borehole we had to drill another borehole. This borehole however can only pump for 10 minutes water and thus we are in process to take Mr Taukobong to the High Court for spoliation to recover our right to our borehole.
 3. Mr Taukobong has also built right in the current servitude to our borehole. His house and his sanitation pipes is in direct conflict with the Building laws as he build outside the approved building lines.
 4. The current chicken activities is all ready a problem since the water for our domestic use is now been used for his chicken farming.
 5. The dirty water is running right into the borehole area, thus polluting the groundwater which is a serious health risk and water use risk for us.
 6. The smell of the current chicken farming is all ready a serious problem for us since the wind blows the terrible smell in our direction. There are people living there and this is a health risk to humans and other animals. We all ready had to move our sheep due to Mr Taukobong hi-jacking our water and due to the health risk chickens cause. .
 7. The area is all ready turning into a more residential area and thus farming on this scale should be done far away for other residents.
 8. More chickens and more personnel will result in more water been used which is our domestic water which leaves us with a risk of not enough domestic water.
 9. More chickens and more personnel will result in the risk for high health issues and since the current chicken farming is all ready a health risk for our health and well as for the groundwater quality the risk increases tri-fold.
 10. There is also a servitude on Mr Taukobong's property which is road servitude towards the the southern side and your proposed goats site is right in the servitude. Mr Taukobong is also in a court case with the owner, since he is refusing access - right of way -

SECTION F: APPENDICES

Basic Assessment for IDCNKE Holdings' proposed expansion of a chicken layer facility and vegetable production on Portion 348 of Kameeldrift Farm 313, Pretoria West, Gauteng.

namely the road servitude (also registered with the Deeds office) for the owner behind him. The proposed goat quarter is right in the servitude.

11. Furthermore this is then also a goat farming application and that will also have health risks as well as the possibility of damaging our fence.

12. The servants quarters will also be not be within the allowed building area. Too close to the fence.

13. The road access to our property is shared by surrounding plots and more trucks and vehicles to this chicken farm will also result in blocking our entrance, as well as noise pollution.

13. We require:

- a. restoration of access to our borehole and equipment
- b. fence around servitude towards our borehole
- c. fence to divide the servitude for the road.
- d. maintenance of the road to our property - a tar road and an entrance to Mr ~~Taukobong's~~ plot at least 50 meters away from our entrance.
- e. installation of sound filters to ensure we do not hear any chickens or goats - to prevent noise pollution.
- f. installation of air filters to ensure air pollution is zero..
- g. full medical insurance should any of us affected by this farming get any chicken or goat related disease or any disease related to the pollution of the water of any of the activities on this plot..

14. As owner we want proof of insurance for:

- a. protection against fire;
- b. compensation and protection against loss for property value
- c. protection and insurance for water supply
- d. theft on our property, due to the increase of workers
- e. invasion of privacy as there ~~will~~ be many workers.
- f. insurance on the maintenance / repair of our fence. We have solely erected the fence and has ~~all ready~~ had damages for Mr ~~Taukobong's~~ side of the fence.
- g. full medical insurance for all affected on our plot.

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

Please complete this Comment and Registration Form by **29 January 2018** and submit it to:

Ms. Babalwa Mqokeli
~~Ms. Babalwa Mqokeli~~
P O Box 320,
Stellenbosch, 7599
Tel: 021 888 2432
Fax: 021 888 2693
E-mail: bmqokeli@csir.co.za



SECTION F: APPENDICES

Basic Assessment for IDCNKE Holdings' proposed expansion of a chicken layer facility and vegetable production on Portion 348 of Kameeldrift Farm 313, Pretoria West, Gauteng.

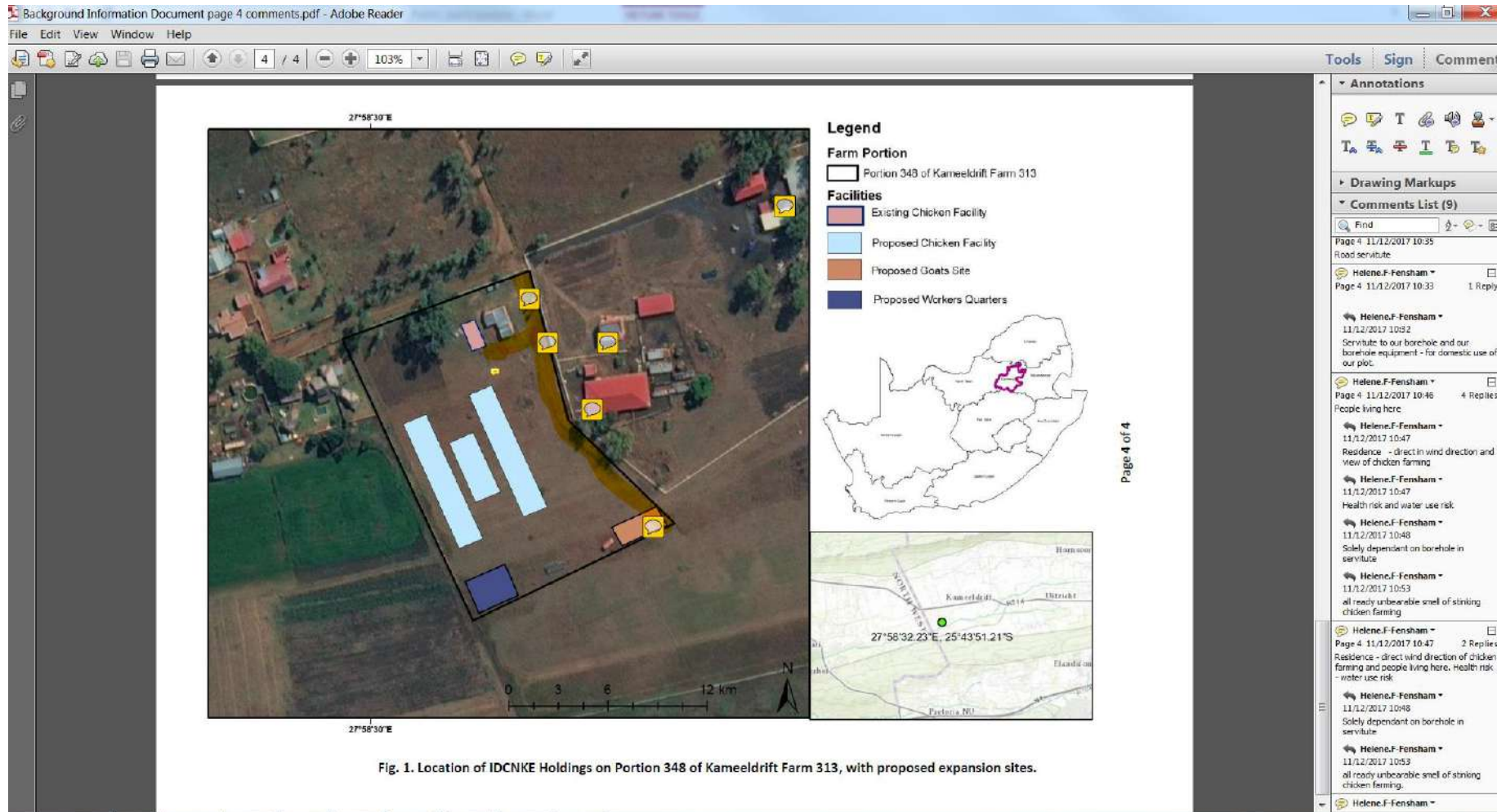
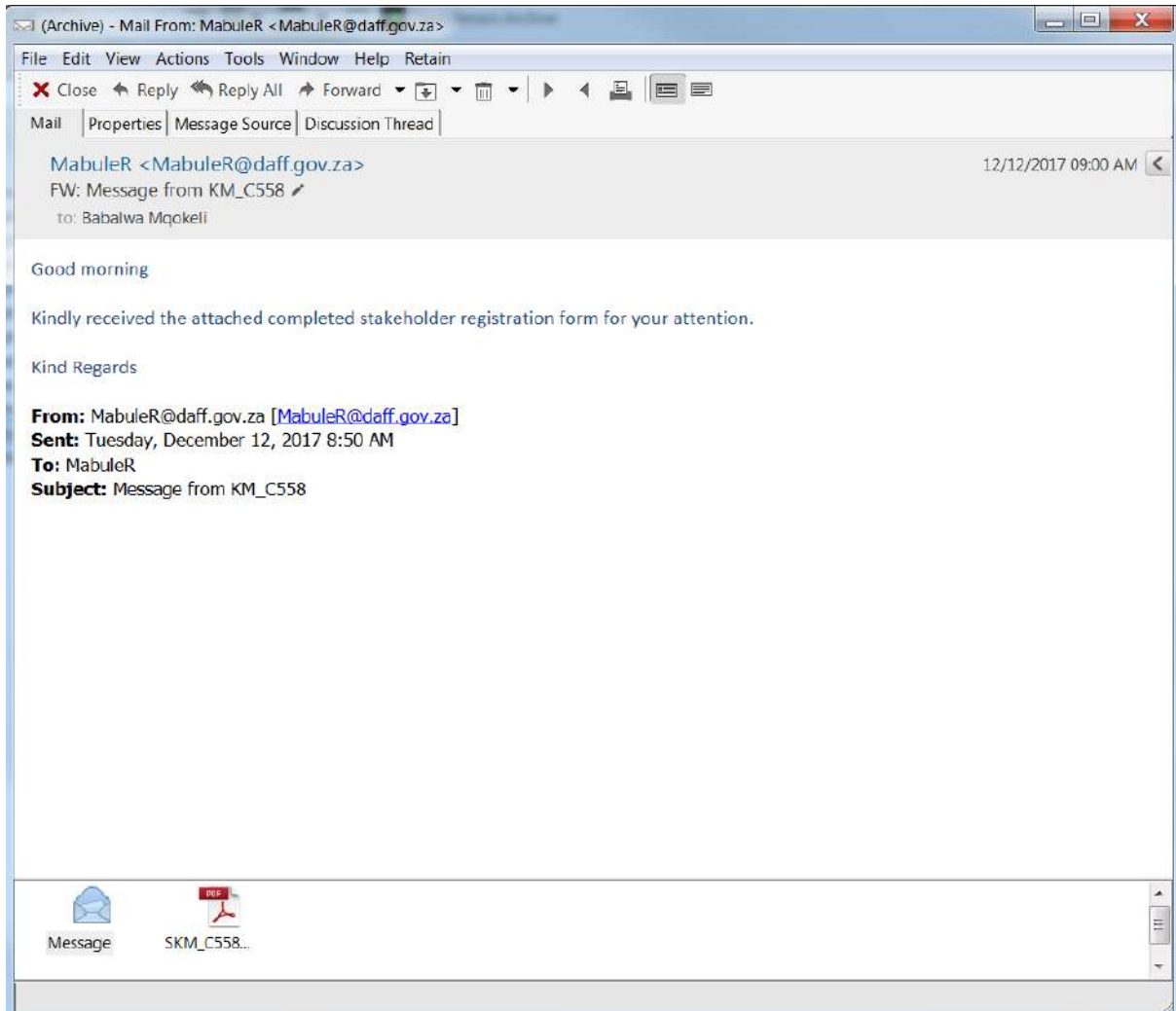


Fig. 1. Location of IDCNKE Holdings on Portion 348 of Kameeldrift Farm 313, with proposed expansion sites.

SECTION F: APPENDICES

Basic Assessment for IDCNKE Holdings' proposed expansion of a chicken layer facility and vegetable production on Portion 348 of Kameeldrift Farm 313, Pretoria West, Gauteng.

2.



SECTION F: APPENDICES

Basic Assessment for IDCNKE Holdings' proposed expansion of a chicken layer facility and vegetable production on Portion 348 of Kameeldrift Farm 313, Pretoria West, Gauteng.

Basic Assessment for the proposed expansion of a chicken layer facility, and vegetable production, Portion 348 of Kameeldrift Farm 313, Pretoria West, Gauteng

COMMENT AND REGISTRATION FORM

Name: <i>Mabule Ramodike</i>	Telephone: <i>012 319 7563</i>
Organisation: <i>DAFF</i>	Fax: <i>—</i>
Position: <i>Land use Advisor</i>	Email: <i>Mabule.Ramodike@daff.gov.za</i>
Physical address: <i>Cnr Union & Annie Botha Deppan Building</i>	Postal address: <i>P/Box 2120 Pretoria 0001</i>

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

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

None

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

The proposed project will contribute to the agriculture production and assist in addressing poverty as the mandate of DAFF. However, the Department will also have to issue written comments on the proposed project. Therefore, as soon as a formal application is received, such comments will be done.

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

—

Please complete this Comment and Registration Form by **29 January 2018** and submit it to:

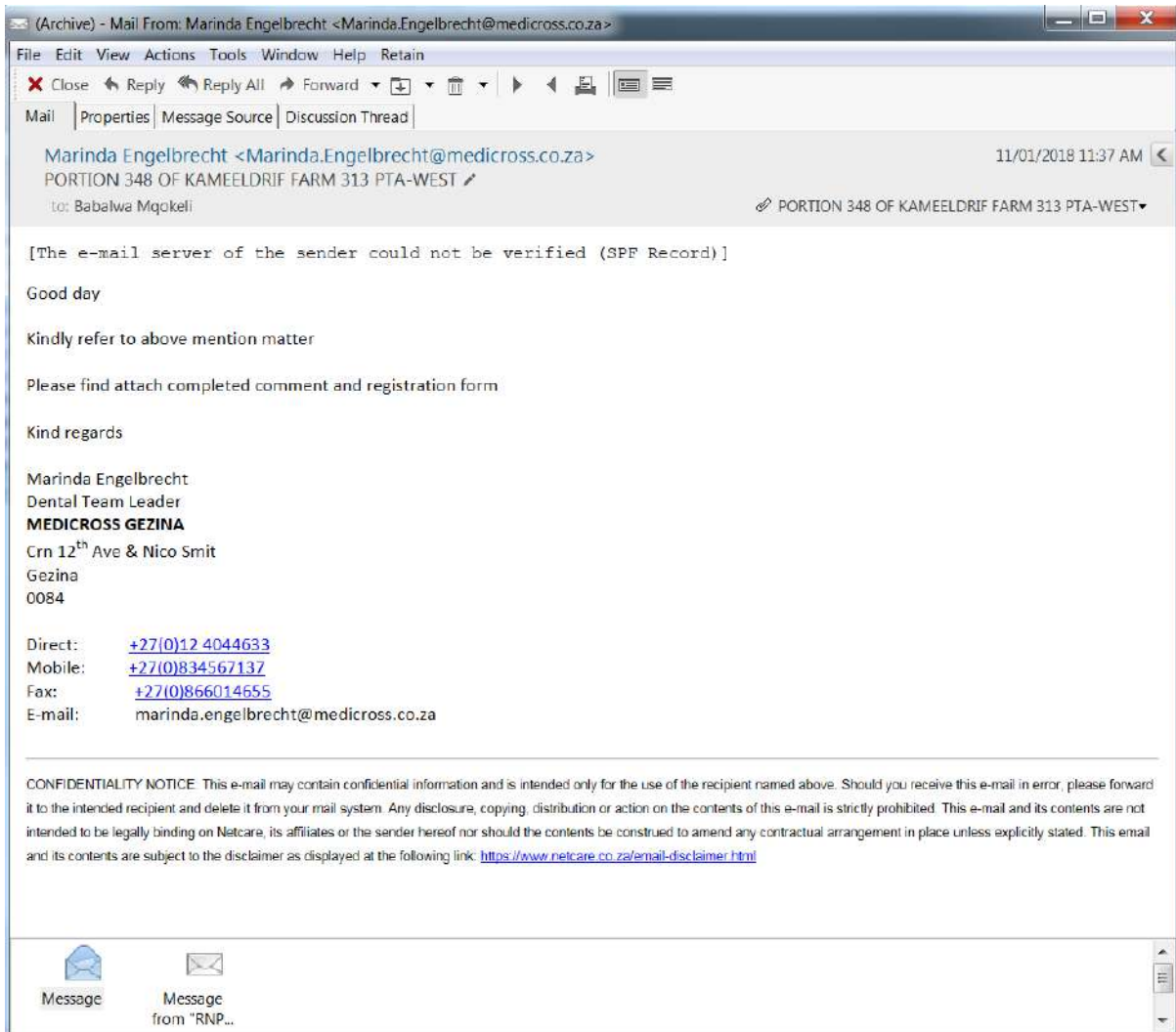
Ms. Babalwa Mqokeli
P O Box 320,
Stellenbosch, 7599
Tel: 021 888 2432
Fax: 021 888 2693
E-mail: bmqokeli@csir.co.za



SECTION F: APPENDICES

Basic Assessment for IDCNKE Holdings' proposed expansion of a chicken layer facility and vegetable production on Portion 348 of Kameeldrif Farm 313, Pretoria West, Gauteng.

3.



SECTION F: APPENDICES

Basic Assessment for IDCNKE Holdings' proposed expansion of a chicken layer facility and vegetable production on Portion 348 of Kameeldrift Farm 313, Pretoria West, Gauteng.

Basic Assessment for the proposed expansion of a chicken layer facility, and vegetable production, Portion 348 of Kameeldrift Farm 313, Pretoria West, Gauteng

COMMENT AND REGISTRATION FORM

Name: JC Engelbrecht	Telephone: 0824214023
Organisation:	Fax:
Position:	Email: janniebrecht@gmail.com
Physical address: Plot 7 Wattstreet Kameeldrift Wes	Postal address: PO Box 911-2074 Rosslyn 0200

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

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

--

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

1) Deed does not allow that big farming 7) Buildings not neatly build
2) Noise smell will be more
3) To close to my house & borehole
4) Crime escalate, theft of chickens
5) No toilettes available for workers
6) Smallholding to small

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

Please complete this Comment and Registration Form by **29 January 2018** and submit it to:

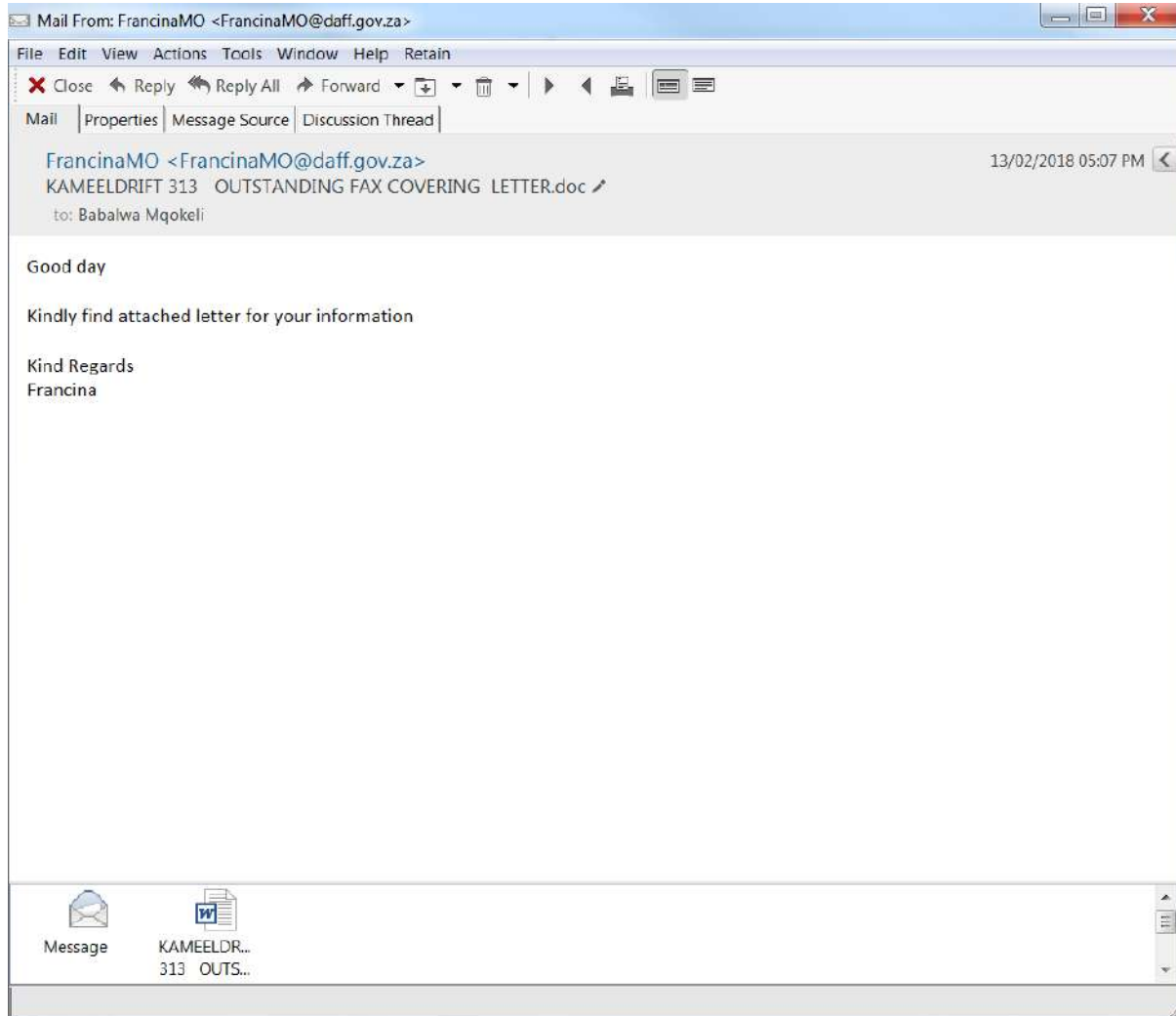
Ms. Babalwa Mqokeli
P O Box 320,
Stellenbosch, 7599
Tel: 021 888 2432
Fax: 021 888 2693
E-mail: bmqokeli@csir.co.za



SECTION F: APPENDICES

Basic Assessment for IDCNKE Holdings' proposed expansion of a chicken layer facility and vegetable production on Portion 348 of Kameeldrift Farm 313, Pretoria West, Gauteng.

4.



SECTION F: APPENDICES

Basic Assessment for IDCNKE Holdings' proposed expansion of a chicken layer facility and vegetable production on Portion 348 of Kameeldrift Farm 313, Pretoria West, Gauteng.



agriculture,
forestry & fisheries

Department:
Agriculture, Forestry and Fisheries
REPUBLIC OF SOUTH AFRICA

**DEPARTMENT: AGRICULTURE
REPUBLIC OF SOUTH AFRICA**

Directorate LUSM Private Bag x 120, PRETORIA, 0001 • Tel: (012) 319 7678

FAX COVER SHEET

DATE: 2018-02-13

TO:	Mr/ms Babalwa Mqokeli		
ORGANISATION:	CSIR Environmental Management Services		
Email	bmqokeli@csir.co.za		
FROM:	Ms Francina		
TEL:	012- 319 7634	Ref No:	2018_01_0109
FAX:	012-329 5938		
NO. PAGES:	1		

PORTION 348 OF THE FARM KAMEELDRIFT NO. 313, GAUTENG PROVINCE

MESSAGE:

With reference to your application for the above mentioned farm, the application is currently in process of the eight steps which have to be completed in order to finalize an application. To assist in the processing it would be highly appreciated if you would please forward to the Department the title deed.

Your urgent attention in this regard will be appreciated.

Regards,
Francina.

SECTION F: APPENDICES

Basic Assessment for IDCNKE Holdings' proposed expansion of a chicken layer facility and vegetable production on Portion 348 of Kameeldrift Farm 313, Pretoria West, Gauteng.

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

Appendix E6: Comments and Responses Report (following project announcement)

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

COMMENTATOR	ISSUE/COMMENT	RESPONSE FROM ENVIRONMENTAL ASSESSMENT PRACTITIONER
1. Helene Ferreira-Fensham (Trust of Troy)	<p>a) We have a servitude to the borehole on Mr Taukobong property. This is registered on our title Deed. Thus registered with the Surveyor General and the Deeds office. The borehole is for our domestic use. Mr Taukobong however has disconnected on 20 May 2017 illegally our water pipes and electricity to the borehole which has our equipment in. This is our plot's main source for water. Mr Taukobong has a borehole on his property for his sole use but refuses to equip the borehole and use it.</p> <p>b) Due to Mr Taukobong's actions regarding our borehole we had to drill another borehole. This borehole however can only pump for 10 minutes water and thus we are in process to take Mr Taukobong to the High Court for spoliation to recover our right to our borehole.</p> <p>c) Mr Taukobong has also built right in the current servitude to our borehole. His house and his sanitation pipes is in direct conflict with the Building laws as he build outside the approved building lines.</p>	<p>a), b) & c) Thank you for your comments. Ms Ferreira-Fensham can discuss the matter regarding access to the borehole with the applicant separately, as it is outside the scope of the Basic Assessment. The purpose of this BA is to assess potential environmental impacts, taking into account socio-economic impacts, associated with the proposed expansion of the chicken facility. The BA seeks to address issues associated with the actual chicken facility expansion.</p>

SECTION F: APPENDICES

Basic Assessment for IDCNKE Holdings' proposed expansion of a chicken layer facility and vegetable production on Portion 348 of Kameeldrift Farm 313, Pretoria West, Gauteng.

COMMENTATOR	ISSUE/COMMENT	RESPONSE FROM ENVIRONMENTAL ASSESSMENT PRACTITIONER
	<p>d) The current chicken activities is all ready a problem since the water for our domestic use is now been used for his chicken farming.</p> <p>e) The dirty water is running right into the borehole area, thus polluting the groundwater which is a serious health risk and water use risk for us.</p> <p>f) The smell of the current chicken farming is all ready a serious problem for us since the wind blows the terrible smell in our direction. There are people living there and this is a health risk to humans and other animals. We all ready had to move our sheep due to Mr Taukobong hi-jacking our water and due to the health risk chickens cause.</p> <p>g) The area is all ready turning into a more residential area and thus farming on this scale should be done far away for other residents.</p> <p>h) More chickens and more personnel will result in more water been used which is our domestic water which leaves us with a risk of not enough domestic water.</p> <p>i) More chickens and more personnel will result in the risk for high health issues and since the current chicken farming is all ready a health risk for our health and well as for the groundwater quality the risk increases tri-fold.</p> <p>j) There is also a servitude on Mr Taukobong's property which is road servitude towards the the southern side and your proposed goats site is right in the servitude. Mr Taukobong is also in a court case with the owner, since he is refusing access</p>	<p>d) IDCNKE (the applicant) has lodged a Water Use Licence Application (WULA) with the Department of Water and Sanitation (DWS) for the proposed chicken facility expansion. Should the licence be granted, the conditions of the WULA will specify the terms of use and/or amount to be used.</p> <p>e) In terms of waste water treatment, a management plan has been included in the Environmental Management Programme (EMPr) of the proposed project (Appendix H). The waste water from cleaning the structures and disinfection process will be diverted to a septic tank and will be pumped out by a private contractor and removed from the farm, as and when necessary. Management of impacts and mitigation measures to reduce the potential for contamination of soils and water bodies, as well as measures to promote environmental best practice have been included in the attached EMPr. The EMPr of this proposed project must form part of the contractual agreement and be adhered to by both the contractors/workers and the applicant.</p> <p>f) This assessment takes cognisance of the concern regarding health risks posed by the proposed project. Appropriate measures will be applied to reduce smells generated by the operation, these have also been included in the EMPr included as Appendix H of this Report. The operational phase of the project should ensure good housekeeping. Cages and the facility will be cleaned on a regular basis to avoid foul smell that can impact on neighbours. A Public Complaints Register must also be maintained at the facility to record all complaints received as well as the actions taken to rectify.</p> <p>g) Information regarding the zoning of the area was requested from the City of Tshwane Municipality. The site falls within an area zoned as Class 4: Normal control zone under the Gauteng Provincial Environmental Management Framework Zones. This zone is dominated by agricultural uses outside the urban development zone as defined in the Gauteng</p>

SECTION F: APPENDICES

Basic Assessment for IDCNKE Holdings' proposed expansion of a chicken layer facility and vegetable production on Portion 348 of Kameeldrift Farm 313, Pretoria West, Gauteng.

COMMENTATOR	ISSUE/COMMENT	RESPONSE FROM ENVIRONMENTAL ASSESSMENT PRACTITIONER
	<p>- right of way - namely the road servitude (also registered with the Deeds office) for the owner behind him. The proposed goat quarter is right in the servitude.</p> <p>k) Furthermore this is then also a goat farming application and that will also have health risks as well as the possibility of damaging our fence.</p> <p>l) The servants quarters will also be not be within the allowed building area. Too close to the fence.</p> <p>m) The road access to our property is shared by surrounding plots and more trucks and vehicles to this chicken farm will also result in blocking our entrance, as well as noise pollution.</p> <p>n) We require:</p> <ol style="list-style-type: none"> i. restoration of access to our borehole and equipment ii. fence around servitude towards our borehole iii. fence to divide the servitude for the road. iv. maintenance of the road to our property - a tar road and an entrance to Mr Taukobong;s plot at least 50 meters away from our entrance. v. installation of sound filters to ensure we do not hear any chickens or goats - to prevent noise pollution. vi. installation of air filters to ensure air pollution is zero. vii. full medical insurance should any of us affected by this farming get any chicken or goat related disease or any disease related to the pollution of the water of any of the activities on this plot. <p>o) As owner we want proof of insurance for:</p>	<p>Spatial Development Framework. Land uses that are compatible with the intention of this zone include animal production, agricultural infrastructure and farm worker accommodation. The zoning certificate for this property in terms of Tshwane Town-Planning Scheme indicates that it is within Use Zone 19: Undetermined, and does support agricultural purposes for which land and buildings may be used and erected.</p> <p>h) As mentioned above, the applicant has lodged a WULA with the DWS for the proposed chicken facility expansion. Water requirements have been specified in this application and should the WUL be granted, the conditions of the WULA will specify the terms of use and/or amount to be used. Water consumption will be kept to a minimum to avoid any significant impacts on the water availability. Water conservation techniques such as rainwater harvesting and water recycling are management actions included in the EMPR to manage and reduce water use.</p> <p>i) This assessment takes cognisance of the concern regarding health risks posed by the proposed project. The construction and operational phase of the project will be guided by the management actions of the EMPr to minimise health risks and water contamination. The recommendations included in this Report and EMPr to manage these impacts must be adhered to.</p> <p>j) The initial proposed goat shelter no longer forms part of the proposed development and therefore the Right of Way will not be obstructed.</p> <p>K) As per the response above, comments relating to the goat shelter are no longer applicable as the proposed goat shelter will no longer be constructed.</p>

SECTION F: APPENDICES

Basic Assessment for IDCNKE Holdings' proposed expansion of a chicken layer facility and vegetable production on Portion 348 of Kameeldrift Farm 313, Pretoria West, Gauteng.

COMMENTATOR	ISSUE/COMMENT	RESPONSE FROM ENVIRONMENTAL ASSESSMENT PRACTITIONER
	<ul style="list-style-type: none"> i. protection against fire; ii. compensation and protection against loss for property value iii. protection and insurance for water supply iv. theft on our property, due to the increase of workers v. invasion of privacy as there will be many workers. vi. insurance on the maintenance / repair of our fence. We have solely erected the fence and has all ready had damages for Mr Taukobong's side of the fence. vii. full medical insurance for all affected on our plot. 	<p>l) As mentioned above, land uses that are compatible with the intention of Zone 4 include farm worker accommodation. The applicant needs to submit the building plans for the proposed development (including the workers quarters to the municipality for approval.</p> <p>m) Increase in traffic will only occur during the construction phase of the project, this impact is temporary and is not expected to be significant as the number of construction trips will be kept to a minimum. Increase in vehicular traffic during the operation phase will also not be significant as this will occur during the transportation of eggs; the eggs will be transported twice a day and the operation will make use of one truck for transportation.. Only one truck will be used to transport the chickens, and that will occur at the start of each cycle, that is when new chickens arrive at the site and are kept for approximately a year for egg production. Mitigation measures and management actions recommended in this Report and EMPr to restrict and/or control access to the site must be adhered to. Any noise complaints must be recorded in the Complaints Register, as well as the actions taken to rectify or address the issue.</p> <p>n)</p> <p>i) - iv) Ms Ferreira-Fensham can discuss the matter regarding access to the borehole, road servitude, fencing etc with the applicant separately, as it is outside the scope of the Basic Assessment. The purpose of this BA is to assess potential environmental impacts, taking into account socio-economic impacts, associated with the proposed expansion of the chicken facility. The BA seeks to address issues associated with the actual chicken facility expansion.</p> <p>v) Management actions to minimise the potential of noise disturbances have been recommended in the EMPr. Unnecessary disturbance of the chickens must be avoided in order to prevent excessive noise from the</p>

SECTION F: APPENDICES

Basic Assessment for IDCNKE Holdings' proposed expansion of a chicken layer facility and vegetable production on Portion 348 of Kameeldrift Farm 313, Pretoria West, Gauteng.

COMMENTATOR	ISSUE/COMMENT	RESPONSE FROM ENVIRONMENTAL ASSESSMENT PRACTITIONER
		<p>chickens. It must also be noted that this is an existing chicken facility with surrounding activities of livestock farming (cattle and sheep) and the area is associated with agricultural activities. Management actions must, however, be implemented to prevent excessive noise that constitute a nuisance to the neighbourhood.</p> <p>vi) Best management practices will be implemented, as suggested in this Report and EMPr, in terms of general waste management and housekeeping rules. Dust suppression measures will be applied to reduce the impact of dust, particularly during the construction phase. Appropriate management actions referred to in the EMPr to reduce odour generated by the chicken facility, such as regular cleaning of the cages and chicken facility, must be implemented.</p> <p>vii) Ms Ferreira-Fensham can discuss the matter regarding medical insurance with the applicant separately, as it is outside the scope of the Basic Assessment.</p> <p>o) This comment is noted. However, as mentioned above, this issue regarding insurance for the items listed falls outside the scope of the Basic Assessment Process and should be discussed separately with the applicant.</p>
2. Mabule Ramodike (Department of Agriculture, Forestry and Fisheries)	The proposed project will contribute to agricultural production and assist in addressing poverty as the mandate of DAFF. However the Department will also have to issue written comments on the proposed project. Therefore, as soon as a formal application is received, comments will be sent.	Thank you for your comment. The proposed project received an official Application reference number from DAFF, and confirmation was received in the form of an official letter that the application is in process. This letter is included as Letter 4 in Appendix E4 above.
3. Marinda Engelbrecht	<p>a) Deed does not allow that big farming</p> <p>b) Noise, smell will be more</p>	<p>Thank you for your comments.</p> <p>a) Information regarding the zoning of the area was requested from the City of Tshwane Municipality. The site falls within an area zoned as Class 4:</p>

SECTION F: APPENDICES

Basic Assessment for IDCNKE Holdings' proposed expansion of a chicken layer facility and vegetable production on Portion 348 of Kameeldrift Farm 313, Pretoria West, Gauteng.

COMMENTATOR	ISSUE/COMMENT	RESPONSE FROM ENVIRONMENTAL ASSESSMENT PRACTITIONER
	<p>c) Too close to my house and borehole</p> <p>d) Crime escalates, theft of chickens</p> <p>e) No toilets available for workers</p> <p>f) Smallholding to small</p> <p>g) Buildings not neatly build</p>	<p>Normal control zone under the Gauteng Provincial Environmental Management Framework Zones. This zone is dominated by agricultural uses outside the urban development zone as defined in the Gauteng Spatial Development Framework. Land uses that are compatible with the intention of this zone include animal production, agricultural infrastructure, and farm worker accommodation.</p> <p>b) Management actions to minimise the potential of noise disturbances have been recommended in the EMPr. Unnecessary disturbance of the chickens must be avoided in order to prevent excessive noise from the chickens. It must also be noted that this is an existing chicken facility with surrounding activities of livestock farming (cattle and sheep) and the area is associated to agricultural activities. Management actions must, however, be implemented to prevent excessive noise that constitute a nuisance to the neighbourhood.</p> <p>c) This assessment takes cognisance of the concern regarding the proximity of the facility to the neighbours, as well as the potential impacts thereof. The construction and operational phase of the project will be guided by the management actions of the EMPr to minimise disturbance and/or intrusion to the neighbours. Best management practices will be implemented, as suggested in this Report and EMPr, in terms of general waste management, odour control, waste water management, noise and prevention of water resource contamination. The proposed development is subject to approval from the City of Tshwane Municipality regarding building plans etc.</p> <p>d) The applicant will take precautionary measures to minimise crime incidents in the area that are associated with the proposed development. The applicant will also hire the services of a security guard to monitor the proposed facility. Chickens will be housed in an enclosed safe area to prevent incidents of theft.</p>

SECTION F: APPENDICES

Basic Assessment for IDCNKE Holdings' proposed expansion of a chicken layer facility and vegetable production on Portion 348 of Kameeldrift Farm 313, Pretoria West, Gauteng.

COMMENTATOR	ISSUE/COMMENT	RESPONSE FROM ENVIRONMENTAL ASSESSMENT PRACTITIONER
		<p>e) The workers quarters proposed will include ablution facilities for use by the employees on site. These facilities must be maintained in a hygienic manner and serviced regularly.</p> <p>f) Several factors have been considered regarding the proposed development. These include the fact that the surrounding area is predominantly agricultural, the applicant owns the farm and is the only land parcel they could acquire, it is an existing facility, and when conducting due diligence – the applicant considered an enterprise that would be suitable for the size of this farm, as well as one that would maximise on quality and demand of the product.</p> <p>g) The existing facility falls outside the scope of this BA Process. The proposed facility infrastructure will be constructed in a manner that is guided by Municipal building laws and those of the Gauteng Department of Agriculture and Rural Development (GDARD) for the actual chicken facility.</p>
Francina M.O (Department of Agriculture, Forestry and Fisheries)	With reference to your application for the above mentioned farm, the application is currently in process of the eight steps which have to be completed in order to finalize an application. To assist in the processing it would be highly appreciated if you would please forward to the Department the title deed.	Thank you for your comment. A copy of the title deed was forwarded to the Department as requested.

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

Appendix E8: Comments from I&APs on amendments to the BA Report - N/A at this stage of the BA process

SECTION F: APPENDICES

Basic Assessment for IDCNKE Holdings' proposed expansion of a chicken layer facility and vegetable production on Portion 348 of Kameeldrift Farm 313, Pretoria West, Gauteng.

Appendix E9: 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						email+post
Department of Environmental Affairs- National	Sibusisiwe Hlela						email
Department of Environmental Affairs- National	Takalani Nemarude						email
Department of Rural Development and Land Reform	Bonginkosi Zulu						email+post
Department of Agriculture, Forestry and Fisheries	Mashudu Marubini						email+post
Department of Agriculture, Forestry and Fisheries (AgriLand and Liaison Officer)	Ms Thoko Buthelezi						email+post
National Department of Water Affairs	Ms Ndileka K mohapi						email + post
National Department of Water Affairs	Namisha Muthraparsad						email + post
PROVINCIAL							
Department of Agriculture and Rural Development	Steven Mukhola						email+post
Department of Agriculture and Rural Development	Karabo Mohatla						email+post
Department of Agriculture and Rural Development	Phuti Matlamela						Email+post
Department of Health	Albert Marumo						email
Department of Water and Sanitation	Ms M Musekene						email+post

SECTION F: APPENDICES

Basic Assessment for IDCNKE Holdings' proposed expansion of a chicken layer facility and vegetable production on Portion 348 of Kameeldrift Farm 313, Pretoria West, Gauteng.

Company/organization	Name	Physical Address	Phone	Postal	Cell	Email	BID + letter 1 + comment form
Department of Water and Sanitation	Ms T Rakgotho						email+post
Gauteng Department of Infrastructure Development	Bethuel Netshiswinzhe						email+post
Gauteng Department of Economic Development	Phindile Mbanjwa						email+post
The Provincial Heritage Resources Authority Gauteng	Tebogo Molokomme						email+post
GDARD waste management	Zingisa Smale						email+post
LOCAL MUNICIPALITY							
City of Tshwane Metropolitan Municipality	Ms Celia M						email+post
City of Tshwane Metropolitan Municipality	Tshinyadzo Mpephu						email+post
WARD COUNCILLORS							
Ward 24 Tshwane Councillor	Mr Van Wyk						email
CLIENT & NEIGHBOURS							
Client	Busisiwe Manghena						email
Neighbours	Jannie Brecht						email
Neighbours	Elaine						email
	Eileen						email
OTHER I&APs							
EWT	Adam Pires						email

SECTION F: APPENDICES

Basic Assessment for IDCNKE Holdings' proposed expansion of a chicken layer facility and vegetable production on Portion 348 of Kameeldrift Farm 313, Pretoria West, Gauteng.

Company/organization	Name	Physical Address	Phone	Postal	Cell	Email	BID + letter 1 + comment form
EWT	Dr Harriet Davies-Mostert						email
Council for Geoscience	Dr Stewart Foya						email
Birdlife	Simon Gear						email
South African National Parks (SANParks)	Dr. Howard Hendricks						email
South African National Roads Agency	Victoria Bota						email
South African National Roads Agency	Khathutshelo Ramavhoya						email
AgriLand	Anneliza Collett						post

SECTION F: APPENDICES

Basic Assessment for IDCNKE Holdings' proposed expansion of a chicken layer facility and vegetable production on Portion 348 of Kameeldrift Farm 313, Pretoria West, Gauteng

BASIC ASSESSMENT REPORT

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

contents

Water Use Licence Authorisation : **Not Applicable at this stage, still in process of applying.**
SAHRA information
Service letters: **Not Applicable**
Water supply information: **Not Applicable**

South African Heritage Resources Agency Letter _____	2
Heritage Impact Assessment Executive Summary from Heritage Contracts and Archaeological Consulting (HCAC) – Full Report included in Appendix G _____	5

SECTION F: APPENDICES

Basic Assessment for the Legae La Tlhago (Pty) Ltd's proposed expansion of a pig production enterprise on Plot 684 Winterveldt Agricultural Holdings in Winterveldt, Pretoria.

South African Heritage Resources Agency Letter

IDCNKE Chicken Layer Facility Expansion

Our Ref: 12092



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: 12092

Date: Friday February 16, 2018
Page No: 1

Letter

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

Attention: Tebogo Taukobong

Proposed expansion of a chicken layer facility, on Portion 348 of Kameeldrift Farm 313, Kameeldrift West, Pretoria, Gauteng.

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 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

SECTION F: APPENDICES

Basic Assessment for the Legae La Tlhago (Pty) Ltd's proposed expansion of a pig production enterprise on Plot 684 Winterveldt Agricultural Holdings in Winterveldt, Pretoria.

IDCNKE Chicken Layer Facility Expansion

Our Ref: 12092



an agency of the
Department of Arts and Culture

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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: 12092

Date: Friday February 16, 2018
Page No: 2

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 viewsapes must also be assessed.

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

Yours faithfully

Andrew Salomon
Heritage Officer: Archaeology
South African Heritage Resources Agency

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

ADMIN:
Direct URL to case: <http://www.sahra.org.za/node/487677>

SECTION F: APPENDICES

Basic Assessment for the Legae La Tlhago (Pty) Ltd's proposed expansion of a pig production enterprise on Plot 684 Winterveldt Agricultural Holdings in Winterveldt, Pretoria.

IDCNKE Chicken Layer Facility Expansion

Our Ref: 12092



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Tel: 021 462 4502
Email: asalomon@sahra.org.za
CaseID: 12092

Date: Friday February 16, 2018
Page No: 3

SECTION F: APPENDICES

Basic Assessment for the Legae La Tlhago (Pty) Ltd's proposed expansion of a pig production enterprise on Plot 684 Winterveldt Agricultural Holdings in Winterveldt, Pretoria.

Heritage Impact Assessment Executive Summary from Heritage Contracts and Archaeological Consulting (HCAC) – Full Report included in Appendix G

<h1>HERITAGE IMPACT ASSESSMENT</h1> <p>(REQUIRED UNDER SECTION 38(8) OF THE NHRA (No. 25 OF 1999))</p> <hr/> <p style="text-align: center;">FOR THE PROPOSED IDCNKE CHICKEN FARM, GAUTENG PROVINCE</p> <hr/>	
<p>Type of development: Agricultural Development</p>	
<p>Client: CSIR</p>	
<p>Client info: Babalwa Mqokeli</p>	
<p>E – mail: BMqokeli@csir.co.za</p>	
<p>Developer: IDCNKE</p>	
	
<p>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</p>	<p><u>Report Author:</u> Mr. J. van der Walt <u>Project Reference:</u> HCAC Project number 218314 <u>Report date:</u> March 2018</p>

SECTION F: APPENDICES

Basic Assessment for the Legae La Tlhago (Pty) Ltd's proposed expansion of a pig production enterprise on Plot 684 Winterveldt Agricultural Holdings in Winterveldt, Pretoria.

Executive Summary

The CSIR is conducting a Basic Assessment for the proposed IDCNKE Chicken Farm, 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 the development footprint as development plans were not available at the time of the survey.

The study area is entirely transformed by previous agricultural activities and in terms of the archaeological component of Section 35 of the NHRA Act 25 of 1999 no raw material suitable for stone tool manufacture occurs in the study area and no ceramics or stone walls attributed to the Iron Age were recorded. Therefore, no further mitigation prior to construction is recommended in terms of the archaeological component of Section 35 for the proposed development to proceed. Based on the SAHRA Palaeontological Sensitivity map the area is of high paleontological significance and further work will be needed during the construction phase of the project.

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 study area is surrounded by existing developments and infrastructure and the proposed development will not impact negatively on significant cultural landscapes or views. 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 EMP and based on approval from SAHRA:

- Implementation of a chance find procedure;
- A Professional palaeontologist should monitor fresh exposures should large scale excavations into unweathered sedimentary bedrock be conducted during the construction phase of the development.

Basic Assessment for IDCNKE Holdings' proposed expansion of a chicken layer facility and vegetable production on Portion 348 of Kameeldrift Farm 313, Pretoria West, Gauteng.

APPENDIX G: SPECIALIST REPORTS



Vegetation Assessment for the proposed expansion of a chicken layer facility, on Portion 348 of Kameeldrift Farm 313, Kameeldrift West, Pretoria, Gauteng.

Date: February 2018

Report drafted on behalf of:

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Indemnity

This 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. 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 at the time of study. Therefore, the author reserves the right to modify aspects of the report including the recommendations if and when new information may become available from ongoing research or further work in this field or pertaining to this investigation.

Although the author exercises due care and diligence in rendering services and preparing documents, she accepts no liability, and the client, by receiving this document, indemnifies the author against all actions, claims, demands, losses, liabilities, costs, damages and expenses arising from or in connection with services rendered, directly or indirectly by the author and by the use of this document.

The Environmental Impact Assessment Regulations (Government Notice No. R982 of 4 December 2014), requires that certain information is included in specialist reports. The terms of reference, purpose of the report, methodologies, assumptions and limitations, impact assessment and mitigation (where relevant to the scope of work) and summaries of consultations (where applicable) are included within the main report. Other relevant information is set out below:

Expertise of author:

- Working in the field of ecology, and in specific vegetation related assessments, since 2007;
- Is registered as a Professional Natural Scientist with the South African Council for Natural Scientific Professions in the field of ecology (Reg. No. 400019/11); and
- Has been working with plants indigenous to South Africa since 1997.


Declaration of independence:

Dimela Eco Consulting in an independent consultant and hereby declare that it does not have any financial or other vested interest in the undertaking of the proposed activity, other than remuneration for the work performed in terms of the National Environmental Management Act, 1998 (Act 107 of 1998). In addition, remuneration for services provided by Dimela Eco Consulting is not subjected to or based on approval of the proposed project by the relevant authorities responsible for authorising this proposed project.

Disclosure:

Dimela Eco Consulting undertake to disclose, to the competent authority, any material information that has or may have the potential to influence the decision of the competent authority or the objectivity of any report, plan or document required in terms of the National Environmental Management Act, 1998 (Act 107 of 1998) and will provide the competent authority with access to all information at its disposal regarding the application, whether such information is favourable to the applicant or not.

Based on information provided to Dimela Eco Consulting by the client, and in addition to information obtained during the course of this study, Dimela Eco Consulting present the results and conclusion within the associated document to the best of the authors professional judgement and in accordance with best practise.



Antoinette Eyssell-Knox
SACNASP Reg. No. 400019/11

____ 2018/02/19 ____
Date

COMPLIANCE WITH THE APPENDICES OF THE AMENDED 2014 EIAs REGULATIONS

Requirements of Appendix 6 of GN R326	Addressed in the Specialist Reports
1. (1) A specialist report prepared in terms of these Regulations must contain-	Appendix D
a) details of- <ul style="list-style-type: none"> i. the specialist who prepared the report; and ii. the expertise of that specialist to compile a specialist report including a curriculum vitae; 	
b) a declaration that the specialist is independent in a form as may be specified by the competent authority;	Appendix E
c) an indication of the scope of, and the purpose for which, the report was prepared;	1. Introduction p 1
d) the date and season of the site investigation and the relevance of the season to the outcome of the assessment;	1.3 Methodology p 1
e) a description of the methodology adopted in preparing the report or carrying out the specialised process;	1.3 Methodology p 1
f) the specific identified sensitivity of the site related to the activity and its associated structures and infrastructure;	4 Vegetation Sensitivity p 19-21
g) an identification of any areas to be avoided, including buffers;	4 Vegetation Sensitivity p 19-21
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 7, p21
i) a description of any assumptions made and any uncertainties or gaps in knowledge;	1.2 Assumption p1
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;	5. Impact assessment 6. Conclusion
k) any mitigation measures for inclusion in the EMPr;	5 Impact assessment
l) any conditions for inclusion in the environmental authorisation;	5 Impact assessment
m) any monitoring requirements for inclusion in the EMPr or environmental authorisation;	5. Impact assessment 6. Conclusion
n) a reasoned opinion- <ul style="list-style-type: none"> i. as to whether the proposed activity or portions thereof should be authorised; and ii. if the opinion is that the proposed activity 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; 	6. Conclusion
o) a description of any consultation process that was undertaken during the course of preparing the specialist report;	NA
p) a summary and copies of any comments received during any consultation process and where applicable all responses thereto; and	NA
q) any other information requested by the competent authority.	-

EXECUTIVE SUMMARY

IDCNKE is a small-scale poultry production and vegetable farm, located on 2 hectares of land on Portion 348 of Kameeldrift Farm 313, Pretoria West, Gauteng. The existing facility currently has 1000 layer chickens and proposes to expand by erecting new structures with a capacity of 40 000 chicken layers, as well as vegetable production and goat farming.

The CSIR is currently undertaking a Basic Assessment Process for the proposed expansion of the agricultural activities and requested Dimela Eco Consulting to assess the vegetation on the property.

The vegetation investigation involved desktop studies, a scan on site and a report indicating amongst others:

- Status quo and description of the vegetation found to be present on site and natural or semi-natural vegetation adjacent to the site (particularly east of the site);
- Comparison of the findings with the Gauteng Conservation Plan;
- Localities of plants or plant communities that are of conservation concern (e.g. Red Data listed species) that were confirmed to occur or are likely to occur;
- An impact assessment; and
- Recommendations and mitigations to conserve threatened species or sensitive vegetation groupings if found to be present.

Vegetation studies should be conducted during the growing season of all plant species that may potentially occur. This may require more than one season's survey with two visits undertaken preferably during November and February. However, this report relied on a single site visit undertaken on the 24th of January 2018. Some species may have been dormant at the time of the assessment. In addition, the grassland on the site was grazed which hampered the identification of some species.

The site is located on two (2) hectares of land on Portion 348 of Kameeldrift Farm 313, Pretoria West, Gauteng. The site is situated within the quarter degree square 2527DB. The chicken layer facility expansion and proposed land for cultivation will encompass 1.06 ha of the 2 ha farm. The existing facility currently has 1000 layer chickens and proposes to expand by erecting new structures with a capacity of 40 000 chicken layers, as well as utilise 0.2 ha of land within the farm for vegetable production.

The site currently includes a residential structure and chicken house on the northern boundary of the site. The plots to the west and east contain residential structures and outbuildings. The land west of the site is cultivated and include irrigation systems, while the land east of the site includes numerous land uses with soil mining and -heaps on the most southerly border. A dirt road on the northern boundary separates the site from secondary grassland. The Swarspruit is situated about 120m south of the site and a non-perennial river that drains into the spruit is situated about 200m west of the site. The site slopes gently southwards towards the Swartspruit. The site is not situated in an area classified as being of conservation

concern, however, an Ecological Support Area, associated with the Swartspruit, is situated south of the site.

The site falls within the historic extent of the Moot Plains Bushveld vegetation type which is classified as being Vulnerable to further transformation of its original extent. The site is *not* situated in a listed ecosystem.

The vegetation on the site was found not to be representative of the Moot Plains Bushveld vegetation type. Instead, the site comprised grassland with a low species diversity. The northern portion of the site comprised degraded grassland classified as being of low ecological importance and sensitivity. The majority of the site was classified as comprising *Themeda-Eragrostis* grassland. The species diversity was low and no bulbous species or plant species of conservation concern were recorded. However, the increased clay content south of the site could be habitat to the Near Threatened *Stenostelma umbiliferum* and the grassland acts as a recharge area for moist grassland and the Swartspruit that occurred south of the site. Although the *Themeda-Eragrostis* grassland was not considered sensitive, it plays a role in the health and functioning of the Swartspruit and was classified as being of medium ecological importance and sensitivity. South of the site, the moist grassland and Swartspruit was classified as being of a high ecological importance and sensitivity.

The grassland vegetation on the site was assessed as being of low to medium ecological importance and sensitivity and other than the potential occurrence of the Near Threatened plant species along the southern boundary of the site, the vegetation on site is not considered sensitive to the proposed developments.

However, the clay soils south of the site grades into moist grassland along the Swarspruit that is situated about 120m south of the site. The moist grassland, including the Swartspruit south of the site, were assessed as being of high ecological importance and sensitivity. The proposed development can proceed, provided that no construction or operational activities negatively impact on the moist grassland south of the site.

Therefore, this assessment found that development on the site will not directly impact sensitive vegetation and could proceed, provided that the construction and operational phase do not impact negatively on the moist grassland.

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1. INTRODUCTION

IDCNKE is a small-scale poultry production and vegetable farm, located on 2 hectares of land on Portion 348 of Kameeldrift Farm 313, Pretoria West, Gauteng. The existing facility currently has 1000 layer chickens and proposes to expand by erecting new structures with a capacity of 40 000 chicken layers, as well as vegetable production and goat farming.

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1.1S Terms of reference

The vegetation investigation involved desktop studies, a scan on site and a report indicating amongst others:

- Status quo and description of the vegetation found to be present on site and natural or semi-natural vegetation adjacent to the site (particularly east of the site);
- Comparison of the findings with the Gauteng Conservation Plan;
- Localities of plants or plant communities that are of conservation concern (e.g. Red Data listed species) that were confirmed to occur or are likely to occur;
- An impact assessment; and
- Recommendations and mitigations to conserve threatened species or sensitive vegetation groupings if found to be present.

1.2 Assumptions and Limitations

Vegetation studies should be conducted during the growing season of all plant species that may potentially occur. This may require more than one season's survey with two visits undertaken preferably during November and February. However, this report relied on a single site visit undertaken on the 24th of January 2018. Some species may have been dormant at the time of the assessment. In addition, the grassland on the site was grazed which hampered the identification of some species.

Even though every care is taken to ensure the accuracy of this report, environmental assessment studies are limited in scope, time and budget. Discussions and proposed mitigations are to some extent made on reasonable and informed assumptions built on *bone fide* information sources, as well as deductive reasoning. Deriving a 100% factual report based on field collecting and observations can only be done over several years and seasons to account for fluctuating environmental conditions and migrations. Since environmental impact studies deal with dynamic natural systems, additional information may come to light at a later stage. We can thus not accept responsibility for conclusions and mitigation measures made in good faith.

1.3 Methodology

The study was undertaken in accordance with the Gauteng Requirements for Biodiversity Assessments Version 2 (GDARD, 2012).

Vegetation:

The vegetation investigation entailed a literature review which included short listing plants of conservation concern that could potentially occur on the site, a visit to the site and reporting.

The site visit was undertaken on the 24th of January 2018. Natural and semi-natural vegetation south and south of the site was also investigated as activities on the site could impact thereon. Natural vegetation and a riparian area were present south of the site and the area was surveyed. A secondary grassland, situated north and higher than the proposed development was not surveyed.

The description of the regional vegetation relied on literature from Mucina & Rutherford (2006). Plant names follow Van Wyk & Van Wyk (1997), Van Wyk & Malan (1997), Pooley (1998), Henderson (2001), Van Oudtshoorn (2002) and Bromilow (2010). Random transects were walked on the site and representative areas in natural or semi-natural vegetation sampled. Any additional information on any other feature thought to have ecological significance within the site, such as dominant species cover abundance, soil type, erosion, rocky cover, alien/exotic/invasive plants, as well as plant species of conservation concern and/or their habitat were also recorded. Plant identification and vegetation description relied on species recorded in the sampling points along the walked transects. Vegetation sensitivity was classified as set out in the assessment criteria in Appendix A.

2. BACKGROUND TO THE STUDY SITE

2.1 Locality and land use

The site is located on two (2) hectares of land on Portion 348 of Kameeldrift Farm 313, Pretoria West, Gauteng (Figure 1). The site is situated within the quarter degree square 2527DB. The chicken layer facility expansion and proposed land for cultivation will encompass 1.06 ha of the 2 ha farm. The existing facility currently has 1000 layer chickens and proposes to expand by erecting new structures with a capacity of 40 000 chicken layers, as well as utilise 0.2 ha of land within the farm for vegetable production.

The site currently includes a residential structure and chicken house on the northern boundary of the site (Figure 2; Photograph 1). The plots to the west and east contain residential structures and outbuildings. The land west of the site is cultivated and include irrigation systems, while the land east of the site includes numerous land uses with soil mining and -heaps on the most southerly border (Figure 1; Photograph 1). The land directly south of the site is vacant and borders the Swartspruit (Figure 3). A dirt road on the northern boundary separates the site from secondary grassland.

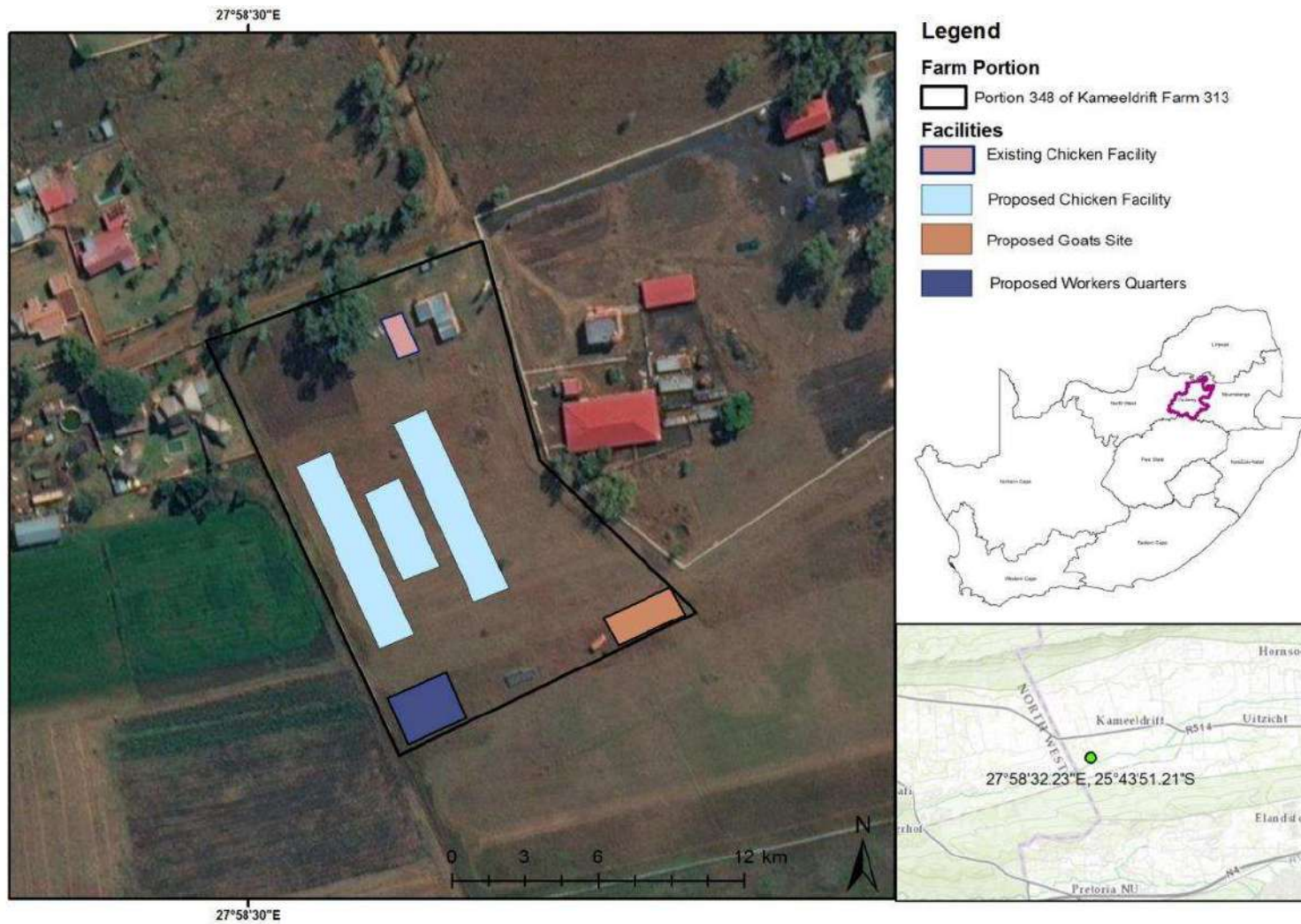


Figure 1: Locality and site layout map



Figure 2: Land cover and land use around the site



Photograph 1: a) Existing buildings on the northern boundary of the site, b) cultivated land west of the site, c) dirt road that forms the northern boundary and secondary grassland beyond the road and d) the property east of the site comprises numerous buildings and soil heaps on its southern boundary

The land directly south of the site was vacant and assessed at the time of the site visit (Photograph 2).



Photograph 2: A view of the site from the vacant land south of the site

2.2 Hydrology and topography

According to the hydrology spatial layers of the Gauteng Conservation Plan v3 (2011), no waterbodies occur on the site. However, the Swarspruit is situated about 120m south of the site and a non-perennial river that drains into the spruit is situated about 200m west of the site (Figure 3). The site slopes gently southwards towards the Swartspruit.

2.3 Gauteng Conservation Plan and Ridges

The Gauteng Conservation Plan (Version 3.3) (GDARD, 2011) classified areas within the province based on its contribution to reach the conservation targets within the province. These areas are either 'Irreplaceable' (must be conserved), 'Important' to reach the conservation targets or 'Ecological Support Areas' (ESAs) to ensure sustainability in the long term.

The site is not situated in an area classified as being of conservation concern, however, an Ecological Support Area, associated with the Swartspruit, is situated south of the site (Figure 4). The site is situated near the Magaliesberg. A class 2 ridge is situated about 1.2km south of the site.

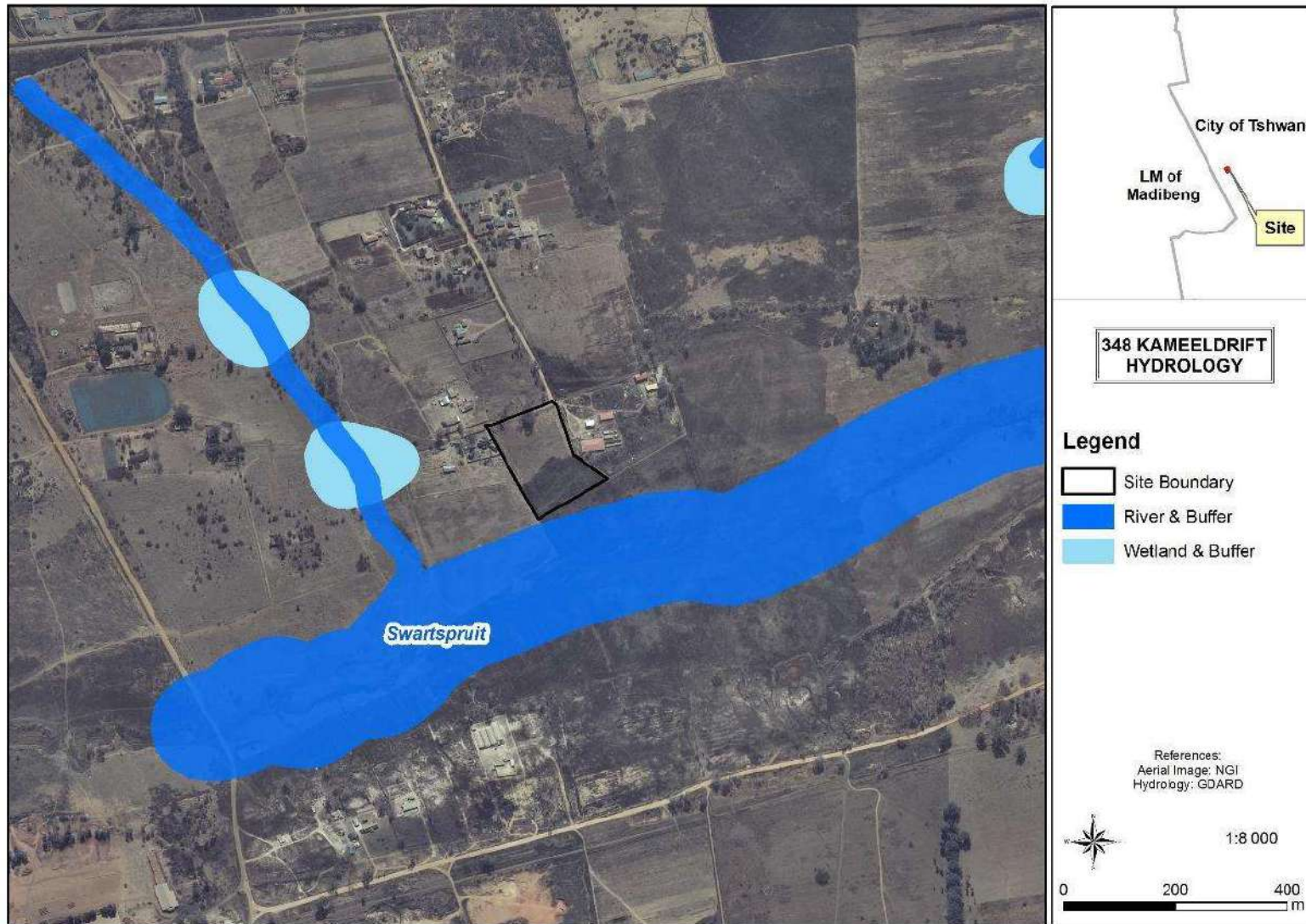


Figure 3: Hydrology of the area that the site is situated in

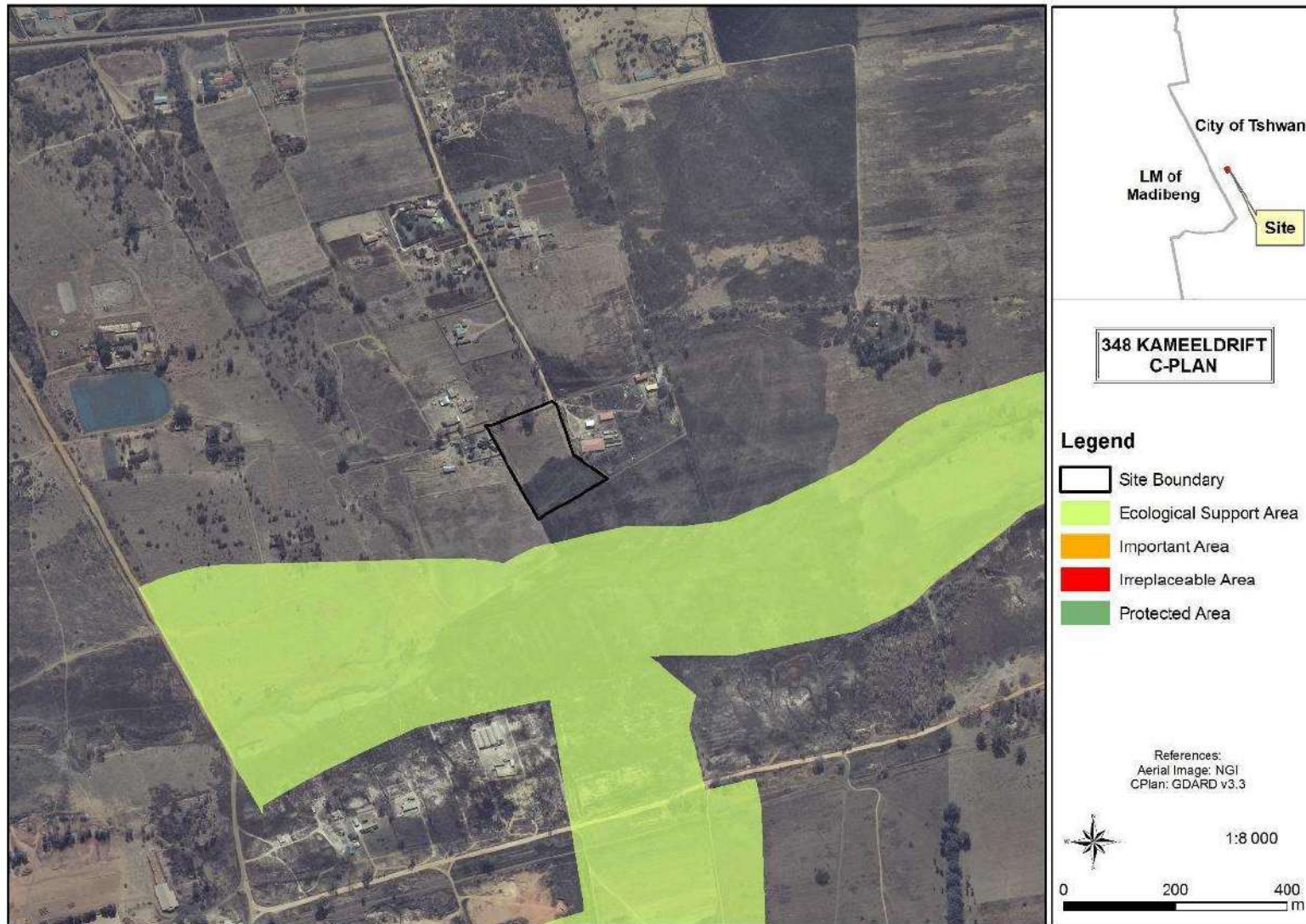


Figure 4: An ESA situated south of the site. No other categories of the Gauteng Conservation Plan is present on or close to the site.

2.4 Soils

The dominant soils are Rensburg (dRG20). The soils comprise red, yellow and / or greyish soils with low to medium base status (National soils - general soil descriptions, bgisviewer.sanbi.org). The soils are deep (1200+mm), black swelling hydromorphic clay, calcareous which are likely to support wetland conditions.

2.5 Overview of Historic Vegetation Type

The site is situated within the Savanna biome of South Africa and in specific within the Central Bushveld Bioregion. The Savanna biome is the largest biome in southern Africa, occupying over one-third of the surface area of the country (Mucina & Rutherford, 2006). It is characterised by a grassy ground layer and a distinct upper layer of woody plants. Where this upper layer is near the ground the vegetation may be referred to as Shrubveld, where it is dense, as Woodland, and the intermediate stages are commonly known as Bushveld (Mucina & Rutherford, 2006). Summer rainfall, coupled with winter fire and regular grazing ensures that the grass layer remains dominant. In addition, the lack of sufficient rainfall prevents the upper layer (trees) from dominating. However, where grazing intensity is high, and fire frequencies low, the tree layer could become increasingly dominant.

The Central Bushveld Bioregion (a bioregion is a vegetation organisation level between that of vegetation type and biome) comprises several vegetation types. The site falls within the Moot Plains Bushveld vegetation type which comprises open to closed, low, often thorny savanna dominated by various species of *Vachellia* and *Senegalia* in the bottomlands and plains as well as woodlands of varying height and density on the lower hillsides. The herbaceous layer is dominated by grasses (Mucina and Rutherford, 2006). Any disturbances to the vegetation on the site and surrounds could modify the site vegetation from this reference state. Typical species expected to occur are listed in Table 1.

Table 1: Typical species occurring in the Moot Plains Bushveld (Mucina and Rutherford, 2006)

Small Trees:	<i>Vachellia nilotica</i> (d), <i>V. tortilis</i> subsp. <i>heteracantha</i> (d), <i>Searsia lancea</i> (d).
Tall Shrubs:	<i>Buddleja saligna</i> (d), <i>Euclea undulata</i> (d), <i>Olea europaea</i> subsp. <i>africana</i> (d), <i>Grewia occidentalis</i> , <i>Gymnosporia polyacantha</i> , <i>Mystroxydon aethiopicum</i> subsp. <i>burkeanum</i> .
Low Shrubs:	<i>Aptosimum elongatum</i> , <i>Felicia fascicularis</i> , <i>Lantana rugosa</i> , <i>Teucrium trifidum</i> .
Succulent Shrub:	<i>Kalanchoe paniculata</i> .
Woody Climber	<i>Jasminum breviflorum</i> .
Herbaceous Climber	<i>Lotononis bainesii</i>
Graminoids:	<i>Heteropogon contortus</i> (d), <i>Setaria sphacelata</i> (d), <i>Themeda triandra</i> (d), <i>Aristida congesta</i> , <i>Chloris virgata</i> , <i>Cynodon dactylon</i> , <i>Sporobolus nitens</i> , <i>Tragus racemosus</i>
Herbs:	<i>Achyroopsis avicularis</i> , <i>Corchorus asplenifolius</i> , <i>Evolvulus alsinoides</i> , <i>Helichrysum nudifolium</i> , <i>H. undulatum</i> , <i>Hermannia depressa</i> , <i>Osteospermum muricatum</i> , <i>Phyllanthus maderaspatensis</i> .

The Moot Plains Bushveld is transformed mainly by cultivation and urban and built-up areas, however, infestation by alien plants including *Cereus jamacaru*, *Eucalyptus* species, *Jacaranda mimosifolia*, *Lantana camara*, *Melia azedarach* and *Schinus* species contribute to the degradation of this vegetation type which is classified as being Vulnerable to further transformation of its original extent (Mucina and Rutherford, 2006).

2.6 Listed Ecosystems

The National Environmental Management: Biodiversity Act (Act 10 of 2004) provides for listing threatened or protected ecosystems in one of four categories: critically endangered (CR), endangered (EN), Vulnerable (VU) or Protected (Section 52(1)(a) of the National Environmental Management: Biodiversity Act (Government Gazette 34809, Government Notice 1002, 9 December 2011)). The ecosystem status is based on the percentage of original area remaining untransformed (by croplands, mining, urban development & roads) in relation to the biodiversity target and a threshold for ecosystem functioning. The purpose of listing threatened ecosystems is primarily to reduce the rate of ecosystem and species extinction. This includes preventing further degradation and loss of structure, function and composition of threatened ecosystems. The site is situated is *not* situated in a listed ecosystem.

3. RESULTS: VEGETATION

The vegetation on site, as well as south and south-east of the site were surveyed and the result is geographically represented in Figure 5 below and discussed separately thereafter. The plant species recorded are listed in Appendix B.

3.1 Vegetation observed on the site:

The vegetation on the site was not representative of the Moot Plains Bushveld vegetation type. Instead, the site comprised grassland with a low species diversity, including areas that are degraded.

3.1.1 Degraded and modified grassland

The vegetation around the existing infrastructure on the northern portion of the site was degraded. Although typical grassland grass species such as *Themeda triandra* (red grass), *Cynodon dactylon* (couch grass), *Aristida congesta* and *Heteropogon contortus* (spear grass) were recorded, the soils were disturbed and alien and invasive species such as *Verbena tenuisecta*, *Conyza* species and *Solanum elaeagnifolium* dominated the herbaceous layer (Photograph 3) (Appendix B). No plant species of conservation concern were recorded here, and it is highly unlikely to occur.

A total of eight (8) grass, three (3) forb and two (2) two species were recorded (indigenous).

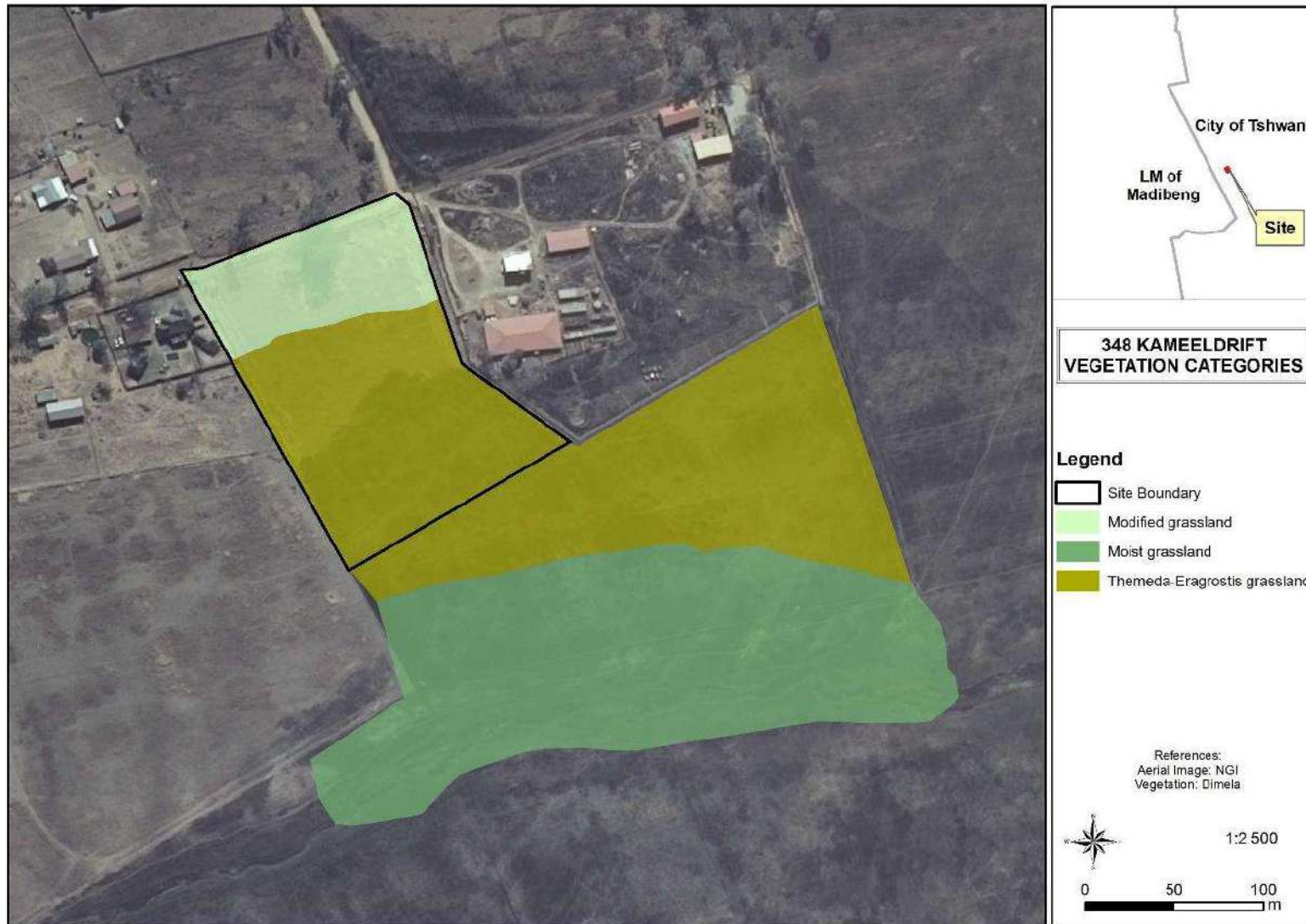


Figure 5: Vegetation of the site and to the south and south east



Photograph 3: Degraded grassland on the northern portion of the site

3.1.2 *Themeda-Eragrostis* grassland

Most of the site comprised grassland on loam to clay soils. The grassland was recently grazed and short at the time of the site visit (Photograph 4). The grass layer included a patchy dominance of *Themeda triandra* (red grass), *Eragrostis chloromelas* (narrow leaf love grass) and *Heretopogon contortus* (spear grass) with *Ischaemum fasciculatum* (hippo grass) becoming more dominant towards the southern portion of the site where the clay content was higher. Other common grasses included *Aristida congesta*, *Hyparrhenia hirta* (common thatching grass) and *Cynodon dactylon* (couch grass) (Appendix B).

The forb layer was depauperate. The only indigenous forbs recorded in the walked transects were *Cucumis zeyheri*, *Polygala hottentotta*, *Nidorella anomala*, *Helichrysum rugulosum*, *Rhynchosia adenodes*, *Gazania krebsiana*, *Lactuca inermis* (wild lettuce) and *Xysmalobium undulatum* (bitterhout). No bulbous species were recorded. Additional forb species, adapted to growing in moist conditions, were recorded south of the site (see section 3.2). Exotic and invasive plant species within the grassland on the site included *Verbena tenuisecta* (fine-leaved Verbena) and limited numbers of the invasive *Campuloclinium macrocephalum* (pom-pom weed). The indigenous tree *Vachellia karroo* (sweet thorn) and the shrub *Rhynchosia nitens* colonised localised disturbances on the site. Disturbances were mostly noted along fence lines with neighbouring properties. The vegetation does not characterize Moot Plain Bushveld if typical species listed in Table 1 is compared to the species recorded on the site.

A total of twelve (12) grass, eleven (11) forb and one (1) tree species were recorded (indigenous). The low species diversity and the sites' altered state from bushveld to grassland, indicates that the site was likely cultivated at some stage. Available historical aerial imagery (Google Earth) from 2002 do not indicate any cultivation, however, the site already comprised open grassland. It is thought that the site was historically (prior to 2002) planted with pasture and that regular grazing or baling at that time, limited the forb, shrub and tree diversity on the site. No plant species of conservation concern was recorded or are expected to be present within this grassland on the site.



Photograph 4: *Themeda-Eragrostis* grassland on the site

3.2 Vegetation south and south-east of the site

The site slopes southwards towards the Swartspruit. The proposed activities on the site could impact on vegetation south and south-east of the site and therefore these areas were also assessed.

Two broad vegetation groups were recorded: *Themeda-Eragrostis* clay grassland and moist grassland.

3.2.1 *Themeda-Eragrostis* clay grassland

This grassland is a continuation of the grassland on the site, extending towards the moist grassland along the Swartspruit (Photograph 5). *Themeda triandra* (red grass), *Eragrostis curvula* and *E. superba* are common species. The grasses *Setaria incrassata* (vlei bristle grass) and *Ischaemum fasciculatum* (hippo grass) were more frequent and formed dominant stands due to the higher clay and moisture content of the soils. Additional species in the forb layer included *Berkheya radula*, *Scabiosa columbaria*, *Pelargonium luridum* and *Dipcadi rigidifolium* (skaamblommetjie) (Appendix B). No plant species of conservation concern was recorded; however, the clay soils provide suitable habitat for the Near Threatened

Stenostelma umbelluliferum. The invasive *Cirsium vulgare* (Scotch thistle) was also recorded in the moist clay soils.

A total of eight (8) grass and seven (7) forb species were recorded (indigenous).



Photograph 5: Grassland extending from the southern boundary of the site towards the Swartspruit. An old fence, visible in the background, separates the grassland from the Swartspruit.

3.2.2 Moist grassland

The moist grassland was characterised by hydrophytic plants (plants typically found in wet habitats or at least temporarily/seasonally wet soils) and could be indicative of wetland conditions. The moist grassland was also associated with black clay soils. The grass layer was dominated by *Setaria incrassata*, *Cymbopogon validus* (giant turpentine grass) and *Hyparrhenia hirta*. Young individuals of *Phragmites australis* (common reed) were also recorded. *Berkheya radula* and *Nidorella anomala* were the dominant forbs, with limited *Senecio* species and *Haplocarpa scaposa* (Photograph 6).

Beyond a fence line, the moist grassland adjoins the Swartspruit (Photograph 7). The spruit was eroded and in some portions the channel supported dominant stands of *Phragmites australis*, as well as the tree *Vachellia karoo*. Although no plant species of conservation concern were recorded here, suitable habitat for at least one species is present (see 3.3).

A total of eight (8) grass, ten (10) forb and one (1) tree species were recorded (indigenous).



Photograph 6: Moist grassland about 30m south of the site



Photograph 7: The Swartspruit about 120m south of the site

3.3 Summary of Plants of Conservation Importance

3.3.1 Threatened or Protected Plant Species (TOPS)

Chapter 4, Part 2 of the National Environmental Management: Biodiversity Act (No. 10 of 2004), (NEMBA) provides for listing of plant and animal species as threatened or protected. If a species is listed as threatened, it must be further classified as Critically Endangered, Endangered or Vulnerable. These species are commonly referred to as TOPS listed. The Act defines these classes as follows:

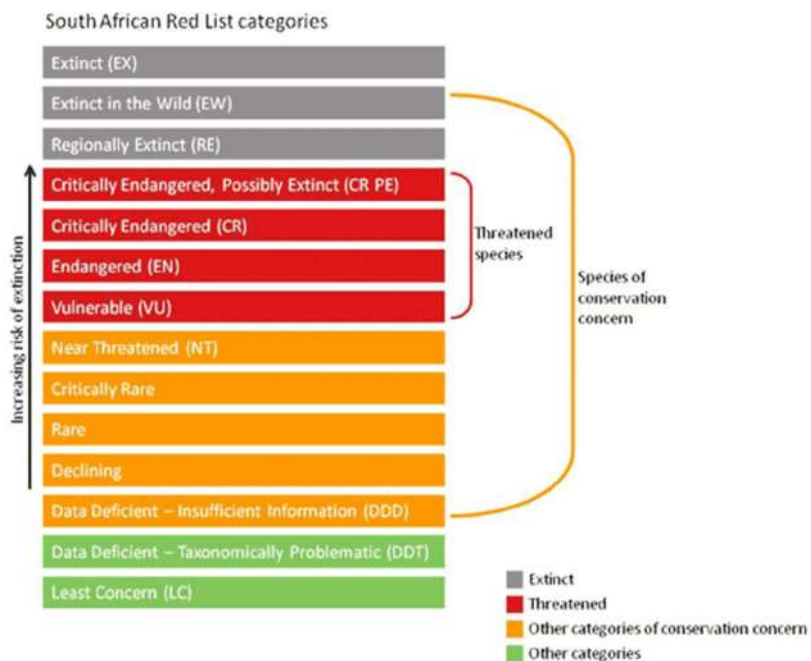
- Critically endangered species: any indigenous species facing an extremely high risk of extinction in the wild in the immediate future.
- Endangered species: any indigenous species facing a high risk of extinction in the wild in the near future, although it is not a critically endangered species.
- Vulnerable species: any indigenous species facing an extremely high risk of extinction in the wild in the medium-term future; although it is not a critically endangered species or an endangered species.
- Protected species: any species which is of such high conservation value or national importance that it requires national protection. 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).

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 first list of threatened and protected species published under NEMBA was published in the government gazette on the 23rd of February 2007 along with the Regulations on Threatened or Protected Species.

No TOPS species are expected to occur on the site.

3.3.2 Threatened Species or Plant Species of Conservation Concern

The Threatened Species Programme of the South African National Biodiversity Institute (SANBI) published the Red List of South African Plants (Raimondo *et al*, 2009). An online version provides up to date information on the national conservation status of South Africa's indigenous plants. The Red List includes the Threatened species as per the TOPS list and makes provision for additional categories. These are referred to as Plants of Conservation Concern and are those plants that are important for South Africa's conservation decision making processes and include all plants that are Threatened, Extinct in the wild, Data deficient, Near-threatened, Critically rare, Rare and Declining (Figure 6). These plants are also referred to as Red Listed plants.



(Source: <http://redlist.sanbi.org/redcat.php>)

Figure 6: Threatened species and species of conservation concern

A list of plants of conservation concern that may occur on or around the site was compiled using information from the Plants of Southern Africa (POSA) website, as well as information received from the Gauteng Department of Agriculture and Rural Development (GDARD).

Eight (8) plants of conservation concern that were previously recorded in the quarter degree square that the site is situated in, or may potentially occur are listed in Appendix C. Most of these species are associated with the Magaliesberg and rocky mountainous areas and therefore no suitable habitat is present on the site. However, the clay soils south of the site provide suitable habitat for one species, *Stenostelma umbelluliferum*. Although this plant was not recorded in walked transects, its inconspicuous nature makes it easy to be overlooked and therefore it may yet be present.

3.3.3 Provincially Protected Plants

Several provincially protected plants are listed in the Transvaal Nature Conservation Ordinance Act No. 12 of 1983. These plants are not to be removed, damaged, or destroyed without permit authorisation from Gauteng Department of Agriculture and Rural Development (GDARD). None of these species were recorded in walked transects at the time of the field survey, however, the bulbous *Crinum lurgadii* might be present along the Swartspuit.

4. VEGETATION SENSITIVITY

It has been clearly demonstrated that vegetation not only forms the basis of the trophic pyramid in an ecosystem, but also plays a crucial role in providing the physical habitat within which organisms complete their life cycles (Kent & Coker 1992). Therefore, the vegetation of an area will largely determine the ecological sensitivity thereof. The vegetation sensitivity assessment aims to identify whether the vegetation within the study area is of conservation concern and thus sensitive to development as it is amongst others:

- Situated in a listed ecosystem or threatened vegetation unit;
- Habitat or potential habitat to threatened plants, protected plants or protected trees;
- Situated within ecologically sensitive features such as rocky areas, ridges, wetlands or riparian areas; and
- Untransformed and un-fragmented natural vegetation.

4.1 Rating and Analysis of Vegetation Importance

To determine the sensitivity of the vegetation groups that could be impacted on, weighting scores and criteria as in Appendix A were applied. The results of the scoring places the vegetation in either of the sensitivity classifications as listed in Table 2 below. Vegetation with a low score are not considered to be sensitive. The resulting vegetation sensitivity is geographically represented in Figure 7.

Table 2: Weighting scores

Scoring	18-13	12-7	6-0
Sensitivity	High	Medium	Low

Table 3: Scoring of vegetation importance on and south of the site

Broad vegetation community	Conservation Status of regional Vegetation	Predominant state	Level of protection	Plants of conservation concern	Ecological Function	Conservation Importance / unique habitat	Total Score out of max of 18	Importance and vulnerability
Modified grassland on northern portion of the site	1	1	0	0	0	0	2	low
<i>Themeda-Eragrostis</i> grassland	1	1	0	2	2	1	7	Medium (to low)
Moist grassland (south of the site)	1	2	3	2	3	3	14	high

As per Table 3, the vegetation associated with the moist grassland (south of the site) was rated as being of high sensitivity. Moist grasslands are usually indicative of wetland areas and should be verified by a

wetland specialist. All watercourses in South Africa (albeit non-perennial or degraded) are protected by the National Water Act (Act 10 of 1998). In addition, the moist grassland falls within an ESA and play an important role in the health and functioning of the Swartspuit and downstream watercourses.

The *Themeda-Eragrostis* grassland was the dominant vegetation on the site and south thereof, and was rated as being of medium ecological importance, albeit modified from the reference state of Moot Plains Bushveld. The species diversity was low; however, the most southern, clayish portion of the site could provide suitable habitat to the Near Threatened *Stenostelma umbelluliferum*. Furthermore, the grassland serves as catchment area to the Swartspuit. Provided that these two functions are addressed, the grassland is not considered sensitive to the proposed development.

The degraded grassland was rated as low sensitivity based on its low species diversity, presence of alien and invasive species and the absence of species of conservation concern or suitable habitat for such species.

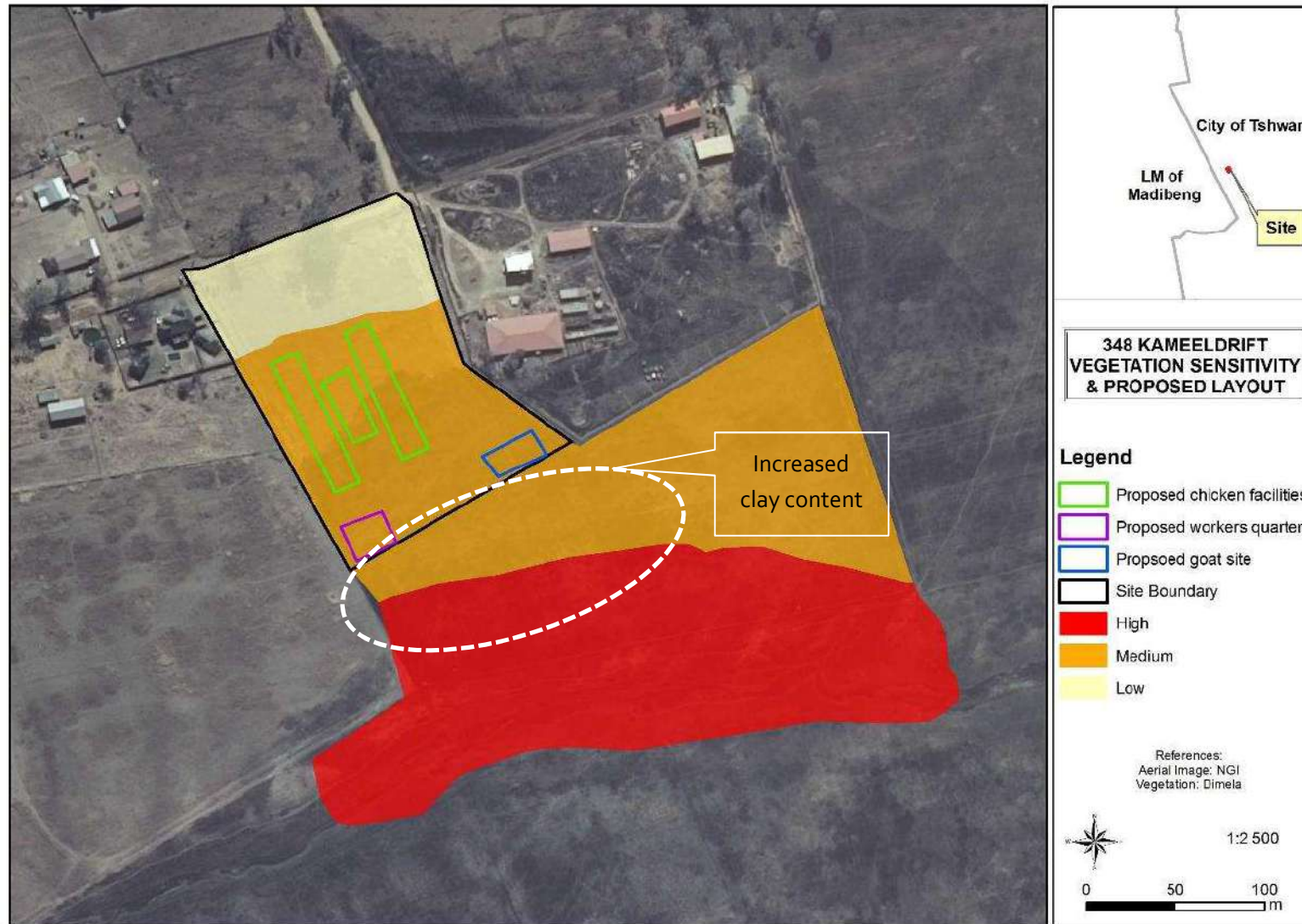


Figure 7: Vegetation sensitivity of the site and surrounds. The clay content of the soil increases south of the site

5. IMPACT ASSESSMENT

5.1 Impact statement

The most significant impact on vegetation is expected to occur during the construction phase, with the greatest impacts expected to be the removal of natural vegetation in proximity to the moist grassland and the likelihood of invasion by invasive plant species.

If the proposed footprint is restricted to the area classified as being of low or medium sensitivity, the impact on vegetation is considered to be low and restricted to edge effects. However, mitigations measures are imperative to protect the moist grassland and proximate Swartspuit.

5.2 Alternative site preference

No alternative was assessed.

5.3 Impacts Assessment

The impact assessment followed the prescribed instructions from the CSIR and were as follows:

Potential impacts were 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.

The tables below assess the direct and indirect impacts of construction (Table 4 & 5) and the indirect impacts of operation (Table 6). If mitigation measures are implemented no cumulative impacts as is listed in Table 7 are expected.

Table 4: Assessment of direct impacts associated with the construction of the proposed facilities

Construction Phase										
Direct Impacts										
Impact Description	Mitigation	Spatial Extent	Intensity	Duration	Reversibility	Irreplaceability	Probability	Significance & Status		Confidence
								Without Mitigation	With Mitigation	
Destruction of grassland vegetation • clearing of vegetation for the development footprints	<ul style="list-style-type: none"> Activities should be restricted to the modified and <i>Themeda-Eragrostis</i> grassland on the site Remove only the vegetation where essential for construction and do not allow any disturbance to the adjoining natural vegetation cover. Limit hard impervious surfaces. Instead, retain grassland vegetation to ensure water infiltration Construction camps and storage of equipment should be planned in areas of low sensitivity as far as possible, or at least as far as possible from the moist 	Site specific	Medium	Long term	Moderate	Low	Highly probable	Medium Neutral	Low Neutral	High

Construction Phase										
Direct Impacts										
Impact Description	Mitigation	Spatial Extent	Intensity	Duration	Reversibility	Irreplaceability	Probability	Significance & Status		Confidence
								Without Mitigation	With Mitigation	
	grassland south of the site									
Clearing of land for construction and potential pollution of the soil	<ul style="list-style-type: none"> Prevent spillage of construction material and other pollutants, contain and treat any spillages immediately, strictly prohibit any pollution/littering according to the relevant EMP No vehicles may be washed on the property, except in suitably designed and protected areas as to prevent polluted water reaching the Swartspruit south of the site No vehicles may be serviced or repaired on the property, unless it is an emergency situation in which 	Local	Medium	Temporary	Moderate	Moderate	Probable	Medium Negative	Low Negative	High

Construction Phase										
Direct Impacts										
Impact Description	Mitigation	Spatial Extent	Intensity	Duration	Reversibility	Irreplaceability	Probability	Significance & Status		Confidence
								Without Mitigation	With Mitigation	
	case adequate spillage containment must be implemented									
Destruction of moist grassland south of the site: <ul style="list-style-type: none"> Construction activities that encroach on the moist grassland e.g. storage of equipment, driving within moist grassland etc Lack of natural vegetation on the site could drastically reduce water holding capacity and the subsequent loss of the ecological function of the 	<ul style="list-style-type: none"> It is recommended that the need for a wetland assessment be assessed. Protective buffer areas around wetlands (as delineated by a wetland specialists) should be adhered to. Such buffer areas may intrude into the site. No development or related activities should take place within the moist grassland south of the site without authorization from the Department of Water and Sanitation. No vehicles may drive in the moist grassland No access routes are allowed in the moist grassland 	Local	Medium	Long term	Moderate	Moderate	Probable	High Negative	Medium Negative	Medium

Construction Phase										
Direct Impacts										
Impact Description	Mitigation	Spatial Extent	Intensity	Duration	Reversibility	Irreplaceability	Probability	Significance & Status		Confidence
								Without Mitigation	With Mitigation	
vegetation as catchment to the moist grassland and Swartspruit	<ul style="list-style-type: none"> Remove only the vegetation where essential for construction and do not allow any disturbance to the adjoining natural vegetation cover. Trucks and equipment should only be washed in dedicated areas and the dirty water is not allowed to discharge into the Swartspruit or surrounding natural vegetation. A temporary fence or demarcation must be erected around the operations area to prevent access to the moist grassland 									
Exposure of the soil to erosion and subsequent sedimentation of proximate moist grasslands and watercourses	<ul style="list-style-type: none"> Do not allow erosion to develop on a large scale before taking action. Retain vegetation and soil in position for as long as possible, removing it 	Site specific	Medium	Long term	Moderate	Moderate	Probable	Medium Negative	Low Neutral	Medium

Construction Phase										
Direct Impacts										
Impact Description	Mitigation	Spatial Extent	Intensity	Duration	Reversibility	Irreplaceability	Probability	Significance & Status		Confidence
								Without Mitigation	With Mitigation	
<ul style="list-style-type: none"> removal of surface vegetation will expose soil that could lead to erosion and sedimentation 	<p>immediately ahead of construction / earthworks in that area (DWAF, 2005).</p> <ul style="list-style-type: none"> Remove only the vegetation where essential for construction and do not allow any disturbance to the adjoining natural vegetation cover. Protect all areas susceptible to erosion (especially stockpiled soils and materials such as sand and tar) and ensure that there is no undue soil erosion resultant from activities within and adjacent to the construction camp and work areas. 									
<p>Spread of alien invasive vegetation:</p> <ul style="list-style-type: none"> Spread from existing infestations construction vehicles and 	<ul style="list-style-type: none"> Alien invasive species, that were identified within the study area should be removed (prioritizing category 1 species), prior to construction. This will prevent the spread of 	Local	Medium	Long term	Moderate	Low	Probable	Medium Negative	Low Neutral	High

Construction Phase										
Direct Impacts										
Impact Description	Mitigation	Spatial Extent	Intensity	Duration	Reversibility	Irreplaceability	Probability	Significance & Status		Confidence
								Without Mitigation	With Mitigation	
equipment could introduce alien invasive plant seeds	seeds into disturbed soils. <ul style="list-style-type: none"> • All alien seedlings and saplings must be removed as they become evident for the duration of construction. • Manual / mechanical removal is preferred to chemical control. • All construction vehicles and equipment, as well as construction material should be free of soil and plant material. Therefore, all equipment and vehicles should be thoroughly cleaned prior to access on to the study area. 									

Table 5: Assessment of indirect impacts associated with the construction activities

Construction Phase										
Indirect Impacts										
Impact Description	Mitigation	Spatial Extent	Intensity	Duration	Reversibility	Irreplaceability	Probability	Significance & Status		Confidence
								Without Mitigation	With Mitigation	
Destruction or degradation of moist grasslands: <ul style="list-style-type: none"> • edge effects • erosion • pollutants 	<ul style="list-style-type: none"> • Edge effects from construction into the moist grassland must be avoided • The construction methodology must include mitigation measures to avoid the impacts on the moist grasslands • Remove only the vegetation where essential for construction and do not allow any disturbance to the adjoining natural vegetation cover. • Protect all areas 	Local	Medium	Short term	Moderate	High	Probable	High Negative	Medium to Low Negative	Medium

Construction Phase										
Indirect Impacts										
Impact Description	Mitigation	Spatial Extent	Intensity	Duration	Reversibility	Irreplaceability	Probability	Significance & Status		Confidence
								Without Mitigation	With Mitigation	
	susceptible to erosion (especially stockpiled soils and materials such as sand and tar) and ensure that there is no undue soil erosion resultant from activities within and adjacent to the construction camp and work areas.									
Destruction or damage to potential habitat for the Near Threatened <i>Stenostelma umbelluliferum</i> <ul style="list-style-type: none"> edge effects 	<ul style="list-style-type: none"> The plant was not recorded on the site or south of the site. However, this species is inconspicuous if not in flower or in seed and could have been overlooked. 	Site specific	Moderate	Short term	Moderate	Moderate	Probable	Medium Negative	Low Neutral	Medium

Construction Phase										
Indirect Impacts										
Impact Description	Mitigation	Spatial Extent	Intensity	Duration	Reversibility	Irreplaceability	Probability	Significance & Status		Confidence
								Without Mitigation	With Mitigation	
	<ul style="list-style-type: none"> This species could be present in clay soils on the southern boundary of the site or south thereof. Therefore, it is recommended to limit development and construction related activities in the clay soils along the southern boundary of the site. If development proceed on the southern boundary, the area should be scanned again to verify the absence of this species. If recorded, these species 									

Construction Phase										
Indirect Impacts										
Impact Description	Mitigation	Spatial Extent	Intensity	Duration	Reversibility	Irreplaceability	Probability	Significance & Status		Confidence
								Without Mitigation	With Mitigation	
	must be conserved in situ and a buffer of up to 400m may be applicable (GDARD, 2006) <ul style="list-style-type: none"> The buffer zone as recommended by a wetland assessment will likely include this species habitat 									
Degradation of adjacent natural vegetation and moist grasslands <ul style="list-style-type: none"> edge effects 	<ul style="list-style-type: none"> The site and construction footprint must be fenced, and no deleterious edge effects are allowed beyond the project boundary. No construction activities may cause deterioration of the 	Local	Medium	Short term	Medium	Moderate	Probable	Medium Negative	Low Neutral	Medium

Construction Phase										
Indirect Impacts										
Impact Description	Mitigation	Spatial Extent	Intensity	Duration	Reversibility	Irreplaceability	Probability	Significance & Status		Confidence
								Without Mitigation	With Mitigation	
	Swartspruit and moist grassland south of the site <ul style="list-style-type: none"> • Protect all areas susceptible to erosion (especially stockpiled soils and materials such as sand and tar) and ensure that there is no undue soil erosion resultant from activities within and adjacent to the construction camp and work areas. 									

Table 6 Assessment of indirect impacts associated with the operational phase of the proposed development

Operational Phase										
Indirect Impacts										
Impact Description	Mitigation	Spatial Extent	Intensity	Duration	Reversibility	Irreplaceability	Probability	Significance & Status		Confidence
								Without Mitigation	With Mitigation	
<p>Loss of the ecological function and degradation of the moist grasslands</p> <ul style="list-style-type: none"> • Pollutants e.g. waste water from the chicken facilities or fertilizer from the vegetable production reach the moist grassland and deteriorate the water quality which could impact on the surrounding and downstream vegetation • Lack of natural vegetation in and around the moist grassland could reduce water holding capacity and the subsequent loss of the ecological function of the vegetation as catchment to the watercourse 	<ul style="list-style-type: none"> • Engineer a method whereby accidental release of effluent can be contained and diverted to be treated. • Prevent disturbances to the moist grassland area by e.g. vehicles • Place and maintain erosion control barriers as appropriate to prevent sedimentation. 	Local	High	Long term	Moderate	Moderate	Probable	High Negative	Medium to low negative	Medium

Operational Phase										
Indirect Impacts										
Impact Description	Mitigation	Spatial Extent	Intensity	Duration	Reversibility	Irreplaceability	Probability	Significance & Status		Confidence
								Without Mitigation	With Mitigation	
Deterioration of the clay grassland between the site and the moist grasslands. This portion could provide suitable habitat to the Near Threatened <i>Stenostelma umbelliferum</i>	<ul style="list-style-type: none"> Prevent livestock (goats) from overgrazing beyond the site boundary Prevent any other edge effect that may impact on this species if present 	Local	High	Long term	Moderate	Moderate	Probable	High Negative	Medium to low negative	Medium

Table 7: Cumulative impacts that may occur

Operational Phase										
Cumulative Impacts										
Impact Description	Mitigation	Spatial Extent	Intensity	Duration	Reversibility	Irreplaceability	Probability	Significance & Status		Confidence
								Without Mitigation	With Mitigation	
Loss of the ecological function of the ecological corridor which includes the degradation of the moist grasslands. <ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • Engineer a method whereby accidental release of effluent can be contained and diverted to be treated. • Prevent disturbances to the moist grassland area by e.g. vehicles • Place and maintain erosion control barriers as appropriate to prevent sedimentation. • Limit hard impervious surfaces. Instead, retain grassland vegetation to ensure water infiltration. 	Local	High	Long term	Moderate	Moderate	Probable	High Negative	Medium to low negative	Medium

Operational Phase										
Cumulative Impacts										
Impact Description	Mitigation	Spatial Extent	Intensity	Duration	Reversibility	Irreplaceability	Probability	Significance & Status		Confidence
								Without Mitigation	With Mitigation	
	<ul style="list-style-type: none"> Remove only the vegetation where essential for construction and do not allow any disturbance to the adjoining natural vegetation cover. Construction camps and storage of equipment should be planned in areas of low sensitivity as far as possible, or at least as far as possible from the moist grassland south of the site Prevent the spread of alien invasive species 									

6. CONCLUSION

The vegetation on site was found to be modified from the reference state of Moot Plains Bushveld. The vegetation comprises grassland with limited indigenous forbs, while a number of invasive species were recorded. The southern boundary of the site contains black clay soils that could provide suitable habitat to the Near Threatened *Stenostelma umbelluliferum*. The plant was not recorded within walked transects on the site or further south thereof, however, the plant is inconspicuous and easily overlooked. The grassland vegetation on the site was assessed as being of low to medium ecological importance and sensitivity based on the potential occurrence of the Near Threatened plant species south of the site and its function as catchment to the moist grassland.

The clay soils south of the site grades into moist grassland along the Swarspruit that is situated about 120m south of the site. The moist grassland, including the Swarspruit south of the site, were assessed as being of high ecological importance and sensitivity. The proposed development can proceed, provided that no construction or operational activities negatively impact on the moist grassland and suitable habitat for *Stenostelma umbelluliferum* south of the site. It is recommended that a wetland specialist verify the presence of wetland conditions south of the site and to calculate a protective buffer zone.

Therefore, this assessment found that development on the site will not directly impact sensitive vegetation and could proceed, provided that the construction and operational phase not impact negatively on the clay and moist grassland south of the site.

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8. GLOSSARY

Biome	A major biotic unit consisting of plant and animal communities having similarities in form and environmental conditions, but not including the abiotic portion of the environment.
Buffer zone	A collar of land that filters edge effects.
Conservation	The management of the biosphere so that it may yield the greatest sustainable benefit to present generation while maintaining its potential to meet the needs and aspirations of future generations. The wise use of natural resources to prevent loss of ecosystems function and integrity.
Conservation concern (Plants of..)	Plants of conservation concern are those plants that are important for South Africa's conservation decision making processes and include all plants that are Threatened (see Threatened), Extinct in the wild, Data deficient, Near threatened , Critically rare, Rare and Declining . These plants are nationally protected by the National Environmental Management: Biodiversity Act. Within the context of these reports, plants that are provincially protected are also discussed under this heading.
Conservation status	An indicator of the likelihood that species remaining extant either in the present day or the near future. Many factors are taken into account when assessing the conservation status of a species: not simply the number remaining, but the overall increase or decrease in the population over time, breeding success rates, known threats, and so on.
Edge effect	Inappropriate influences from surrounding activities, which physically degrade habitat, endanger resident biota and reduce the functional size of remnant fragments including, for example, the effects of invasive plant and animal species, physical damage and soil compaction caused through trampling and harvesting, abiotic habitat alterations and pollution
Indigenous	Any species of plant, shrub or tree that occurs naturally in South Africa
Mitigation	The implementation of practical measures to reduce adverse impacts
Protected Plant	According to Provincial Nature Conservation Ordinances or Acts, no one is allowed to sell, buy, transport, or remove this plant without a permit from the responsible authority. These plants are protected by provincial legislation.
Red Data	A list of species, fauna and flora that require environmental protection - based on the IUCN definitions. <i>Now termed Plants of Conservation Concern</i>
Species diversity	A measure of the number and relative abundance of species
Species richness	The number of species in an area or habitat
Threatened	Threatened Species are those that are facing a high risk of extinction, indicated by placing in the categories Critically Endangered (CR), Endangered (E) and Vulnerable (VU) (Raimondo <i>et al</i> , 2009)
Transformation	The removal or radical disturbance of natural vegetation, for example by crop agriculture, plantation forestry, mining or urban development. Transformation mostly results in a serious and permanent loss of biodiversity and fragmentation of ecosystems, which in turn lead to the failure of ecological processes. Remnants of biodiversity may survive in transformed landscapes

APPENDIX A: METHODOLOGY-vegetation

The study was undertaken on the 24th of January 2018. The assessment entailed a literature review which included short listing plants of conservation concern that could potentially occur, a site visit and reporting.

Literature Review:

The description of the regional vegetation relied on literature from Mucina & Rutherford (2006). Plant names follow Van Wyk & Van Wyk (1997), Van Wyk & Malan (1997), Pooley (1998), Henderson (2001), Van Oudtshoorn (2002) and Bromilow (2010). The study was undertaken in accordance with the Requirements for Biodiversity Assessments Version 2 (GDARD, 2012).

Field survey:

The field survey focussed on identifying natural and untransformed vegetation, unique features that could indicate local sensitivities such as threatened and protected plants, as well as sensitive ecological features such as wetlands, ridges and rivers that are essential for the maintenance of ecosystems and ecological processes.

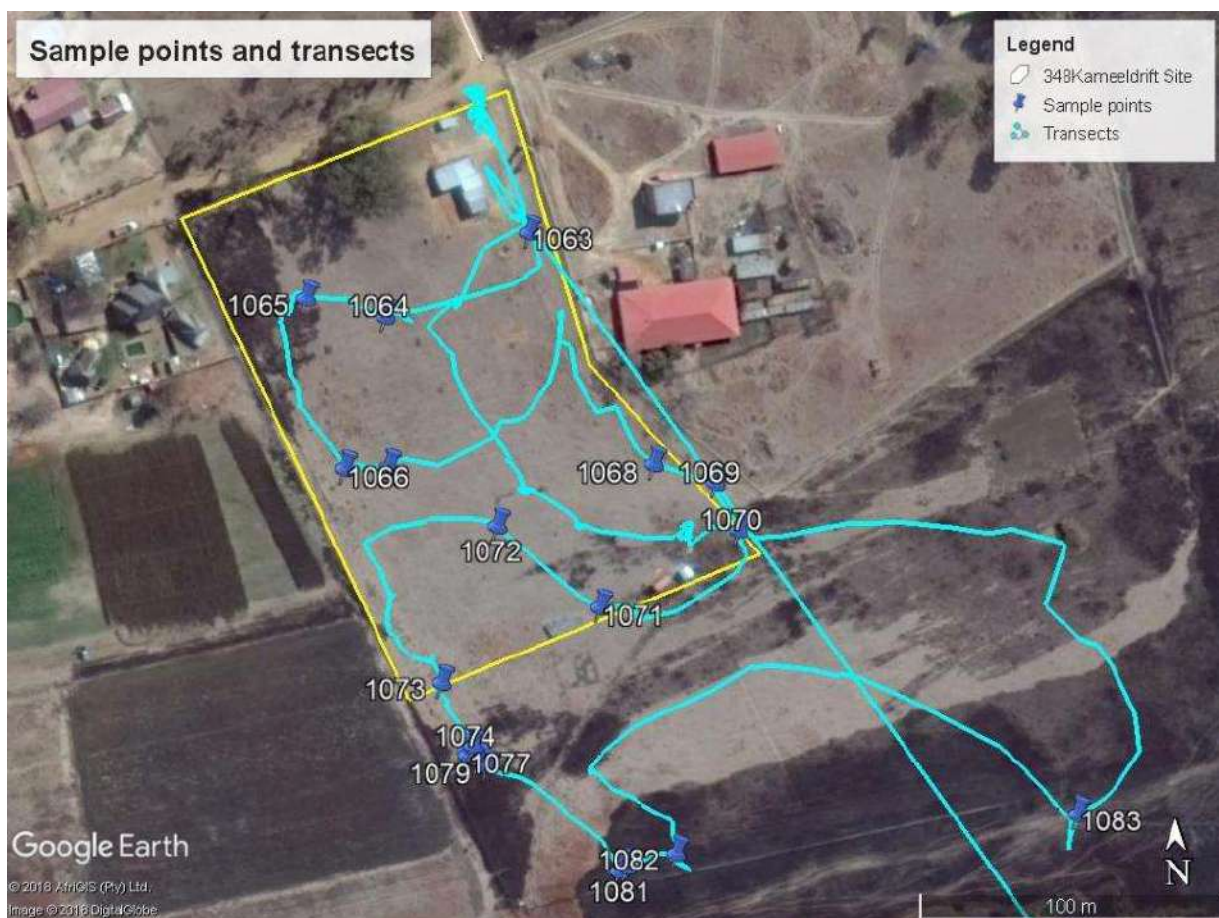


Figure 8: Sample points and walked tracts

Random transects were walked within the proposed development footprint. In order to identify species, protected trees and variation within the vegetation community, transects concentrated on moving through environmental gradients encountered within the site and surrounds. This was continued until few or no new species were encountered. Any additional information on any other feature thought to have ecological significance within the site, such as dominant species cover abundance, soil type, erosion, rocky cover, alien/exotic/invasive plants, as well as plant species of conservation concern and/or their habitat was also recorded. Plant identification and vegetation description relied on species recorded in the sampling points along the walked transects.

Vegetation Sensitivity

The following criteria and weighting was used to determine the vegetation sensitivity, function and conservation importance:

1. The status of the regional vegetation that is expected to occur on the study site, only where natural vegetation is remaining.

Conservation status*	Scoring
Critically Endangered	3
Endangered	2
Vulnerable	1
Least threatened	0

*This scoring is not applicable (N/A) for areas devoid of natural vegetation.

2. State of the vegetation

Listed Ecosystem*	Scoring
Primary state	3
Sub-climax state	2
Secondary state	1
No natural vegetation remaining	0

3. Whether the vegetation or ecological feature is protected by legislation:

Listed Ecosystem*	Scoring
National legislation	3
Provincial policies and guidelines	2
Municipal or other protection	1
No legislated protection	0

4. The presence of suitable habitat for plants of conservation concern as well as the actual occurrence thereof.

Suitable habitat / presence	Scoring
Confirmed presence	3
Confirmed presence of Declining species and Suitable habitat and some likelihood of occurrence of Threatened species	2
Suitable habitat but unlikely to occur	1
No suitable habitat	0

5. Ecological Function: areas important to ecological processes such as ecological corridors, hydrological processes and important topographical features such as ridges.

Ecological function	Scoring
High: Sensitive vegetation communities with low inherent resistance or resilience towards disturbance factors; vegetation that are considered important for the maintenance of ecosystem integrity. Most of these vegetation communities represent late succession ecosystems with high connectivity with other important ecological systems.	3
Medium to high: Vegetation communities that occur at disturbances of low-medium intensity and representative of secondary succession stages with a high degree of connectivity with other ecological systems OR disturbed vegetation connected to an ecological and protected system e.g. ridge, wetland or river	2
Medium: Vegetation communities that occur at disturbances of low-medium intensity and representative of secondary succession stages with some degree or limited connectivity with other ecological systems	1
Low: Degraded and highly disturbed vegetation with little ecological function	0

6. Conservation Importance: indication of the necessity to conserve areas based on factors such as the importance of the site on a national and/or provincial scale and on the ecological state of the area (degraded or pristine). This is determined by the presence of a high diversity, rare or endemic species and areas that are protected by legislation.

Ecological importance	Scoring
High: Ecosystems with high species diversity and usually provide suitable habitat for a number of threatened species. OR protected ecosystems e.g. wetlands, riparian vegetation etc These areas should be protected	3
Medium to high: Ecosystems with intermediate levels of species with the possible occurrence of threatened species	2
Medium: Ecosystems with intermediate levels of species diversity without any threatened species.	1
Low: Areas with little or no conservation potential and usually species poor (most species are usually exotic).	0

APPENDIX B: PLANT LIST

Species recorded on the site.

M=medicinal

D = declining

P=provincially protected

Species	Common name	Habitat notes	On site		South of site	
			Modified	Themeda-Eragrostis	Themeda-Eragrostis clay	Moist grassland
Trees						
<i>Acacia (Vachellia) karroo (M)</i>	Sweet Thorn	Widespread, often proliferate in overgrazed areas	1	1		1
<i>Ziziphus mucronata</i>	Buffalo-thorn	Widespread, in various habitats	1			
Total number of tree species = 2			2	1	0	1
Grasses						
<i>Aristida congesta subsp congesta</i>	Tassel Three-awn	Disturbed, overgrazed or farmed land. Increaser II grass	1	1		
<i>Cymbopogon plurinoides (=C. pospischilii)</i>	Narrow-leafed Turpentine Grass	Grassland. Not palatable, Increaser III	1	1		
<i>Cymbopogon validus</i>	Giant Turpentine Grass	Open veld in moist soils.		1	1	1
<i>Cynodon dactylon</i>	Couch grass	Most soils, usually in disturbed areas. Increaser II grass, palatable	1	1	1	
<i>Eragrostis superba</i>	Saw-tooth love grass	Disturbed areas next to roads. Increaser II, palatable grass	1	1	1	
<i>Eragrostis chloromelas</i>	Curly leaf	Rocky slopes, mostly in open grassland. Increaser II grass		1	1	
<i>Eragrostis curvula</i>	Weeping Love Grass	Mostly occurs in disturbed areas / sown as pasture. Increaser II grass	1	1		1
<i>Heteropogon contortus</i>	Spear Grass	Rocky, sloped land and common on disturbed road reserves.	1	1		

Species	Common name	Habitat notes	On site		South of site	
			Modified	<i>Themeda-Eragrostis</i>	<i>Themeda-Eragrostis clay</i>	Moist grassland
		Increaser II grass. Palatable in early summer				
<i>Hyparrhenia hirta</i>	Common Thatching Grass	Well drained, rocky soil in open grassland and disturbed areas. Increaser I grass	1	1	1	1
<i>Imperata cylindrica</i>	Cotton Wool Grass	Mostly in moist soils				1
<i>Ischaemum fasciculatum</i>	Hippo Grass	Grows in moist areas and often in flowing water. Usually in heavy clay soils		1	1	1
<i>Phragmites australis</i>	Common Reed	Grows close to water sources such as rivers and wetlands.				1
<i>Setaria incrassata</i>	Vlei Bristle Grass	Moist places or in turf soils				1
<i>Setaria sphacelata</i> var. <i>sericea</i>	Golden Bristle Grass	Moist, disturbed areas		1	1	
<i>Themeda triandra</i>	red grass	Undisturbed or disturbed open grassland. Decreaser Grass	1	1	1	1
Total number of grass species = 15			8	12	8	8
Forbs/shrubs						
<i>Asparagus africanus</i>	Bush or African Asparagus / Haakdoring	Wide range of habitats		1		
<i>Berkheya radula</i>	Boesmanrietjie	Moist grassland and vleis				1
<i>Chamaecrista mimosoides</i> (M)	Fishbone Cassia	Grassland/bushveld			1	1
<i>Cucumis zeyheri</i> (M)		Grassland and bushveld	1	1		
<i>Dipcadi rigidifolium</i>	Skaambloemetjie	Bushveld, often clayish soil			1	1

Species	Common name	Habitat notes	On site		South of site	
			Modified	Themeda-Eragrostis	Themeda-Eragrostis clay	Moist grassland
<i>Gazania krebsiana</i>	Botterblom	Grassland, widespread in other habitats		1		
<i>Gomphocarpus fruticosus</i>	milkweed	Grassland, often along roadsides and abandoned cultivated fields, disturbed areas.	1			
<i>Haplocarpa scaposa (M)</i>	Tonteldoosbossie	Grassland, often in moist places				1
<i>Helichrysum rugulosum (M)</i>		Grassland, often in vlei's or patches in disturbed areas		1		
<i>Lactuca inermis</i>	Wild lettuce	Grassland and disturbed areas.	1	1		
<i>Nidorella hottentottica</i>		Grassland, often along roadsides. Sometimes in moist areas		1	1	1
<i>Pelargonium luridum (M)</i>		Grassland, often in moist places.			1	
<i>Polygala hottentotta</i>	Small Purple Broom	Common in grassland, often in damp places		1		
<i>Rhynchosia adenodes</i>		Grassland and bushveld		1		1
<i>Rhynchosia nitens</i>	Vaalboontjie	Grassland and bushveld, usually on the summit of ridges.		1		1
<i>Scabiosa columbaria</i>	Wild Scabiosa	Grassland, mainly in rocky areas			1	
<i>Senecio consonguineus</i>	Starvation Senecio	Grassland, weed on cultivated land.			1	1
<i>Senecio gregatus</i>		Grassland, often in moist places				1
<i>Sonchus dregeanus</i>		Grassland, often in rocky ridges		1	1	
<i>Xysmalobium undulatum</i>	Bitterhout	Moist grassland and vlei's		1		1
Total number of forb species = 20			3	11	7	10
Alien and invasive species						

Species	Common name	Habitat notes	On site		South of site	
			Modified	Themeda-Eragrostis	Themeda-Eragrostis clay	Moist grassland
<i>Campuloclinium macrocephalum</i>	Pom-Pom Weed	Category 1b		1		
<i>Cirsium vulgare</i>	Scotch Thistle	Category 1b (NEMBA) Biennial				1
<i>Conyza</i> species	Fleabane	Weed in transformed grasslands	1	1		
<i>Eucalyptus specie</i>	Blue Gum	Category 2 (CARA)	1			
<i>Gomphrena celosiodes</i>	Prostrate Globe Amaranth	Cosmpolitian Weed	1	1		
<i>Hibiscus trionum</i>	Bladderweed	Inasive weed in disturbed places.		1		
<i>Malvastrum coromandelianum</i>	prickly malvastrum	Category 1b	1	1		
<i>Solanum elaeagnifolium</i>	Silverleaf Bitter Apple	Widespread in ploughed and disturbed areas	1	1		
<i>Sonchus nanus</i>	Thistle	Grassland		1		
<i>Verbena aristegera</i> (=V. tenuisecta)	Fine-leaved Verbena	Garden escape, now naturalised along roadsides and disturbed areas	1	1		
Total number of alien and invasive species = 10			6	8		1

APPENDIX C: PLANT SPECIES OF CONSERVATION CONCERN

Plants of conservation which could occur in proximity to the proposed development. The likelihood of each plant of occurring is printed in *italics*.

Specie	Conservation status	Suitable habitat on site <i>Occurrence or likelihood of occurrence on site</i>	Flowering time
<i>Adromischus umbraticola</i> subsp. <i>umbraticola</i>	Near threatened	South-facing rock crevices on ridges, restricted to Gold Reef Mountain Bushveld in the northern parts of its range, and Andesite Mountain Bushveld in the south. <i>No suitable habitat</i>	Sept-Jan
<i>Aloe peglerae</i>	Endangered	Grassland, in shallow, gravely quartzitic soils on rocky, north-facing slopes or summits of ridges from Magaliesberg to Witwatersberg <i>No suitable habitat</i>	July-August
<i>Boophone disticha</i>	Declining (reclassified as Least Concern nationally)	Rocky grasslands, but particularly in proximity or on rocky outcrops. <i>No suitable habitat</i>	Oct-Jan
<i>Crinum macowanii</i>	Declining (reclassified to LC nationally)	Mountain grassland and stony slopes in hard dry shale, gravely soil or sandy flats. <i>No suitable habitat</i>	Oct-Jan
<i>Delosperma leendertziae</i>	Near Threatened	Rocky ridges, on rather steep south facing slopes of quartzite in mountain grassveld. <i>No suitable habitat</i>	Oct-April
<i>Hypoxis hemerocallidea</i>	Declining (reclassified to LC nationally)	Occurs in a wide range of habitats, from sandy hills on the margins of dune forests to open rocky grassland; also grows on dry, stony, grassy slopes, mountain slopes and plateaux; appears to be drought and fire tolerant and can tolerate some disturbance. <i>Unlikely to occur as it was not noted in walked transects.</i>	Sept-March
<i>Ilex mitis</i> var. <i>mitis</i>	Declining (reclassified to LC nationally)	Along rivers and streams in forest and thickets, sometimes in the open. Found from sea level to inland mountain slopes. <i>Could be present along the Swartspruit, however, was not recorded south of the site.</i>	Oct-Dec
<i>Stenostelma umbelluliferum</i>	Near threatened	Deep black turf in open woodland or grassland mainly near drainage lines. The inconspicuous nature of this species makes it easy to be overlooked. <i>Likely to occur</i>	Sept-March

APPENDIX D-SPECIALIST CV

Curriculum Vitae

Antoinette Eyssell-Knox

Personal Information Summary

Name: Antoinette Eyssell-Knox
Highest qualification: MSc Environmental Science (2010), University of Pretoria
Professional membership: SACNASP Pr Sci Nat (400019/11) Ecological Science
Company: Dimela Eco Consulting
Contact details: Antoinette@dimela-eco.co.za
Tel 083 642 6295

Professional Experience

1. Environmental Management:

I have been working in the field of environmental management as a vegetation specialist since the year 2007 (11 years). I have been self-employed since November 2011.

Nov 2011 – current: Dimela Eco Consulting
Sep 2007 – Nov 2011: Strategic Environmental Focus (SEF)

Main field of work and experience include:

- Vegetation assessments, overviews or scans;
- Strategic ecological assessments;
- Ecological management, rehabilitation- and biodiversity action plans (including alien vegetation management);
- Specialist input: Gauteng and North-West Outlook Reports, ecological conditional requirements for Green Star rating;
- Ground-truthing of vegetation related data;
- Review of ecological reports; and
- Mentoring.

2. Environmental Education:

2011 – current: Writer of the ecology feature for the bimonthly Supernova Kids Magazine
Aug 2003 – Sep 2007: Snr Environmental Education Officer, South African National Biodiversity Institute (SANBI), Pretoria National Botanical Garden

3. Horticulture

Jun – Jul 2003: Horticultural Trainer, 7 Shaft Training Centre, Johannesburg
May 1997 – Mar 2002: Horticulturist, Pretoria National Botanical Garden (then NBI, now SANBI)

Qualifications

- M.Sc Environmental Science, University of Pretoria (2010)
Dissertation: *Land cover change and its effect on future land uses*

- B. Sc (Hons) Horticulture, University of Pretoria (1999-2000)
Dissertation: *Horticultural uses of the indigenous Barleria species*
- B. Sc (Agriculture) Horticulture, University of Pretoria (1993-1996)

Memberships and Affiliations

- SACNASP: Registered as a Professional Natural Scientist in the field of ecology since 2011 (Reg no 400019/11)
- Botsoc: Member of the Botanical Society of Southern Africa since 2013

Course History

- 2018: Asteraceae Identification Course
- 2015: SAGIC Invasive Species Consultant Training
- 2012: Tools for Wetland Assessment (Rhodes University – September 2012)
- 2012: Landscape Functional Assessment, introductory workshop with David Tongway and Prof Klaus Kellner (North West University)
- 2012: Soil Classification and Wetland Delineation (Terra Soil)
- 2007: ISO 14000 Advanced EMS Auditors Course (SGS & University of Pretoria)
- 2007: Introduction into Forestry Stewardship Council (FSC) (University of Pretoria)
- 2006: Permaculture training course (S.E.E.D)
- 2005: Project Management Course (Wildlife and Environment Society of South Africa (WESSA) Umgeni Valley)
- 2004: Grass and plant identification courses

Presentations

- July 2007: Environmental Education in a changing world, World Environmental Education Conference (WEEC), Durban
- Sept 2006: Environmental Education, BGCI Conference, Oxford England

Selected Project Experience (2011 onwards)

1. Provincial Environmental Outlook Reports

- 2017-2018: Vegetation input: Gauteng Outlook Report
- in process*: Vegetation input: North-West Outlook Report

2. Open Space Planning

- Nov 2015: The proposed Kaalspruit Open Space Project, Thembisa, Gauteng. Kaalspruit River Rehabilitation Biodiversity Scan: (NuLeaf Planning and Environmental)
- 2015-2016: City of Johannesburg Open Space Planning – vegetation input for Linbro Park, Bassonia, Kyalami and Ruimsig areas (Iggdrasil)

3. Management- and Rehabilitation Plans

- April-May 2012: Vegetation base line study and input into Biodiversity Action Plan for Kumba Iron Ore (Lidwala Consulting Engineers)
- Jan 2015: Environmental Management Plan for the Krugersdorp Nature Reserve – vegetation section

- Jan 2016: Tharisa Mine Railway Line – Vegetation rehabilitation plan (Limosella Consulting)
- Sept 2016: General vegetation rehabilitation plan for the proposed Mezo Kitchens Panel Processing Facility (Shangoni)
- Nov 2016: General Ecological Rehabilitation and Monitoring Plan for the N4 additional lane between: R52 Koster offramp & D1325 Marikana Interchange; and The R512 (Brits West Interchange) & K67 (Ga-Rankuwa Interchange) North West and Gauteng Provinces
- Nov 2016: Biodiversity Management Plan: Afrisam (Sa) (Pty) Ltd, Dudfield Cement – vegetation input
- June 2017: Rehabilitation planning for the Klip- Lower and Upper Rietspruit Water Management Units (Pregio, via Limosella Consulting)
- Dec 2017: Eskom underground cable river crossings – vegetation input into rehabilitation plants (Envirolution)

4. Linear Infrastructure

- March 2012: Kranspoort road upgrade Protected tree identification (Lidwala Consulting Engineers)
- Oct 2012: Eskom: Perseus to Gamma Vegetation assessment (Mokgope Consulting)
- March 2013: Diepsloot Eskom line and substation, Johannesburg (Envirolution)
- Nov 2013: Masa Ngwedi 750kV and 400kV lines (Limpopo & North-West Provinces) Section D & E Vegetation Input for EMP (Mandara Consulting)
- 2013-2014 Eskom: Northern Alignments (Perseus in the Northern Cape to Juno in the Western Cape) (Mokgope Consulting)
- Feb 2014: Meteor substation, as well as the 88kV line between the Pulsar, Meteor and Sonland substations, Sebokeng, (Nsovo Environmental Consulting)
- Dec 2014: Upgrading of Internal Roads in Stinkwater, Hammanskraal (Gauteng) (GladAfrica)
- Sept 2015: Railway Siding for GCMC Open Cast Mine, Lephallale (Limpopo)
- Feb 2016: N4 - Additional lane between Brits and Rustenburg (Environamic)
- Nov 2016: Aggeneis-Paulputs 400kV Powerline and Substations Upgrades
- Feb 2017: Proposed Lulamisa to Diepsloot East to Blue Hills to Crowthorne 88kV Power Line / Cable and 2 Substations Gauteng (Envirolution)
- May 2017: Proposed 132 kV Powerline Between Fochville Municipal Substation and an Existing Line, Gauteng Province (Envirolution)

5. Solar Developments

- January 2012: Schmidtsdrift, Northern Cape Vegetation Assessment for Solar Panels (Nuleaf)
- Aug 2015: Proposed Construction of A 75mw Solar Energy Facility Project, Limpopo Tshikovha Environmental and Communication Consulting

6. Mining

- April 2012: Rietfontein Open Cast Vegetation assessment (Cabanga Concepts)
- Jan 2013: Vierfontein Colliery Vegetation assessment and EMP input (Cabanga Concepts)
- Jan 2017: G&W Base and Industrial Minerals Koppies Betonite Mine Vegetation Assessment & Management Input Report (Cabanga Concepts)

7. Other Development

- Dec 2013: Marekele Bush camp – vegetation & fauna assessments (NuLeaf)
- May 2013: Komati Power Station – Coal stockyard (Envirolution)
- April 2014: Blesboklaagte & Leeupoort Township development (Shangoni)
- May 2014: Goldi Farm Composting Site, Section 24G Fauna and Flora assessment and Summary document (Shangoni)

- Feb 2015: TOPIGS: Proposed Piggery, Mpumalanga (Shangoni)
- May 2015: Kwaggasrant Recycling Facility Upgrade (Shangoni)
- Oct 2016: Proposed piggery on portion 139 of the farm Honingnestkrans 269JR Vegetation and Fauna investigation (Methale Environmental Consulting)
- Oct 2017: Ongoing Clinic Development & Proposed Emergency Medical Services Facility on Prt 79 of the farm De Wagendrift 417 JR Gauteng Province. (Methale Environmental Consultants)

8. Plant relocation and monitoring

- April 2014: Relocation of *C bulbipermum*, overlooked Colliery in Mpumalanga (Cabanga Concepts)
- Feb 2017: Monitoring report for the relocated *Crinum bulbispermum* at Overlooked Colliery
- May 2017: Relocation of protected plant species: Evander Mine

9. International:

- Oct 2009: Tatu, Nairobi: Vegetation Assessment (Kenya) (Lokisa Environmental Consulting)
- Sept 2014: Vegetation input to the Regional Environmental and Social Assessment of Coal-based Energy Projects along the South Africa- Botswana Border (World bank Project, Mott MacDonald)

10. Mentorship:

- May 2017: Technical Peer Review of the vegetation section for the Emfuleni Bulk Water Supply Pipelines: Ecological Assessment. GIBB Engineering & Architecture (Pty) Ltd
- Nov 2017: Mentorship and Technical Peer Review of the vegetation section for the Merensky-Kennedy Powerline: vegetation assessment GIBB Engineering & Architecture (Pty) Ltd

APPENDIX E: DECLARATION



environmental affairs

Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

DETAILS OF SPECIALIST AND DECLARATION OF INTEREST

	(For official use only)
File Reference Number:	12/12/20/ or 12/9/11/L
NEAS Reference Number:	DEAT/EIA
Date Received:	

Application for integrated environmental authorisation and waste management licence in terms of the-

- (1) National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended and the Environmental Impact Assessment Regulations, 2010; and
- (2) National Environmental Management Act: Waste Act, 2008 (Act No. 59 of 2008) and Government Notice 718, 2009

PROJECT TITLE

Vegetation Assessment for the proposed expansion of a chicken layer facility, on Portion 348 of Kameeldrift Farm 313, Kameeldrift West, Pretoria, Gauteng.

Specialist:	Antoinette Eyssell		
Contactperson:	Antoinette Eyssell		
Postaladdress:	PO Box 6314, Pretoria		
Postal code:	0001	Cell:	0836426295
Telephone:	0836426295	Fax:	-
E-mail:	antoinette@dimela-eco.co.za		
Professional affiliation(s) (if any)	SACNASP Pr Sci Nat (400019/11) Ecological Science		
Project Consultant:	Vegetation Assessment for the proposed expansion of a chicken layer facility, on		
Contact person:	Portion 348 of Kameeldrift Farm 313, Kameeldrift West, Pretoria, Gauteng.		
Postal address:	Council for Scientific and Industrial Research (CSIR)		
Postal code:	Babalwa Mqokeli		
Telephone:	PO Box 320	Cell:	
E-mail:	Stellenbosch 7599	Fax:	
	021 8882432		
	BMqokeli@csir.co.za		

4.2 The specialist appointed in terms of the Regulations_

I, Antoinette Eyssell, declare that -- General

declaration:

I act as the independent specialist in this application;
I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
I declare that there are no circumstances that may compromise my objectivity in performing such work;
I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity;
I will comply with the Act, Regulations and all other applicable legislation;
I have no, and will not engage in, conflicting interests in the undertaking of the activity;
I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
all the particulars furnished by me in this form are true and correct; and
I realise that a false declaration is an offence in terms of regulation 71 and is punishable in terms of section 24F of the Act.



Signature of the specialist:

Dimela Eco Consulting

Name of company (if applicable):

05/02/2018

Date:

KAMEELDRIFT CHICKEN FARM

TERRESTRIAL FAUNA IMPACT ASSESSMENT & MANAGEMENT PLAN IN TERMS OF A NEMA APPLICATION FOR THE PROPOSED CHICKEN FARM ON PORTION 348 OF KAMEELDRIFT 313 JR, GAUTENG PROVINCE

February 2018

Commissioned by Dimela Eco Consulting on behalf of the CSIR-Stellenbosch

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Specialist Qualification & Declaration

Barbara Kasl (CV summary attached as Appendix A):

- Holds a PhD in Animal, Plant and Environmental Sciences from the University of the Witwatersrand;
- Is a registered SACNASP Professional Ecological and Environmental Scientist (Pr.Sci.Nat. Registration No.: 400257/09), with expertise in fauna ecology;
- Has been actively involved in the environmental consultancy field for over 13 years; and
- Is a member of the Entomological Society of South Africa.

I, Barbara Kasl, confirm that:

- I act as independent consultant and specialist in the field of ecology and environmental sciences;
- I have no vested interest in the project other than remuneration for work completed in terms of the Scope of Work;
- I have presented the information in this report is in line with the requirements of Appendix 6 of General Notice Regulation 982: National Environmental Management Act (107/1998) (NEMA): Environmental Impact Assessment Regulations, 2014 (GNR982) as far as these are relevant to the specific Scope of Work;
- I have taken NEMA Principals into account as far as these are relevant to the Scope of Work; and
- Information presented is, to the best of my knowledge, accurate and correct within the restraints of field work and stipulated limitations.



16-02-2018

COMPLIANCE WITH THE APPENDIX 6 OF THE AMENDED 2014 EIA REGULATIONS

Requirements of Appendix 6 – GN R326	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;	Appendix A & Page i
b) a declaration that the specialist is independent in a form as may be specified by the competent authority;	Page i
c) an indication of the scope of, and the purpose for which, the report was prepared;	Section 1.1, Page 4
d) the date and season of the site investigation and the relevance of the season to the	Section 2 Intro,

Requirements of Appendix 6 – GN R326	Addressed in the Specialist Report
outcome of the assessment;	Page 5
e) a description of the methodology adopted in preparing the report or carrying out the specialised process;	Section 2, Page 6
f) the specific identified sensitivity of the site related to the activity and its associated structures and infrastructure;	Section 3.9, Page 23
g) an identification of any areas to be avoided, including buffers;	N/A to site.
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;	Plan 5, Page 23
i) a description of any assumptions made and any uncertainties or gaps in knowledge;	Section 2.1, Page 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;	Table 5, Page 25 to 29
k) any mitigation measures for inclusion in the EMPr;	Section 5, page 30
l) any conditions for inclusion in the environmental authorisation;	Section 7 concluding paragraph, Page 35
m) any monitoring requirements for inclusion in the EMPr or environmental authorisation;	Section 6, Page 34
n) a reasoned opinion- i. as to whether the proposed activity or portions thereof should be authorised; and ii. if the opinion is that the proposed activity 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 7, Page 35
o) a description of any consultation process that was undertaken during the course of preparing the specialist report;	Limited to brief on-site discussion with neighbouring chicken farmer.
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 at this stage

Executive Summary

The chicken farm is proposed for portion 348 of Kameeldrift 313JR in the Gauteng Province. The property is surrounded by various small-holding activities including crop and livestock agriculture, quarrying and mining. The site is accessed by a gravel road off the R514. The property lies within the City of Tshwane Municipality.

Desktop assessment of the site indicated the following:

- The project area falls within the Bushveld Biome, specifically the Moot Plains Bushveld vegetation type, and does not fall within a threatened Ecosystem (NEM:BA).
- The site overlaps the eastern extent of the Magaliesberg Important Bird Area (IBA), which has the following trigger species: the Cape Vulture, Secretarybird, Lanner Falcon, Half-collared Kingfisher, African Grass Owl, African Finfoot and Verreaux's Eagle.
 - Of the species likely to occur on site, the Lanner Falcon and Secretary Bird are Vulnerable and the Cape Vulture is Endangered.
- There are no National Parks and no Informal Protected Areas near the property. The nearest Formal Protected Areas are the Magaliesberg Protected Natural Environment, approximately 4km north of site and the Cradle of Humankind World Heritage Site, 11km south west of site. National Protected Areas Expansion Strategies (NPAES) is targeted for areas east of the Cradle of Humankind World Heritage Site. .
- The proposed sustainable development falls just within the Transition Zone of the Magaliesberg Biosphere.
- The site is within the Upper Crocodile Catchment of the Crocodile West & Marico Water Management Area, specifically in quaternary catchment A21H.
- The property is north of the Swartspruit which flows from east to west and drains directly into the Hartebeespoort Dam. The Swartspruit is an NFEPA river with a PES of C and RIVCON of C and is moderately modified. The catchment area is designated as NFEPA water management area – Upstream Management Area.
- The nearest two NFEPA wetlands are a dam along the Swartspruit, 1.3km east of the site and a second dam further east off-river. The dams are designated as artificial wetlands with an NFEPA rank of 6 and are not considered sensitive or important wetlands in terms of NFEPA.
- In terms of the Gauteng Conservation Plan (C-Plan), the property is not designated for biodiversity management and conservation. An area south of the site, associated with the Swartspruit, is designated as an Ecological Support Area (ESA).

Due to the fact that animals are mobile, they may only be transient through the Survey Area and may not reside on site. The results presented in this report focuses on animals that are Confirmed and Highly Likely to reside on site, with some discussion on species that could Possibly occur on site where these are Nationally or Provincially protected species. As animals are not always observed in field, close attention is given to micro-habitats that may be important to fauna. Survey conditions on the 24 January 2018 were partly cloudy to sunny and good for fauna surveys. The preceding evening and morning rainfall, however, would have washed away any animal tracks.

The homogenous landscape surrounded by various anthropogenic activities and limited connectivity to natural areas would dictate low fauna diversity and sporadic fauna activity. In terms of the micro-habitats identified on site the following can be said about the fauna likely to occur on site:

- Fauna with a preference for grassland or generalist species are more likely to occur on site. The use of site by cattle for grazing and the surrounding anthropogenic activities means that shy or sensitive species are unlikely to occur on site for any length of time.
- Fauna preferring open waters associated with dams or lakes or muddy banks/flats will not occur in the Survey Area, but may forage over the site from surrounding areas where dams are present.
- Fauna preferring flowing waters associated with streams/rivers may occur along the Swartspruit and again may forage into the Survey Area.
- Fauna preferring reedy wetlands may occur along the Swartspruit, although reed beds were patchy and scarce in the nearby area.
- Fauna preferring rank vegetation or rank grassland and floodplain vegetation could occur in the adjacent wetland area south of site and may forage in the Survey Area.
- Species burrowing or nesting in vertical banks could occur along the Swartspruit and again may forage over the Survey Area.
- Fauna with preference for bushveld are highly unlikely to occur in the Survey Area, but may forage in the Survey Area as bushveld vegetation is present in the surrounds.
- Arboreal species or species requiring trees for roosting or nesting are highly unlikely to occur in the Survey Area, but may forage in the site as wooded areas are present in the surrounds.
- Species preferring dense vegetative cover are unlikely to occur on site, but may occur in the denser vegetation along the Swartspruit and therefore could forage in the Survey Area.
- Fauna with preference for scattered rocky and stony substrates or rocky outcrops are unlikely to occur on site.
- Fauna species roosting or breeding on cliffs or reliant on steeper topographical features will not reside in the Survey Area; but due to the nearby Magaliesberg, avian species are highly likely to forage or fly over the site.
- Species with a preference for sandy soils are very unlikely to occur in the Survey Area. This would exclude several moles and rodents, as well as burrowing reptiles.
- Species associated with termitaria are unlikely to occur in the Survey Area as no termitaria were present.
- Bat species reliant on caves for roosting are not likely to occur on site, but may forage over the area.

Fauna habitat sensitivity of the site can be considered as follows:

- An area south of the site, associated with the Swartspruit, is designated as an Ecological Support Area (ESA). It is assumed that this area aligns with the wetland and some of its buffer zone and this site is considered highly sensitive. The Swartspruit forms an important ecological corridor locally, and in terms of the site is the only neighbouring natural site providing refuge for animals. The site is outside the property development area and will not experience direct impacts, but indirect impacts through run-off must be curbed.

- A buffer zone of 50m from the ESA has been assigned moderate sensitivity. In terms of fauna it provides ecological connectivity between the development area and the wetland and greater ecological corridor. The Workers Quarters and Goat Enclosure are proposed for the area, so minimal direct impact will be experienced. The main function that must be preserved in this area is the connectivity between the higher-lying regions and the wetlands, and activities must prevent pinching off and isolation of the higher and lower lying areas.
- The remainder of the site is designated as low sensitivity. As can be attested by the site findings. Direct impact will be experienced at this site. In general, proper planning is key in order to reduce activity footprint and maintain as much of the undisturbed areas (not targeted for development) in their existing state.
- The buffer zone has been designated as moderately sensitive. The wetland report should be consulted in terms of the most appropriate buffer zone or the legislative buffer limits must be applied as a minimum.
- The remaining areas are classed as low sensitivity and can be developed.

The most significant impacts identified are the potential impact to threatened species (high intensity but low probability and therefore only moderate significance) and destruction of fauna habitat (definite, but with moderate-low intensity and therefore also only moderate significance).

Additional Impacts that have been addressed within the report and management plan include:

- Destruction of burrowing / fossorial fauna (others).
- Disturbance to fauna through noise, vibration, dust.
- Emigration of fauna from site, and resulting influx of fauna to neighbouring areas.
- Hindrance, trapping, killing of fauna.
- Poisoning predators – directly or indirectly through contaminated / poisoned food / prey.
- Attraction of pests and exotic / alien species.
- Pollution of fauna habitat through littering and dumping of waste to surrounding environment is hazardous to fauna.
- Pollution of fauna habitat through sewage leaks.
- Pollution of fauna habitat through spillages of hazardous materials (hydrocarbons or chemicals).

Most impacts will be of moderate to low significance before mitigation and can be mitigated to low significance. No fatal flaws have been identified.

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Appendix B: Mammal Probability List

Appendix C: Avifauna Probability List

Appendix D: Reptile Probability List

Appendix E: Amphibian Probability List

1 Introduction & Site Characterisation in Terms of Terrestrial Fauna

The chicken farm is proposed for portion 348 of Kameeldrift 313JR in the Gauteng Province. The property is surrounded by various small-holding activities including crop and livestock agriculture, quarrying and mining. The site is accessed by a gravel road off the R514. The property lies within the City of Tshwane Municipality.

The desktop ecological information for the property and surrounding areas was sourced from the South African National Biodiversity Institute (SANBI) and is described below.

The Survey Area falls within the Bushveld Biome, specifically the Moot Plains Bushveld vegetation type, and does not fall within a threatened Ecosystem (NEM:BA).

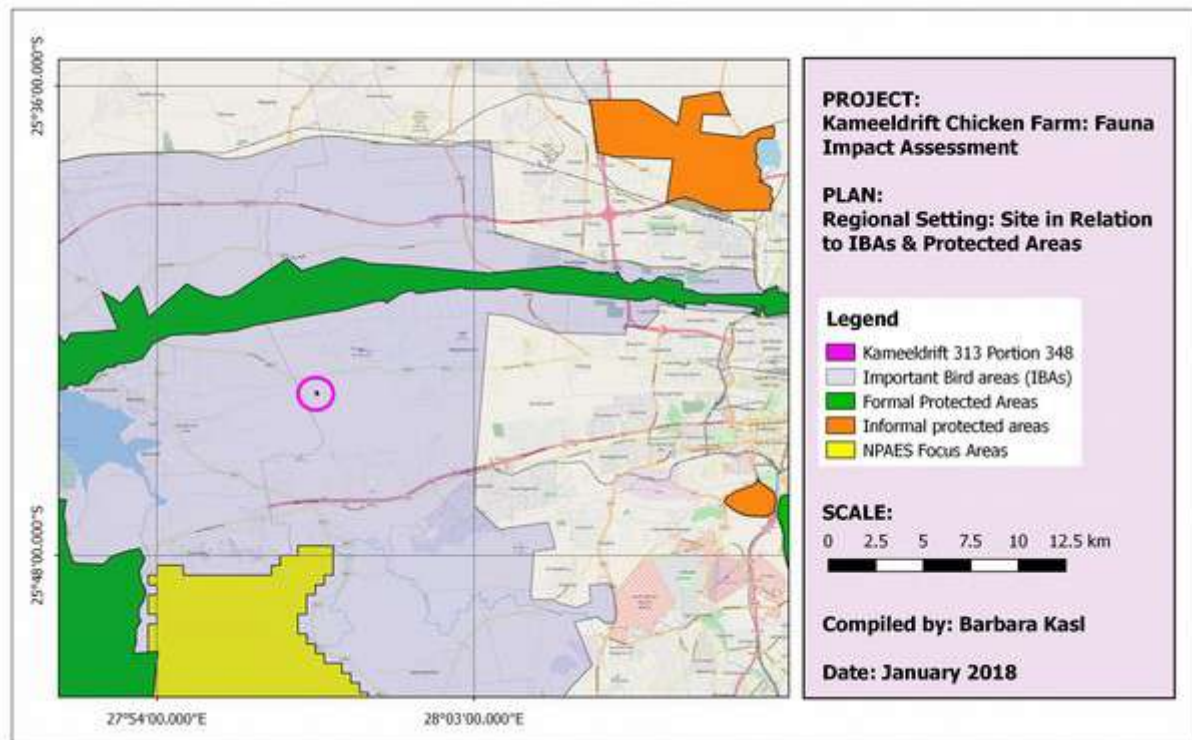
The regional setting in relation to Important Bird Areas (IBAs) and protected areas is indicated in Plan 1. The site overlaps the eastern extent of the Magaliesberg IBA (Plan 1). The Magaliesberg IBA occupies an area of 363 890 ha and is shared with the North West Province. It overlaps with protected areas, the Magaliesberg Biosphere and the Cradle of Humankind (World Heritage Site) and is partially protected. The main IBA trigger species are the Cape Vulture, Secretarybird, Lanner Falcon, Half-collared Kingfisher, African Grass Owl, African Finfoot and Verreauxs' Eagle.

There are no National Parks and no Informal Protected Areas near the property. The nearest Formal Protected Areas are the Magaliesberg Protected Natural Environment, approximately 4km north of site and the Cradle of Humankind World Heritage Site, 11km south west of site. National Protected Areas Expansion Strategies (NPAES) are targeted for areas east of the Cradle of Humankind: World Heritage Site.

The Magaliesberg Biosphere has joined the UNESCO World Network of Biosphere Reserves (June 2015). The area overlaps into North West and is a biodiversity hotspot for the Province and important for fauna conservation Nationally. The Magaliesberg Biosphere consists of separate management zones (<http://magaliesbergbiosphere.org.za/>) which include:

- Core Zone of the Magaliesberg Biosphere consists of the Magaliesberg Protected Natural Environment (MPNE – 37 000ha) which encompasses the Magaliesberg mountain range. The area has endured minimal development and is therefore in a pristine state and provides important habitat and refuge for fauna. Activities in this zone are restricted.
- Buffer Zone consists of ecologically conserved areas associated with the Cradle of Humankind (53 000ha), which also has global significance as a World Heritage Site. Limited activities permitted in this zone and restricted to activities that allow the persistence on natural or near-natural environments.
- Transition Zone which will be a controlled activity zone focussing on sustainable development; the zone currently covers an area in excess of 120 000ha. This zone will be dynamic and respond to the ecological and socio-economic demand.

The proposed sustainable development falls just within the southern border of the Transition Zone of the Magaliesberg Biosphere.



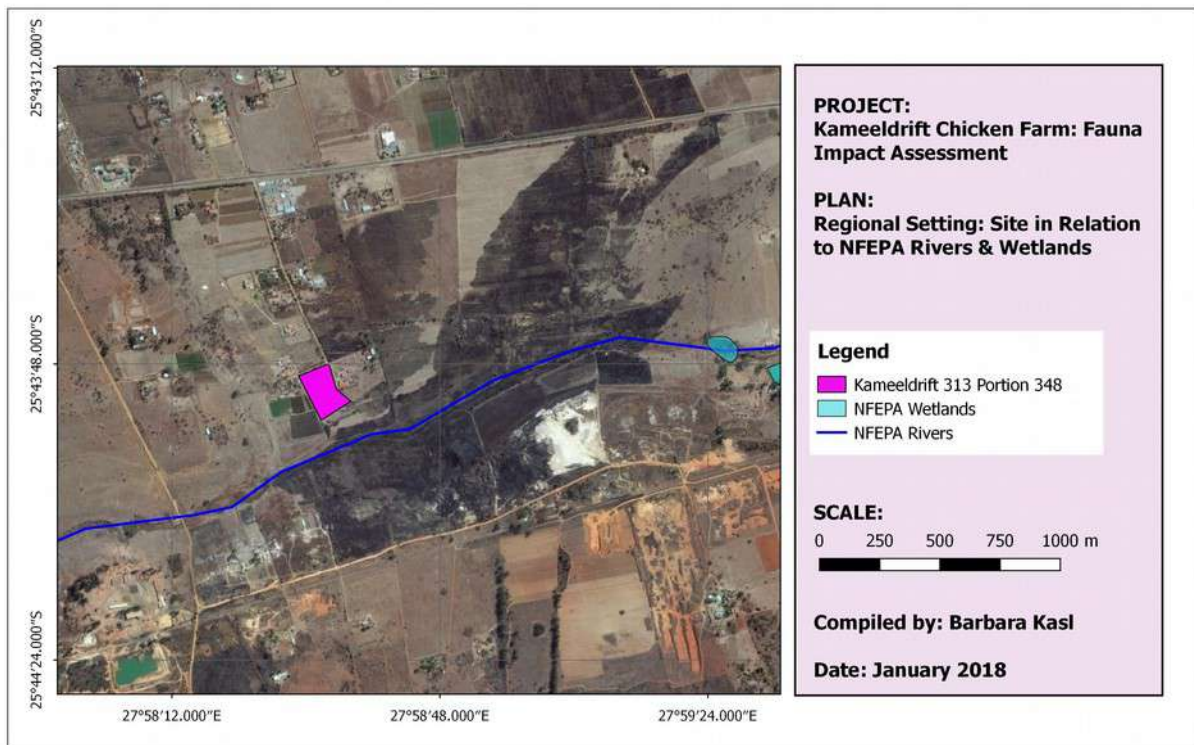
Plan compiled in QGIS with Open Street Maps (OSM) & SANBI & Birdlife SA shapefile data

Plan 1: Regional Setting of the property in relation to Important Bird Areas (IBAs, 2015) and National Protected Areas

The property boundary in relation to nearby National Freshwater Priority Areas (NFPEA) is indicated in Plan 2. The site is within the Upper Crocodile Catchment of the Crocodile West & Marico Water Management Area, specifically in quaternary catchment A21H. The property is north of the Swartspruit which flows from east to west and drains directly into the Hartebeespoort Dam. The Swartspruit is an NFPEA river with a PES of C and RIVCON of C and is moderately modified. The catchment area is designated as NFPEA Upstream Management Area.

The nearest two NFPEA wetlands are a dam along the Swartspruit, 1.3km east of the site and a second dam further east off-river. The dams are designated as artificial wetlands with NFPEA ranks of 6 and are not considered sensitive or important wetlands in terms of NFPEA.

In terms of the Gauteng Conservation Plan (C-Plan), the property is not designated for biodiversity management and conservation. An area south of the site, associated with the Swartspruit, is designated as an Ecological Support Area (ESA) (Plan 3).



Plan compiled in QGIS with Georeferenced Google Earth satellite imagery (2017) & SANBI & CSIR shapefile data

Plan 2: Local setting in relation to NFEPA's, including rivers and wetlands



Plan 3: Property in relation to the Gauteng Conservation Plan (SANBI GIS Database)

1.1 Scope of Work

As per the NEMA requirements, the following is relevant regarding the Scope of work:

- Assess the significance of the terrestrial fauna habitat components and current general conservation status of the property;
- Comment on ecologically sensitive areas in terms of terrestrial fauna;
- Comment on connectivity with natural vegetation and habitats on adjacent sites;
- Provide lists of terrestrial fauna that occur or might occur, with focus on ecologically sensitive species;
- Highlight potential impacts on terrestrial fauna, with specific focus on ecologically sensitive species; and
- Provide management recommendations to mitigate negative and enhance positive impacts of the activities on terrestrial fauna assemblages.

1.2 Relevant Legislation

The following Acts govern the environment and development in relation to the environment within South Africa:

- The Conservation of Agricultural Resources Act, 1983 (Act 43 of 1983);
- The Environmental Conservation Act, 1989 (Act No. 73 of 1989);
- The National Environment Management Act, 1998 (Act No. 107 of 1998);
- The National Environmental Management Biodiversity Act, 2004. (Act 10 of 2004);
- The National Environmental Management: Protected Areas Act (Act 57 Of 2003);
- The National Environmental Management: Waste Act [NEM:WA] (Act 59 of 2008);
- The National Environmental Management: Air Quality Act [NEM:AQA] (Act 39 of 2004);
- The National Forests Act, 2006 (Act 84 of 1998 as amended in 2006);
- The National Water Act, 1998 (Act No. 36 of 1998); and
- The Spatial Planning and Land Use Management Act (SPLUMA) (Act 16 of 2013).

NEM:BA and its regulations are of particular importance in terms of the fauna and flora ecosystems. The principal regulations considered within this report are:

- GN388, 2013: The National Environmental Management: Biodiversity Act (10/2004): Threatened or Protected Species Regulations. General Notice 388 of the 16 April 2013;
- GN389, 2013: The National Environmental Management: Biodiversity Act (10/2004): Publication of lists of species that are threatened or protected, activities that are prohibited and exemption from restriction. General Notice 389 of 16 April 2013;
- GN864, 2016: The National Environmental Management: Biodiversity Act (10/2004): Alien and Invasive Species Lists. General Notice 864 of 29 July 2016; and
- GNR598, 2014: National Environmental Management: Biodiversity Act (10/2004): Alien and Invasive Species Regulations. General Notice Regulation 598 of 1 August 2014.

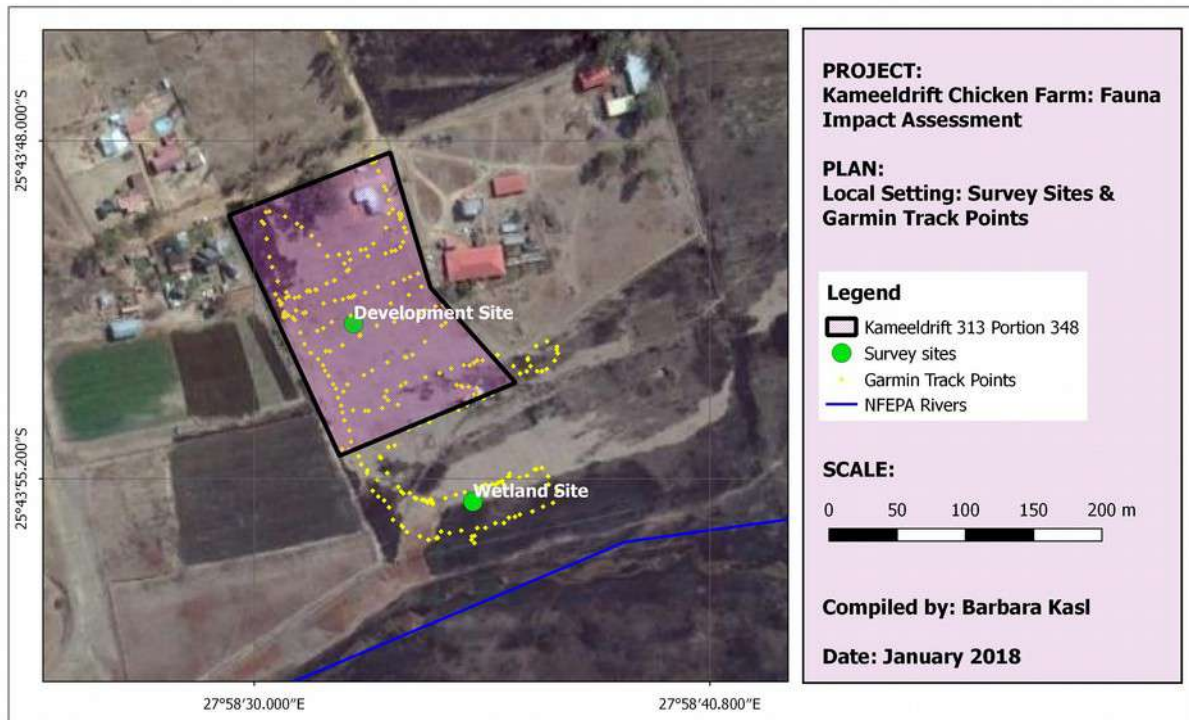
The Alien and Invasive Species Regulations published under GNR598 (2014) list aliens under various categories, including:

- Category 1a Listed Invasive Species are those species listed as such by notice in terms of section 70(1)(a) of NEM:BA as species which must be eradicated.
- Category 1b Listed Invasive Species are those species listed as such by notice in terms of section 70(1)(a) of NEM:BA as species which must be controlled.
- Category 2 Listed Invasive Species are those species listed by notice in terms of section 70(1)(a) of NEM:BA as species which require a permit to carry out a restricted activity within an area specified in the Notice or an area specified in the permit, as the case may be.
- Category 3 Listed Invasive Species are species that are listed by notice in terms of section 70(1)(a) of NEM:BA, as species which are subject to exemptions in terms of section 71(3) and prohibitions in terms of section 71A of Act, as specified in the Notice.

In addition, the Nature Conservation Ordinance 12 of 1983 as amended by Gauteng General Law Amendment Act 4 of 2005 provides for the regulation of nature conservation within the Gauteng Province.

2 Methodology

The study focussed on the Survey Area (the property) and immediate surrounds. Where accessible and relevant, a visual scan survey was done of an approximate 500m radius around the Survey Area for any potential specialist habitat/micro-habitat types. The site visit was undertaken during summer on 24 January 2018 immediately after some rainfall. On the day of the survey, the weather was partly cloudy to sunny and very good in terms of the fauna survey. Plan 4 indicates the routes travelled (walking) across site while sampling.



Plan compiled in QGIS with Georeferenced Google Earth satellite imagery (2017) & Garmin data

Plan 4: Sites assessed and tracks walked

Overall methodology included the following:

- Compiling desktop lists of species that could occur in QDGC 2527DB utilising multiple resources [including internet resources such as SABAP2, and the ADU Virtual Museum) and various field and identification guides as per the reference list] to ensure comprehensive species lists for the area. In terms of this report, such species are referred to as desktop species. Desktop species were further evaluated in terms of:
 - Ecologically sensitive species (protected, alien invasive, endemic).
 - Distribution, habitat, micro-habitat, roosting and feeding preferences, where relevant, for ecologically sensitive species.
- Completing a site assessment, which entailed the following:
 - Overall assessment of broad fauna habitat types within the Survey Area and recording any species observed during such surveys.
 - Visual scans for specialist habitat types beyond the Survey Area where relevant.
 - Walk-through survey of representative samples of each fauna habitat type for:
 - Signs of fauna species, including direct sightings, tracks, calls and/or other ecological indicators (scat, dung, nests, egg shells, skeletal remains, etc.).
 - Any specific micro-habitats, such as substrate types, water resource types, rocky areas, wooded areas, man-made structures, cliffs, etc.
 - Where possible evaluation of available, local knowledge and past surveys.

- A probability assessment to determine the likelihood of desktop species occurring on site was completed based on the findings above. The probability assessment should be seen as a ranking system rather than an absolute and is designed to reduce subjectivity of assessments. Each Desktop Species was assessed as follows in terms of likelihood of occurrence:
 - Confirmed: either through past or current surveys or through sightings, ecological indicators and local knowledge.
 - Highly Likely: Distribution of the species occurs over the Survey Area and the site provides habitat, roosting and food requirements. The species is likely to reside on site for a length of time (season or year).
 - Possible: Distribution of the species occurs over the Survey Site but the specific habitat, roosting or food requirements are limited on the Survey Area, but are present in the surrounds. Species may forage over or traverse the Survey Area.
 - Very Unlikely: Distribution is on the edge of Survey Area and habitat, roosting and food requirements are absent or very limited in the Survey Area and surrounds. Also utilised for species identified in Citizen Science projects but that do not have distributions within the area.
- Compiling a report which encompasses the specific requirements of the Scope of Work and any legislative requirements deemed necessary in terms of the specific study. In general the following has been included in terms of NEMA:
 - Assessment of ecologically sensitive areas relevant to terrestrial fauna Confirmed to occur on site and ecologically sensitive species Highly Likely to occur on site.
 - Impact Assessment in terms of the development on terrestrial fauna.
 - Terrestrial fauna management plan and monitoring where this is deemed relevant.

2.1 Limitations

Specialist studies are conducted to certain levels of confidence, and in all instances known and accepted methodologies have been used and confidence levels are generally high. This means that in most cases the situation described in the report is accurate at high certainty levels, but there exists a low probability that some aspects have not been identified during the studies. Such situations cannot be avoided simply due to the nature of field work and have therefore not been further discussed below.

In situations where species sampling or sensitive site assessment is conducted (such as is completed for this fauna assessment), it must be understood that time limitations and conditions on site means that not all species can be identified / sites can be discovered during the surveys. Again, as accepted methodologies are used, this is not deemed to be a fatal flaw, but must be considered.

There are inherent errors in GPS and mapping programmes which must be considered with all mapping information presented. Furthermore, Google Earth Satellite imagery was used and considered the latest aerial data available.

Analyses, assessment and modelling systems/programmes are merely tools which assist the researcher in assessing field observations and reducing subjectivity of findings but still have innate assumptions which can reduce objectivity and should always be considered when assessing results.

Lastly, impact assessment is a predictive tool to identify aspects of a development that need to be prevented, altered or controlled in a manner to reduce the impact to the receiving environment, or determine where remediation activities will need to be incorporated into the overall development/activity plan. This does not mean that the impact will occur at the predicted significance, but provides guidance on the formulation of the management and monitoring requirements which need to be incorporated to prevent/reduce/manage the impact.

Specific limitations relevant to this study in terms of fauna are as follows:

- No trapping was completed. The nature of the site deemed this unnecessary. Trapping would increase costs significantly and can cause severe stress to animals trapped, without necessarily providing additional insight to the overall fauna biodiversity.
- The preceding evening and morning rainfall would have washed out any animal tracks.
- The site is surrounded by developments on all sides (crop farming, buildings, gravel roads, historical chrome mining, quarries, chicken farm) except to the south. The neighbouring southern property overlaps with the Swartspruit wetland (approximately overlying the ESA in Plan 3) and buffer zone and provides the only connection to natural areas.



3 Results

Due to the fact that animals are mobile, they may only be transient through the Survey Area and may not reside on site. The results presented below focuses on animals that are Confirmed and Highly Likely to occur on site, with some discussion on species that could Possibly occur on site where these are Nationally protected species. This is largely presented as the probability assessments presented as Appendices B to E in this report, which is based on species distribution (fauna with distributions very close to site are included in the lists due to mobility of fauna), adequacy of habitats / micro-habitats, roosting and nesting sites, and food availability, where applicable, in the Survey Area and in neighbouring areas. These are discussed below.

3.1 Overall Site Assessment

Table 1 provides a brief summary of the sites assessed in terms of overall habitat type and, where relevant, micro-habitats and specialised food sources. Due to the small size of the property, the areas assessed included the southern wetland area of the Swartspruit (lies outside the proposed development site) and the site itself.

Table 1: Sites assessed and general characteristics as may be relevant to fauna

Site	General Character, Micro-habitats & Overall Site Observations
Wetland Site	 <p>The site (photo facing south) is not targeted for development and is situated between the site and the Swartspruit (earth banks seen in photo). The site provides several riverine and wetland micro-habitats, including running water, patches of exposed earth banks, dense and patchy reed-beds, and short grassy areas. Clay soils occur across the area; no sandy soils present. Scattered, sparse bushes occur along the Swartspruit.</p>
Development Site	 <p>The site (photo facing south-east) is proposed for development and lies outside the wetland area. The site slopes very gently southwards towards the Swartspruit. The site is homogenous and provides minimal micro-habitats, limited to grassy areas of various height and density, areas of exposed hard ground with very few bushes/ trees. Loam soils occur across the area with some gravel and pebble strewn areas on the northern part of the property; no sandy soils present. Tall trees occur only in the far northern extent of the property (eucalyptus), but the neighbouring plots also provided some arboreal habitats.</p>

3.2 Habitat Characteristics Specific to Fauna

The availability of overall habitat types and specific micro-habitats is the first step in determining the likelihood of fauna occurring on site. From aerial and satellite imagery, various land uses occur within 1km of the site and include: tarred main roads, gravel roads, railway lines, various small-holding activities

including crop and livestock agriculture, quarrying and mining, pet kennels, shops and petrol stations, warehousing and show rooms. Most of the areas are disturbed to various degrees and natural landscapes are limited to the Swartspruit south of site.

Table 1 details the types of micro-habitats available on site. In terms of fauna and habitat the following is relevant:

- Fauna with a preference for grassland or generalist species are more likely to occur on site. The use of site by cattle for grazing and the surrounding anthropogenic activities means that shy or sensitive species are unlikely to occur on site for any length of time.
- Fauna preferring open waters associated with dams or lakes or muddy banks/flats will not occur in the Survey Area, but may forage over the site from surrounding areas where dams are present.
- Fauna preferring flowing waters associated with streams/rivers may occur along the Swartspruit and again may forage into the Survey Area.
- Fauna preferring reedy wetlands may occur along the Swartspruit, although reed beds were patchy and scarce in the nearby area.
- Fauna preferring rank vegetation or rank grassland and floodplain vegetation could occur in the adjacent wetland area south of site and may forage in the Survey Area.
- Species burrowing or nesting in vertical banks could occur along the Swartspruit and again may forage over the Survey Area.
- Fauna with preference for bushveld are highly unlikely to occur in the Survey Area, but may forage in the Survey Area as bushveld vegetation is present in the surrounds.
- Arboreal species or species requiring trees for roosting or nesting are highly unlikely to occur in the Survey Area, but may forage in the site as wooded areas are present in the surrounds.
- Species preferring dense vegetative cover are unlikely to occur on site, but may occur in the denser vegetation along the Swartspruit and therefore could forage in the Survey Area.
- Fauna with preference for scattered rocky and stony substrates or rocky outcrops are unlikely to occur on site.
- Fauna species roosting or breeding on cliffs or reliant on steeper topographical features will not reside in the Survey Area; but due to the nearby Magaliesberg, avian species are highly likely to forage or fly over the site.
- Species with a preference for sandy soils are very unlikely to occur in the Survey Area. This would exclude several moles and rodents, as well as burrowing reptiles.
- Species associated with termitaria are unlikely to occur in the Survey Area as no termitaria were present.
- Bat species reliant on caves for roosting are not likely to occur on site, but may forage over the area.

The homogenous landscape surrounded by various anthropogenic activities and limited connectivity to natural areas would dictate low fauna diversity and sporadic fauna activity. This was supported by field assessments as reported below.

3.3 Fauna Food Sources

The primary trophic level (vegetation) can support a variety of herbivorous species, largely grazers and to a limited extent browsers.

Although a specific invertebrate assessment did not form part of the scope of work, the Survey Area supported insect life, including species of Orthoptera (locusts & crickets), Blattodea (cockroaches) Diptera (flies), Hemiptera (bugs), Hymenoptera (wasps & ants) and Lepidoptera (butterflies and moths). Insects and invertebrates provide the next main trophic level and therefore the site could support insectivorous species.

Small animals, largely rodents and birds, would supply food to predators, including owls, raptors and smaller carnivores. Some bird kills (chickens) were noted around site; the developer and owner of the existing chicken farm, north and adjacent to the property, indicated that he did put dead birds out for scavengers and these are likely the carcasses noted on site. Furthermore some remnants of a small vertebrate carcass were also noted on site, but were old and not much could be deduced.

Due to the fact that few animals are likely to reside on site and are more likely transient through site, small prey, and therefore carnivore activity, would be limited on site.

3.4 Mammals

Sources utilised for mammal distribution and identification included:

- Stuarts' Field Guide to Mammals of Southern Africa including Angola, Zambia & Malawi. 5th Edition (Stuart & Stuart, 2015) was utilised to generate mammal desktop lists and assist in identification as needed. Additional species information was provided by:
 - Bats of Southern and Central Africa: A biogeographic and Taxonomic Synthesis (Monadjem *et al.*, 2010a).
 - Rodents of Sub-Saharan Africa: A biogeographic and Taxonomic Synthesis (Monadjem *et al.*, 2010b)The Ultimate Field Guide to Mammals in Southern Africa Application for Android.
- Desktop species were sourced also sourced for the specific quarter degree grid square from the ADU Virtual Museum (specifically MammalMAP) for the period of 2013-2017.
- A Field Guide to the Tracks & Signs of Southern, Central & East African Wildlife (Stuart & Stuart, 2013) was utilised to assist in identification of animal signs.
- SANBI.Org was consulted for the latest Red Data Mammal (2016) for South Africa.

The full mammal desktop list is provided in Appendix B. The list includes mammal species with distribution ranges overlapping the site, the national and IUCN status of each animal and its probability of occurring in the Survey Area, taking into consideration distribution range, preferred habitats / micro-habitats and food sources.

Indicators (dung) of only one mammal species was recorded; the scrub hare. No other indicators (tracks or burrows) were noted. In addition old dung, most likely of a domestic dog, and cow dung was recorded from site.

The Animal Demographic Unit runs a citizen science project for various fauna groups. The MammalMAP indicates an additional 5 species for the relevant grid, including the Blesbok, Hedgehog, Vervet Monkey, Porcupine and Tree Squirrel.

No mammals of conservation concern were observed on site.

3.4.1 Species of Conservation Concern

Protected status of animals was sourced from SANBI (2016) and GNR389 (2013). Appendix B should be consulted for protected species that could occur on site.

Focussing on species with a High (site) or Possible (surrounds) likelihood of occurring on site, Table 2 indicates all IUCN and South African threatened (excluding Least Concerned & Near Threatened) species, and species protected under South African Legislation (GN389, 2013). The Vulnerable White-tailed Mouse and Near Threatened Southern African Vlei Rat are the only South African Red-Listed mammals likely to occur on site in terms of habitat. Neither are protected under GN389 of 2013.

The Gauteng Nature Conservation Ordinance 12 of 1983 as amended by Gauteng General Law Amendment Act 4 of 2005 should be consulted for restricted activities (hunting, trapping, catching, releasing) related to scheduled mammals in Gauteng.

3.4.2 Invasive Species

Focussing on species with a High or Possible likelihood of occurring on site, Table 2 indicates all species listed as aliens under South African Legislation (GN864, 2016). Three non-categorised invasive species (not categorised for the Gauteng Province), the House Rat and House Mouse are highly likely to occur on site and the Brown Rat could possibly occur on site.

Table 2: Mammals of interest

Common name	Taxon name	SA Status	IUCN (2016)	Site Occurrence
SITE SPECIES				
Hare, Scrub	<i>Lepus saxatilis</i>			Confirmed – Dung
SPECIES OF CONSERVATION IMPORTANCE				
Mouse, White-tailed	<i>Mystromys albicaudatus</i>	Vulnerable	Endangered	Highly likely
Rat, Southern African Vlei (grassland)	<i>Otomys auratus</i>	Near Threatened	Near Threatened	Highly likely
Hyaena, Brown	<i>Hyaena brunnea</i>	Near-threatened (Protected under GN389, 2013)	Near Threatened	Possible
Leopard	<i>Panthera pardus</i>	Vulnerable (Protected under GN389, 2013)	Vulnerable	Possible
Otter, Cape Clawless	<i>Aonyx capensis</i>	Near-threatened	Near Threatened	Possible
Pangolin	<i>Smutsia (Manis) temminckii</i>	Vulnerable (Vulnerable under GN389, 2013)	Vulnerable	Possible
ALIEN SPECIES				
Rat, House	<i>Rattus rattus</i>	Non-categorised Invasive		Highly likely
Mouse, House	<i>Mus musculus</i>	Non-categorised Invasive		Highly likely
Rat, Brown	<i>Rattus norvegicus</i>	Non-categorised Invasive		Possible

3.5 Birds

Sources utilised for bird distribution and identification included:

- Southern African Bird Atlas Project (SABAP2) (sabap2.adu.org.za) is a Citizen Science project providing annual bird lists for each Quarter Degree Grid (QDG). The SABAP2 data for 2007-2017 was utilised as the initial desktop list.
- Roberts Bird Guide, 2nd Edition (Chittenden *et al.*, 2016) was used to add any additional species with distributions falling over the Survey Area, determine endemic species and was consulted for identification, distribution, habitat, roosting and feeding requirements of ecologically sensitive species.
- Taylor (2015) was utilised for ecological statuses of birds species, regarding Red Data listings.
- Sasol Birds of Southern Africa, 4th Edition (Sinclair *et al.*, 2011) was also consulted for identification, distribution, habitat, roosting and feeding requirements of ecologically sensitive species.
- Roberts VII Multimedia Birds of Southern Africa application for Android and IOS was used to assist in identification or additional clarifying information.
- Roberts Nests & Eggs of Southern African Birds (Tarboton, 2014) to assist in field identification where needed.
- A Field Guide to the Tracks & Signs of Southern, Central & East African Wildlife (Stuart & Stuart, 2013) to assist in field identification where needed.

The full avifauna desktop list is provided in Appendix C. The list includes avifauna species with distributions overlapping the site, endemic status of birds, the national and IUCN status of each bird and its probability of occurring on site, taking into consideration distribution range, preferred habitats / micro-habitats, nesting/roosting requirements and food sources.

As with mammal life, bird life observed in the Survey Area was low, as to be expected with homogenous habitats. In terms of the site, only grassland specialists are highly likely to reside on site. As many birds are mobile, many species may forage over the site as many habitat types occur in the neighbouring region, including water bodies (rivers and dams), mountains with cliffs and rocky outcrops, various woodlands, largely associated with gardens on the small holdings and the typical bushveld for the area. Therefore many avian species could frequent the site (could possibly occur), but are unlikely to remain at the site for any length of time.

Many of the birds confirmed on site, occurred on or originated within neighbouring areas. None of the birds observed (Table 3) are protected species and only the Cape Weaver is a Near Endemic species and a fairly common resident.

3.5.1 Species of Conservation Concern

Protected status of birds was sourced from the latest Red Data book for birds (Taylor's, 2015 listings) and GNR389 (2013) and the endemic status from Roberts Bird Guide (Chittenden *et al.*, 2016) (Table 3).

Of the species with a high likelihood of occurring on site, the Lanner Falcon and Secretary Bird are Vulnerable. The Cape Vulture is Endangered and could forage over the site. These species are the main

avian species of ecological concern and will form the focus of management measures in terms of birds, especially considering that the proposed development site is within an Important Bird Area.

The Gauteng Nature Conservation Ordinance 12 of 1983 as amended by Gauteng General Law Amendment Act 4 of 2005 should be consulted for restricted activities (hunting, trapping, catching, releasing) related to scheduled birds in Gauteng.

3.5.2 Invasive Species

In terms of birds, three Category 3 invasive species (GN864, 2016) are highly likely to occur on site: the Rock Dove, House Sparrow and Common Myna.

Table 3: Birds of interest

Common name	Taxon name	Endemic / Migratory	SA Status	IUCN, 2016	Occurrence
SITE SPECIES					
Hornbill, African Grey	<i>Tockus nasutus</i>				Confirmed
Kite, Black-shouldered	<i>Elanus caeruleus</i>				Confirmed
Lapwing, Blacksmith	<i>Vanellus armatus</i>				Confirmed
Lapwing, Crowned	<i>Vanellus coronatus</i>				Confirmed
Martin, Banded	<i>Riparia cincta</i>				Confirmed
Martin, Brown-throated	<i>Riparia paludicola</i>				Confirmed
Stork, White	<i>Ciconia ciconia</i>				Confirmed
Weaver, Cape	<i>Ploceus capensis</i>	Endemic			Confirmed
ENDEMIC SPECIES					
Weaver, Cape	<i>Ploceus capensis</i>	Near Endemic			Confirmed
Chat, Anteating	<i>Myrmecocichla formicivora</i>	Endemic			Highly Likely
Crane, Blue	<i>Anthropoides paradiseus</i>	Endemic	Near Threatened [Vulnerable (GN389)]	Vulnerable	Highly Likely
Korhaan, Northern Black	<i>Afrotis afraoides</i>	Endemic			Highly Likely
Lark, Melodious	<i>Mirafraga cheniana</i>	Near Endemic	Least Concern	Near threatened	Highly Likely
Longclaw, Cape	<i>Macronyx capensis</i>	Endemic			Highly Likely
Swallow, South African Cliff	<i>Hirundo spilodera</i>	Breeding endemic			Highly Likely
Waxbill, Swee	<i>Coccyzygia melanotis</i>	Endemic			Highly Likely
Babbler, Southern Pied	<i>Turdoides bicolor</i>	Endemic			Possible
Boubou, Southern	<i>Laniarius ferrugineus</i>	Endemic			Possible
Buzzard, Jackal	<i>Buteo rufufuscus</i>	Near Endemic			Possible
Flycatcher, Fairy	<i>Stenostira scita</i>	Endemic			Possible
Flycatcher, Fiscal	<i>Sigelus silens</i>	Endemic			Possible
Grassbird, Cape	<i>Sphenoeacus afer</i>	Endemic			Possible
Mousebird, White-backed	<i>Colius colius</i>	Endemic			Possible
Robin-chat, White-throated	<i>Cossypha humeralis</i>	Endemic			Possible
Rock-thrush, Cape	<i>Monticola rupestris</i>	Endemic			Possible
Shelduck, South African	<i>Tadorna cana</i>	Endemic			Possible
Sunbird, Greater Double-collared	<i>Cinnyris afer</i>	Endemic			Possible
Thrush, Karoo	<i>Turdus smithi</i>	Endemic			Possible
Vulture, Cape	<i>Gyps coprotheres</i>	Endemic	Endangered [Vulnerable, GN389, 2013]	Endangered	Possible

Common name	Taxon name	Endemic / Migratory	SA Status	IUCN, 2016	Occurrence
White-eye, Cape	<i>Zosterops virens</i>	Endemic			Possible
SPECIES OF CONSERVATION IMPORTANCE					
Crane, Blue	<i>Anthropoides paradiseus</i>	Endemic	Near Threatened [Vulnerable (GN389)]	Vulnerable	Highly Likely
Falcon, Lanner	<i>Falco biarmicus</i>		Vulnerable		Highly Likely
Lark, Melodious	<i>Mirafra cheniana</i>	Near Endemic		Near Threatened	Highly Likely
Pratincole, Black-winged	<i>Glareola nordmanni</i>		Near Threatened	Near Threatened	Highly Likely
Sandgrouse, Yellow-throated	<i>Pterocles gutturalis</i>		Near Threatened		Highly Likely
Secretarybird, Secretarybird	<i>Sagittarius serpentarius</i>		Vulnerable	Vulnerable	Highly Likely
Stork, Abdim's	<i>Ciconia abdimii</i>		Near Threatened; Non-breeding, migrant		Highly Likely
Stork, Marabou	<i>Leptoptilos crumeniferus</i>		Near Threatened		Highly Likely
Dove, European Turtle	<i>Streptopelia turtur</i>			Vulnerable	Possible
Eagle, Martial	<i>Polmaetus bellicosus</i>		Endangered [Vulnerable, GN389, 2013]	Vulnerable	Possible
Eagle, Steppe	<i>Aquila nipalensis</i>			Endangered	Possible
Eagle, Tawny	<i>Aquila rapax</i>		Endangered [Vulnerable, GN389, 2013]		Possible
Eagle, Verreaux's	<i>Aquila verreauxii</i>		Vulnerable		Possible
Falcon, Red-footed	<i>Falco vespertinus</i>		Near threatened	Near threatened	Possible
Harrier, African Marsh	<i>Circus ranivorus</i>		Endangered		Possible
Kingfisher, Half-collared	<i>Alcedo semitorquata</i>		Near threatened		Possible
Korhaan (Bustard), White-bellied	<i>Eupodotis senegalensis</i>		Vulnerable		Possible
Owl, African Grass	<i>Tyto capensis</i>		Vulnerable		Possible
Roller, European	<i>Coracias garrulus</i>		Near Threatened	Near Threatened	Possible
Sandpiper, Curlew	<i>Calidris ferruginea</i>			Near Threatened	Possible
Snipe, Great	<i>Gallinago media</i>		Not Assessed	Near Threatened	Possible
Stork, Black	<i>Ciconia nigra</i>		Vulnerable		Possible
Stork, Yellow-billed	<i>Mycteria ibis</i>		Endangered		Possible
Vulture, Cape	<i>Gyps coprotheres</i>	Endemic	Endangered [Vulnerable, GN389, 2013]	Endangered	Possible
Vulture, Lappet-faced	<i>Torgos tracheliotus</i>		Endangered [Vulnerable, GN389, 2013]	Endangered	Possible
Vulture, White-backed	<i>Gyps africanus</i>		Endangered [Protected, GN389, 2013]	Critically Endangered	Possible
ALIEN SPECIES					
Dove, Rock	<i>Columba livia</i>		Category 3 Invasive (GN864, 2016)		Highly likely
Myna, Common	<i>Acridotheres tristis</i>		Category 3 Invasive (GN864, 2016)		Highly likely
Sparrow, House	<i>Passer domesticus</i>		Category 3 Invasive (GN864, 2016)		Highly likely
Duck, Mallard	<i>Anas platyrhynchos</i>		Category 2 Invasive (GN864, 2016)		Possible

3.6 Reptiles

Sources utilised for reptile distribution and identification included:

- Atlas and red list of the reptiles of South Africa, Lesotho and Swaziland (Bates, *et al.*, 2014).
- Chameleons of Southern Africa (Tolley & Burger, 2012) was utilised for additional information requirements and identification as needed.
- Desktop species were also sourced for the specific quarter degree grid square from the ADU Virtual Museum (specifically ReptileMAP) for the period of 2013-2017.
- A Field Guide to the Tracks & Signs of Southern, Central & East African Wildlife (Stuart & Stuart, 2013) to assist in field identification where needed.

The full reptile desktop list is provided in Appendix D. The list includes the endemic status of reptiles, the national and IUCN status of each species and its probability of occurring on site, taking into consideration distribution range, preferred habitats / micro-habitats, sheltering habits and food sources.

No reptiles were observed on site. No reptile burrows were noted on site but cannot be excluded. It is possible that the preceding rains sealed up the smaller burrows of reptiles.

The ADU records (2013-2017) indicate the following species for the quarter degree grid square:

- The Puff Adder, Yellow-throated Plated Lizard, Brown House Snake, Short-snouted Grass Snake and Variable Skink all highly likely to occur on site as these species prefer grassland habitats.
- The Souther Rock Agama, Southern Tree Agama, Common Flap-Neck chameleon, Snouted Cobra, Common Egg-eater, Common Dwarf Day Gecko, Transvaal Thick-toed Gecko, Tropical House Gecko, Common Girdled Lizard, Water Monitor, Speckled Rock Skink and Spotted Bush Snake all which could occur in neighbouring areas and could frequent the site.

3.6.1 Species of Conservation Concern

The main sources utilised for the protected status of reptiles was the Atlas and Red List of the Reptiles of South Africa, Lesotho and Swaziland (Bates, *et al.*, 2014) and GNR389 (2013).

Endemic and near endemic (Bates, *et al.*, 2014) species that are Highly likely or may Possibly occur on site are indicated in Table 4. The Survey Area will support endemic and near-endemic species but most have wide distributions across South Africa and none are specifically restricted to this area.

Focussing on species with a High or Possible likelihood of occurring on site, Table 4 indicates all IUCN and South African threatened (excluding Least Concerned & Near Threatened) species, and species protected under South African Legislation (GN389, 2013). The Near Threatened Coppery Grass Lizard is highly likely to occur on site and the Near Threatened Striped Harlequin Snake may frequent the site. Grass Lizards tend to be very habitat specific. The Coppery Grass Lizard is not fossorial and is a rapid mover within the grassy habitats. It is most likely that the commencement of the development will cause the species to retreat to the surrounds. According to Bates *et al.* (2014), the main threats are the transformation of habitat for crop farming and plantations and extreme urbanisation in Gauteng.

An additional four species are protected under legislation (GNR389, 2013) as per Table 4 and may not be harmed, hindered or killed.

The Gauteng Nature Conservation Ordinance 12 of 1983 as amended by Gauteng General Law Amendment Act 4 of 2005 should be consulted for restricted activities (hunting, trapping, catching, releasing) related to scheduled reptiles in Gauteng.

3.6.2 Invasive Species

Bates, *et al.* (2014) provide lists of exotic snakes that have been collected around South Africa. None have been recorded from the Magaliesberg area in Gauteng, but cannot be excluded from the area.

Table 4: Reptiles of interest

Common name	Taxon name	Endemism	SA Status	IUCN (2016)	Site Occurrence
SITE SPECIES					
No species or indicators/tracks of species observed during site assessments.					
ENDEMIC SPECIES					
Agama, Eastern Ground	<i>Agama aculeata distanti</i>	Endemic			Highly Likely
Lizard, Coppery Grass (Transvaal Grass)	<i>Chamaesaura aenea</i>	Endemic	Near Threatened		Highly Likely
Lizard, Delalande's Sandveld	<i>Nucras laladii</i>	Endemic	Least concern		Highly Likely
Rinkhals	<i>Hemachatus haemachatus</i>	Near Endemic			Highly Likely
Shovel-snout, Sundevall's	<i>Prosymna sundevalli</i>	Near Endemic			Highly Likely
Slug-eater, Common	<i>Duberria lutrix lutrix</i>	Endemic			Highly Likely
Snake, Crossed Whip	<i>Psammophis crucifer</i>	Near Endemic			Highly Likely
Snake, Distant's Thread	<i>Leptotyphlops distanti</i>	Near Endemic			Highly Likely
Snake, Olive Ground	<i>Lycodonomorphus inornatus</i>	Endemic			Highly Likely
Agama, Southern Rock	<i>Agama atra</i>	Near Endemic			Possible
Gecko, Spotted Dwarf	<i>Lygodactylus ocellatus ocellatus</i>	Endemic			Possible
Gecko, Transvaal Thick-toed	<i>Pachydactylus affinis</i>	Endemic	(Protected, GN389, 2013)		Possible
Lizard, Common Girdled (Transvaal Girdled)	<i>Cordylus vittifer</i>	Near Endemic			Possible
Skink, Thin-tailed Legless	<i>Acontias gracilicauda</i>	Endemic			Possible
Snake, Aurora House	<i>Lamprophis aurora</i>	Endemic			Possible
Snake, Bibron's Blind	<i>Afrotyphlops bibronii</i>	Near Endemic			Possible
Snake, Striped Harlequin	<i>Homoroselaps dorsalis</i>	Endemic	Near Threatened	Near Threatened	Possible
Snake, Western Natal Green	<i>Philothamnus natalensis occidentalis</i>	Endemic			Possible
Tortoise, Lobatse Hinged-back	<i>Kinixys lobatsiana</i>	Near Endemic			Possible
SPECIES OF CONSERVATION IMPORTANCE					
Gecko, Cape	<i>Pachydactylus capensis</i>		Protected, GN389, 2013		Highly Likely
Lizard, Coppery Grass (Transvaal Grass)	<i>Chamaesaura aenea</i>	Endemic	Near Threatened		Highly Likely

Common name	Taxon name	Endemism	SA Status	IUCN (2016)	Site Occurrence
Gecko, Transvaal Thick-toed	<i>Pachydactylus affinis</i>	Endemic	Protected, GN389, 2013		Possible
Python, Southern African	<i>Python natalensis</i>		Protected, GN389, 2013		Possible
Snake, Striped Harlequin	<i>Homoroselaps dorsalis</i>	Endemic	Near Threatened	Near Threatened	Possible
Adder, Horned	<i>Bitis caudalis</i>		Protected, GN389, 2013		Very Unlikely
ALIEN SPECIES					
None recorded from the area					

3.7 Amphibians

Sources utilised for amphibian distribution and identification included:

- A Complete Guide to the Frogs of Southern Africa (du Preez & Carruthers, 2009).
- Desktop species were sourced also sourced for the specific quarter degree grid square from the ADU Virtual Museum (specifically FrogMAP) for the period of 2013-2017.
- A Field Guide to the Tracks & Signs of Southern, Central & East African Wildlife (Stuart & Stuart, 2013) to assist in field identification where needed.

The full frog desktop list is provided in Appendix E. The list includes the national and IUCN status of each frog and its probability of occurring on site, taking into consideration distribution range, preferred habitats / micro-habitats.

No frogs were observed during site visits.

The ADU records indicate that the Tremolo Sand Frog, Red Toad and Giant Bullfrog have been recorded from the quarter degree grid over the 2013-2017 period.

3.7.1 *Species of Conservation Concern*

The Giant Bullfrog, as recorded in the quarter degree grid (ADU, 2018), could occur on site. The species hibernates underground in sandy (1m below) and clay (300mm below) substrates, emerging only during the peak of the rainy season (November/December) (du Preez & Carruthers, 2009). The main threat to the species is urbanisation and crop farming.

The Gauteng Nature Conservation Ordinance 12 of 1983 as amended by Gauteng General Law Amendment Act 4 of 2005 should be consulted for restricted activities (hunting, trapping, catching, releasing) related to scheduled frogs (currently only the Giant Bullfrog) in Gauteng.

3.7.2 *Invasive Species*

No categorised alien invasive frogs are likely to occur on site. The Guttural Toad is listed as an alien invasive species in Western Cape only, where it occurs outside its natural range.

3.8 Invertebrates

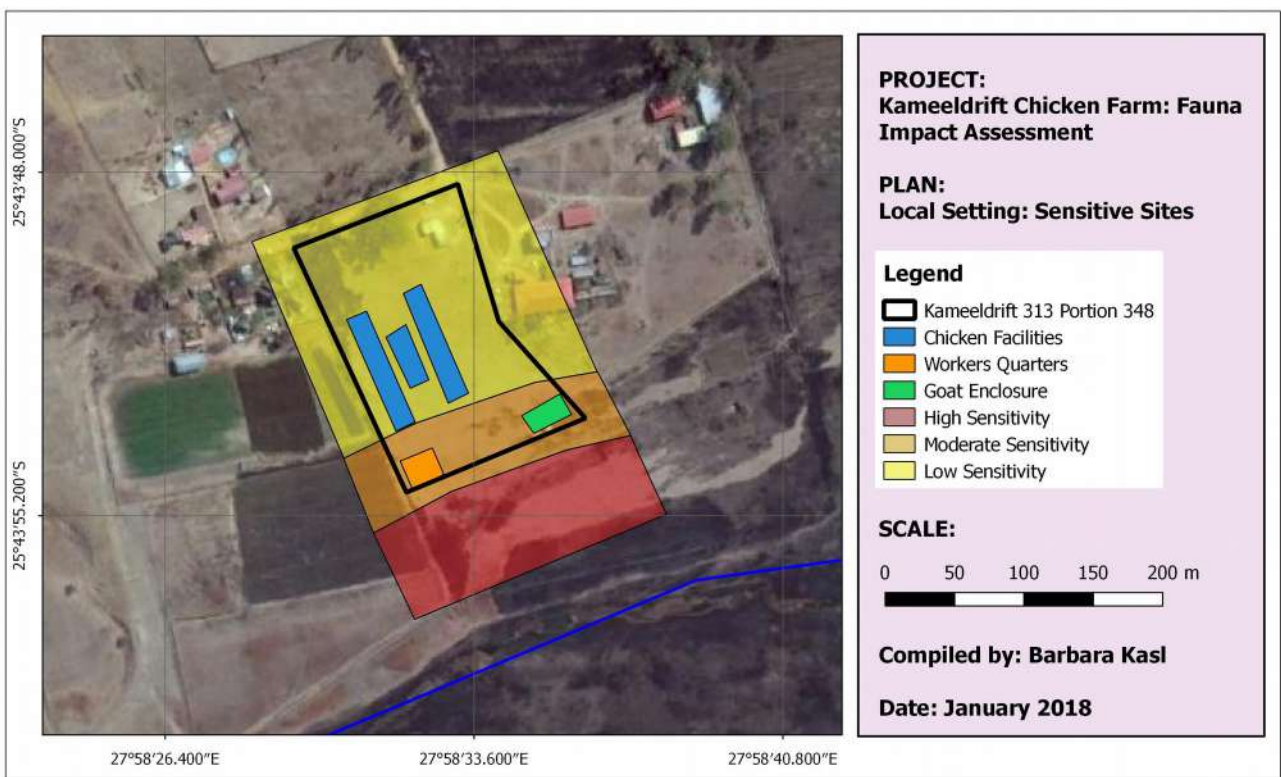
Desktop species were sourced for the specific quarter degree grid (QDG) from the ADU Virtual Museum (specifically DungBeetleMAP, LacewingMAP, OdonataMAP, LepiMAP, SpiderMAP, ScorpionMAP) for the period of 2013-2017. The following is relevant:

- No threatened or endemic butterfly species have been recorded for the QDG for the 2013-2017 period.
- No threatened or endemic dung beetles have been recorded for the QDG for the 2013-2017 period.
- No threatened or endemic lacewings have been recorded for the QDG for the 2013-2017 period.
- No threatened or endemic Odonata (damselflies and dragonflies) have been recorded for the QDG for the 2013-2017 period.

- No threatened or endemic spiders have been recorded for the QDG for the 2013-2017 period.
- No threatened or endemic scorpions have been recorded for the QDG for the 2013-2017 period.

3.9 Habitat Sensitivity in Terms of Fauna

In terms of the Gauteng Conservation Plan (C-Plan), the property is not designated for biodiversity management and conservation. An area south of the site, associated with the Swartspruit, is designated as an Ecological Support Area (ESA) (Plan 3). It is assumed that this area aligns with the wetland and some of its buffer zone and this site is considered highly sensitive. The Swartspruit forms an important ecological corridor locally, and in terms of the site is the only neighbouring natural site providing refuge for animals. The site is outside the property development area and will not experience direct impacts, but indirect impacts through run-off must be curbed.



Plan compiled in QGIS with georeferenced Google Earth satellite imagery

Plan 5: Extent of sensitive fauna habitat within the Survey Area

A buffer zone of 50m from the ESA has been assigned moderate sensitivity. In terms of fauna it provides ecological connectivity between the upper lying areas and the development area with the wetland. The Workers Quarters and Goat Enclosure are proposed for the area, so minimal direct impact will be experienced. The main function that must be preserved in this area is the connectivity between the higher-lying regions and the wetland ecological corridor that is the Swartspruit, and activities must prevent pinching off and isolation of the higher and lower lying areas.

The remainder of the site is designated as low sensitivity. As can be attested by the site findings. Direct impact will be experienced at this site. In general, proper planning is key in order to reduce activity footprint and maintain as much of the undisturbed areas (not targeted for development) in their existing state.

4 Fauna Impact Assessment

The impact assessment considered impacts that may occur due to the Chicken Farm development. Impact assessment criteria as provided by the CSIR were utilised and the final impact assessment is presented in Table 5 below.

Table 5: Fauna-based impact assessment

Impact Description	Mitigation	Spatial Extent	Intensity	Duration	Reversibility	Irreplaceability	Probability	Significance & Status		Confidence
								Without Mitigation	With Mitigation	
CONSTRUCTION										
DIRECT IMPACTS										
Fauna habitat destruction & degradation and loss of connectivity & fragmentation	<p>MODIFY: Development site must be maintained as small as possible and no material must be stored outside the development footprint.</p> <p>REMEDY: Once construction is complete, any disturbed and/or bare areas will be vegetated with local indigenous species.</p> <p>CONTROL: The development site must be properly demarcated. The best way to attain this would be to erect a fence.</p> <p>STOP: No activity or material stockpiling in the wetland area (highly sensitive area).</p>	Site	Medium-low	Permanent	High	Low	Definite	Medium Negative	Low Negative	High
Destruction of burrowing / fossorial fauna (Giant Bullfrog)	<p>MODIFY: It must be stressed that the excavation footprints are small. The following could be considered: complete all excavation activities when Bullfrogs are more likely to be breeding in the local water bodies.</p>	National	High	Permanent	Low	High	Probable	Medium Negative	Low Negative	Mod
Destruction of burrowing / fossorial fauna (others)	No Additional Measures. Mitigation measures to minimise fauna habitat destruction should aide in mitigating impact.	Site	Low	Medium-term	Medium	Low	Probable	Low Negative	Low Negative	High
Emigration of fauna from site, and resulting influx of fauna to neighbouring areas	<p>REMEDY: After construction consider planting local indigenous bushes and trees around the site to improve habitat for fauna and attract indigenous fauna to the site. Consider establishing bat or bird boxes around the fence perimeter to provide roosting/nesting habitats.</p> <p>CONTROL: Keep needless noise to a minimum. Keep vehicle and pedestrian traffic to the site only.</p>	Local	Low	Temporary	High	Low	High	Low Negative	Low Positive	High

Impact Description	Mitigation	Spatial Extent	Intensity	Duration	Reversibility	Irreplaceability	Probability	Significance & Status		Confidence
								Without Mitigation	With Mitigation	
Hindrance, trapping, killing of fauna	<p>REMEDY: Contracts with contractors must specify actions that will be taken against contractors who do not conduct activities in line with the EMP. Should any fauna be accidentally trapped within the development area, activities will cease to provide the animal opportunity to escape or specialists contracted to safely remove the animals from site.</p> <p>CONTROL: All contractors on site must undergo environmental awareness training which must include the prohibition of any harm or hindrance to any fauna species.</p>	Site	Medium	Permanent	Medium	Low	Probable	Low Negative	Low Negative	High
Poisoning predators (including threatened birds) – directly or indirectly through contaminated / poisoned food / prey	<p>MODIFY: Utilise natural alternatives for pest control, rather than chemicals.</p> <p>CONTROL: Where chemical control is utilised, do so only as specified in instructions. Remove any small vertebrate (rodents for example) carcasses from site and dispose of as medical waste.</p> <p>STOP: Any chickens suspected of dying of disease / poison must be disposed of as medical waste and must not be placed outside.</p>	National	High	Permanent	Low	High	Probable	Medium Negative	Low Negative	High
INDIRECT IMPACTS										
Disturbance to fauna through noise, vibration, dust	<p>MODIFY: Utilise quieter equipment where feasible.</p> <p>CONTROL: Ensure dust suppression is applied at time of high dust generation. Any noisy point-sources should be enclosed, and all equipment / machinery fitted with silencers. All equipment / machinery will be serviced and maintained within operating specifications to prevent excessive noise.</p> <p>STOP: Cease dusty activities when very windy.</p>	Local	Medium-low	Temporary	High	Low	Definite	Medium Negative	Low Negative	High
Poisoning predators (including threatened birds) – directly or indirectly through contaminated / poisoned food / prey	<p>MODIFY: Utilise natural alternatives for pest control, rather than chemicals.</p> <p>CONTROL: Where chemical control is utilised, do so only as specified in instructions. Remove any small vertebrate (rodents for example) carcasses from site and dispose of as medical waste.</p> <p>STOP: Any chickens suspected of dying of disease / poison must be disposed of as medical waste and must not be placed outside.</p>	National	High	Permanent	Low	High	Probable	Medium Negative	Low Negative	High

Impact Description	Mitigation	Spatial Extent	Intensity	Duration	Reversibility	Irreplaceability	Probability	Significance & Status		Confidence
								Without Mitigation	With Mitigation	
Pollution of fauna habitat through littering and dumping of waste to surrounding environment is hazardous to fauna	REMEDY: Inspect and clear all litter and waste from the site and surrounds. CONTROL: Waste will be handled and stored according to the Norms and Standards for Storage of Waste and best practices. The relevant licenses will be obtained as needed under NEM:WA.	Local	Medium-low	Permanent	Medium	Medium	Probable	Low Negative	Low Negative	High
Pollution of fauna habitat through spillages of hazardous materials (hydrocarbons or chemicals)	MODIFY: Due to the proximity of petrol stations to site, no bulk storage of hydrocarbons should take place on site and should be limited to small amounts needed for generators or tools and stored responsibly. REMEDY: All hydrocarbons spills on bare ground will be cleared immediately. CONTROL: All equipment / machinery will be serviced and maintained within operating specifications to prevent the risks of leaks. STOP: Discontinue use of all faulty machinery / equipment on site until properly repaired.	Local	Medium-high	Permanent	Medium	High	Probable	Low Negative	Low Negative	High
CUMULATIVE IMPACTS										
Attraction of pests and exotic / alien species	REMEDY: Maintain healthy indigenous populations to aide in preventing explosive alien populations. CONTROL: Compile and implement and alien invasive management plan. Ensure that the outside areas are kept clean and tidy to prevent the attraction of scavenging alien species to the site. Keep all refuse areas secure and unexposed to fauna.	Regional	High	Long-term	Medium	Medium	Probable	Medium Negative	Low Negative	High
OPERATION										
DIRECT IMPACTS										
Any power lines or cables across site will hinder avifauna (including threatened species) and bats	MODIFY: Any power lines to site or between buildings must be fitted with bird-flappers to ensure visibility of line to birds, or cables/lines should run through pipe, which will be bulkier and visible to birds and bats.	National	High	Permanent	Low	High	Improbable	Medium Negative	Low Negative	High

Impact Description	Mitigation	Spatial Extent	Intensity	Duration	Reversibility	Irreplaceability	Probability	Significance & Status		Confidence
								Without Mitigation	With Mitigation	
Hindrance, trapping, killing of fauna	<p>REMEDY: Contracts with contractors must specify actions that will be taken against contractors who do not conduct activities in line with the EMP. Should any fauna be accidentally trapped within the development area, activities will cease to provide the animal opportunity to escape or specialists contracted to safely remove the animals from site.</p> <p>CONTROL: All contractors on site must undergo environmental awareness training which must include the prohibition of any harm or hindrance to any fauna species.</p>	Site	Medium	Permanent	Medium	Low	Probable	Low Negative	Low Negative	High
Poisoning predators (including threatened birds) – directly or indirectly through contaminated / poisoned food / prey	<p>MODIFY: Utilise natural alternatives for pest control, rather than chemicals.</p> <p>CONTROL: Where chemical control is utilised, do so only as specified in instructions. Remove any small vertebrate (rodents for example) carcasses from site and dispose of as medical waste.</p> <p>STOP: Any chickens suspected of dying of disease / poison must be disposed of as medical waste and must not be placed outside.</p>	National	High	Permanent	Low	High	Probable	Medium Negative	Low Negative	High
INDIRECT IMPACTS										
Disturbance to fauna through noise, vibration, dust	<p>MODIFY: Utilise quieter equipment where feasible.</p> <p>CONTROL: Ensure dust suppression is applied at time of high dust generation. Any noisy point-sources should be enclosed, and all equipment / machinery fitted with silencers. All equipment / machinery will be serviced and maintained within operating specifications to prevent excessive noise.</p> <p>STOP: Cease dusty activities when very windy.</p>	Local	Low	Temporary	High	Low	High	Medium Negative	Low Negative	High
Poisoning predators (including threatened birds) – directly or indirectly through contaminated / poisoned food / prey	<p>MODIFY: Utilise natural alternatives for pest control, rather than chemicals.</p> <p>CONTROL: Where chemical control is utilised, do so only as specified in instructions. Remove any small vertebrate (rodents for example) carcasses from site and dispose of as medical waste.</p> <p>STOP: Any chickens suspected of dying of disease / poison must be disposed of as medical waste and must not be placed outside.</p>	National	High	Permanent	Low	High	Probable	Medium Negative	Low Negative	High

Impact Description	Mitigation	Spatial Extent	Intensity	Duration	Reversibility	Irreplaceability	Probability	Significance & Status		Confidence
								Without Mitigation	With Mitigation	
Pollution of fauna habitat through littering and dumping of waste to surrounding environment is hazardous to fauna	REMEDY: Inspect and clear all litter and waste from the site and surrounds. CONTROL: Waste will be handled and stored according to the Norms and Standards for Storage of Waste and best practices. The relevant licenses will be obtained as needed under NEM:WA.	Local	Medium-low	Permanent	Medium	Medium	Probable	Low Negative	Low Negative	High
Pollution of fauna habitat through sewage leaks	MODIFY: Provide adequate toilets, sewage containment / treatment facilities on site for the relevant staff component REMEDY: Regularly inspect and repair all plumbing associated with the bathrooms and toilets.	Local	Med-low	Short-term	High	Low	Probable	18	14	High
Pollution of fauna habitat through spillages of hazardous materials (hydrocarbons or chemicals)	MODIFY: Due to the proximity of petrol stations to site, no bulk storage of hydrocarbons should take place on site and should be limited to small amounts needed for generators or tools and stored responsibly. REMEDY: All hydrocarbons spills on bare ground will be cleared immediately. CONTROL: All equipment / machinery will be serviced and maintained within operating specifications to prevent the risks of leaks. STOP: Discontinue use of all faulty machinery / equipment on site until properly repaired.	Local	Medium-high	Permanent	Medium	High	Probable	Low Negative	Low Negative	High
CUMULATIVE IMPACTS										
Attraction of pests and exotic / alien species	REMEDY: Maintain healthy indigenous populations to aide in preventing explosive alien populations. CONTROL: Compile and implement an alien invasive management plan. Ensure that the outside areas are kept clean and tidy to prevent the attraction of scavenging alien species to the site. Keep all refuse areas secure and unexposed to fauna.	Regional	High	Long-term	Medium	Mod	Probable	Medium Negative	Low Negative	High

5 Fauna Management Plan

The objectives of the management plan are as follows:

- To prevent the unnecessary destruction of natural habitat and animal life within the development area and to maintain ecological connectivity to neighbouring sites and, where possible, to regional ecological corridors.
- Not to unnecessarily or deliberately alienate or hinder the movement of fauna in the area or to harm any animal life found on the property.
- To maintain or improve existing fauna biodiversity and prevent the skewing of fauna communities as far as possible.

The mitigation measures for each potential impact in Table 5 are provided below. It must be kept in mind that activities related to fauna may be restricted under National and Provincial legislation and these should be carefully consulted to ensure that necessary permits are obtained to undertake necessary activities (hunting, trapping, catching, releasing).

Management and Mitigation measures include:

- Activities that should be stopped:
 - No activity or material stockpiling in the wetland area (highly sensitive area).
 - Consider ceasing dusty activities when very windy.
 - The owner currently puts out dead chickens for predators. This is not a problem as long as the chickens have died from natural causes. The location of the disposal site should vary to prevent scavengers from becoming used to a single location. Any chickens suspected of dying of disease or poison must be disposed of as medical waste and must not be placed outside.
 - Discontinue use of all faulty machinery / equipment on site during construction until properly repaired.
- Modification of activities:
 - Development site must be maintained as small as possible and no material must be stored outside the development footprint.
 - Utilise quieter equipment during construction where feasible.
 - Any power lines to site or between buildings must be fitted with bird-flappers to ensure visibility of line to birds, or cables/lines should run through pipe, which will be bulkier and visible to birds and bats.
 - Many rat poisons are cumulative and affect the entire food chain. Utilise natural alternatives for pest control, rather than chemicals.
 - Provide adequate toilets, sewage containment / treatment facilities on site for the relevant staff component.
 - Due to the proximity of petrol stations to site, no bulk storage of hydrocarbons should take place on site and should be limited to small amounts needed for generators or tools. This

must be stored in line with best practices and containers should not be exposed to the elements (rain, wind, sun) or stored on bare ground (must be on an impermeable bunded slab or within a contained, sealed area).

- Activities must be controlled as follows:
 - The development site must be properly demarcated and no activity will occur beyond the demarcation. The best way to attain this would be to erect a fence. Palisade-type fencing should be considered with culverts to allow for the movement of animals between areas. This should be sufficient for the fauna likely to utilise the site.
 - Keep vehicle and pedestrian traffic to the site only.
 - Maintain the substrate in surrounding areas which will provide areas for burrowing species to retreat to.
 - Keep needless noise to a minimum. Any noisy point-sources utilised on site should be enclosed, and all equipment / machinery fitted with silencers where applicable. All equipment / machinery will be serviced and maintained within operating specifications to prevent excessive noise.
 - All equipment / machinery will be serviced and maintained within operating specifications to prevent the risks of leaks.
 - Ensure dust suppression, through water sprinkling, is applied at time of high dust generation.
 - All contractors on site must undergo environmental awareness training which must include the prohibition of any harm or hindrance to any fauna species.
 - Where chemical control of pests is utilised, do so only as specified. Keep all refuse areas secure and unexposed to fauna.
 - Waste should be recycled as far as possible and sold/given to interested contractors. Waste will be stored according to the Norms and Standards for Storage of Waste. Recyclable waste should not be stored for excessive periods. Refuse bins will be placed around site to collect waste for separation, recycling and disposal. The relevant licenses will be obtained as needed for industrial, hazardous and medical waste storage as may be relevant under NEM:WA.
 - Fauna must not be harmed, hindered, trapped or killed.
 - Ensure freedom of animal movement to allow fauna the opportunity to move away from disturbances.
 - Feeding of wild animals, including birds, should be discouraged. The constant availability of food will increase populations beyond what would naturally be sustainable.
- Remedial actions include:
 - Once construction is complete, any disturbed and/or bare areas will be vegetated with local indigenous species.
 - All hydrocarbons spills on bare ground will be cleared immediately. This will include the lifting of the contaminated soil for bio-remediation or disposal to a hazardous waste facility.
 - Contracts with contractors must specify actions that will be taken against contractors who do not conduct activities in line with the EMP, including trapping and killing of indigenous fauna on site.

- Should any fauna be accidentally trapped within the development area, activities will cease to provide the animal opportunity to escape or specialists contracted to safely remove the animals from site.
- Inspect and clear all litter and waste from the site and surrounds.
- Regularly inspect and repair all plumbing associated with the bathrooms and toilets.

Consideration can also be given to the following:

- Although not critical in terms of the surrounding activities, consideration could be given to moving the goat pen further west. This would result in reduction of the overall development footprint and keep the eastern side of the property in its current state to act as an ecological link between the upper lying areas and the ecological corridor of the wetland area.
- It must be stressed that the excavation footprints are small. The following could be considered to protect potential Bullfrogs: complete all excavation activities no less than a week (and no more than a month) after the first proper rainfalls in late November when Bullfrogs are more likely to be breeding in the local water bodies. All surface construction activities can commence after the main rainfalls.
- Maintaining and/or improving local indigenous populations creates competition for invading species and could assist in reducing alien species numbers on site.
 - After construction consider planting local indigenous bushes and trees around the site to improve habitat for fauna and attract indigenous fauna to the site.
 - Consider establishing bat or bird boxes around the fence perimeter to provide roosting/nesting habitats.

5.1 Invasive Species

An Invasive Species Control Plan must be developed in terms of section 75(4) of NEM:BA, and the alien species must be managed and controlled in accordance with such plan. In terms of the findings of this study, three non-categorised invasive mammal species (not categorised for the Gauteng Province) (the House Rat and House Mouse and the Brown Rat), three Category 3 invasive birds species (the Rock Dove, House Sparrow and Common Myna) and one Category 2 bird (Mallard Duck) are likely to occur or frequent the site. The following is relevant in terms of the legislation governing Category 2 and 3 species (GN598, 2014):

- Category 2 Listed Invasive Species are those species listed by notice in terms of section 70(1)(a) of the Act as species which require a permit to carry out a restricted activity within an area specified in the Notice or permit. Remove any small vertebrate (rodents for example) carcasses from site and dispose of as medical waste.
- Compile and implement an alien invasive management plan which must include management of alien fauna species. Ensure that the outside areas are kept clean and tidy to prevent the attraction of scavenging alien species to the activity within an area specified in the Notice or an area specified in the permit, as the case may be.
- Category 3 Listed Invasive Species are species which are subject to exemptions in terms of section 71(3) and prohibitions in terms of section 71A of Act, as specified in the Notice.

- As per Notice 1 of GN864 (2016) the following activities require permits in terms of Category 2 and are exempted regarding Category 3 invasive species:
 - Having in possession or exercising physical control over any specimen of a listed invasive species.
- The following activities are prohibited regarding Category 2 and 3 invasive species:
 - The introduction of a specimen of an alien or a listed invasive species to offshore islands.
- The following activities require permits in terms of Category 2 and are prohibited regarding Category 3 invasive species:
 - Importing into the Republic, including introducing from the sea, any specimen of a listed invasive species.
 - Growing, breeding or in any other way propagating any specimen of a listed invasive species, or causing it to multiply.
 - Conveying, moving or otherwise translocating any specimen of a listed invasive species.
 - Selling or otherwise trading in, buying, receiving, giving, donating or accepting as a gift, or in any way acquiring or disposing of any specimen of a listed invasive species.
 - Spreading or allowing the spread of any specimen of a listed invasive species.
 - Releasing any specimen of a listed invasive species.
 - The transfer or release of a specimen of a listed invasive fresh-water species from one discrete catchment system in which it occurs, to another discrete catchment system in which it does not occur; or, from within a part of a discrete catchment system where it does occur to another part where it does not occur as a result of a natural or artificial barrier.
 - Discharging of or disposing into any waterway or the ocean, water from an aquarium, tank or other receptacle that has been used to keep a specimen of an alien or a listed invasive species.
- The following activities are subject to Notice 3 (species specific or geographical limits scope of exemption) of GN864 (2016) regarding Category 2 and 3 invasive species (not relevant to species identified within this study):
 - Catch and release of a specimen of a listed invasive fresh-water fish or listed invasive fresh-water invertebrate species.
 - The release of a specimen of a listed invasive fresh-water fish species, or of a listed invasive fresh-water invertebrate species, into a discrete catchment system in which it already occurs.

In terms of the listed species Highly Likely to occur on site or Possibly frequent the site, the following is relevant:

- House Rat, Brown Rat and House Mouse (not categorised in the Gauteng Province) do not formally need to be managed in the Province. The surrounding nature of the area will maintain populations and nothing can be done to eliminate these species on site. In terms of practices on site, waste must be strictly managed.

- House Sparrow, Rock Dove and Common Myna are listed Category 3 invasive species. As per the legislative framework described in Section 2 of this report, no regulations on restricted activities or prohibitions concerning Category 3 invasive species have been published to date. In general the prolific distribution of these species means that control measures must be applied Provincially and Nationally. The Category 2 Mallard duck is not likely to reside on site and will not be a priority species for control, but is subject to permits if kept on site.
- These specific bird species have extensive distributions in South Africa and all are closely related to human settlements and no proper control programmes have been implemented in South Africa for these species (Picker & Griffiths, 2011). Populations of these birds were not observed on site, but populations must be monitored and controlled in line with the Municipal Control Plan once this is published as far as possible. The following measures should be considered:
 - Reducing attractiveness of buildings for nesting.
 - Removal and destruction of eggs during the breeding season.
 - Removal (humane culling) of breeding pairs.
 - Prevent access to food, domestic waste and litter.
 - Maintain healthy populations of indigenous species, which, through competition for food and habitat, and the presence of potential predators, should manage and reduce explosive populations of invasive species.

6 Fauna Monitoring Plan

A monitoring plan must be implemented in order to ensure mitigation measures are effective. With monitoring an adaptive management approach can be applied. The benefits of monitoring and adaptive management include:

- Saving costs by discontinuation of non-effective measures which can only be identified through monitoring.
- Higher success in environmental impact management through application of more effective management measures targeting specific identified impacts, which can only be identified during the activity through monitoring.

The following monitoring plan is considered ecologically responsible practice and should be implemented as a minimum:

- Any protected fauna species observed on site (now or into the future) should be monitored and if activities on site are seen to threaten such species, these species should be encouraged to move off site or be relocated by specialists, on condition that the relevant permits are obtained or held by the specialist.
- Alien invasive species must be monitored and controlled on site in line with the alien invasive management plan. Once the Municipal Control Plan is published, the site must align their monitoring and management of alien species, including fauna species, in line with this plan where relevant.
- Alien invasive management plan must be annually audited.

- To curb pollution to the surrounding area, which will potentially poison fauna, environmental monitoring and associated adaptive management must be conducted in line with the EMP, which must also include:
 - Surrounding areas must be checked weekly and all litter and waste dumped on and around the site collected and disposed of to the relevant waste stream.

7 Conclusion and Recommendations

The area is already highly disturbed and fauna or activity of fauna in the area was minimal. **Furthermore the site has been assessed to have low sensitivity in terms of fauna.**

Although not critical in terms of the surrounding activities, consideration could be given to moving the goat pen further west. This would provide some benefit to fauna by compacting the overall development footprint and keeping the eastern side of the property in its current state to act as an ecological link between the upper lying areas and the ecological corridor of the wetland area.

Any development will pose impacts on the environment. None of the impacts identified are fatal flaws and none are of high significance. There is no reason to not authorise the proposed activity in terms of fauna biodiversity as long as mitigation measures are implemented. The management measures will aid in reducing impact to fauna and fauna habitat and assist in improving local indigenous fauna biodiversity and must be incorporated into the overall management plan for the site.

In terms of the threatened species, specifically the trigger species for the Magaliesberg IBA, prevention of releasing poisons into the environment is critical. Therefore utilisation of poisons for pest control should be discouraged, especially those that accumulate within the food chains, and natural alternatives should be considered instead, such as traps. Also, any power lines or cables must be established in a manner that will make them visible to birds (bird flapper or led through PVC piping for example).

8 References & Bibliography

8.1 Internet Sources

<http://www.birdlife.org.za>: For Red Data status of bird species (according to Taylor, 2015) in South Africa and information regarding important Bird Areas (IBAs) of relevance.

<http://sabap2.adu.org.za>: Citizen Science project for birds in specific areas within South Africa.

<http://www.iucnredlist.org>: For the IUCN Red List status of species in 2016.

<http://vmus.adu.org.za/>: Animal Demography Unit, Virtual Museum (2017): MammalMAP, ReptileMAP, FrogMAP, DunBeetleMAP, LacewingMAP, LepiMAP, OdonataMAP, ScorpionMAP, SpiderMAP.

<http://SANBI.org.za>: For geographic information, including shape-files, related to protected and sensitive ecosystems and environments as provided by SANBI and partners including CSIR and Bird Life SA.

<http://magaliesbergbiosphere.org.za>: For information relating to the management zones

8.2 Digital Applications

Bird App: Roberts VII Multimedia Birds of Southern Africa application for Android and IOS: For Quarter Degree Grid species list, bird identification and species-specific information.

Mammal App: The Ultimate Field Guide to Mammals in Southern Africa Application for Android: For supporting information on mammal distribution lists and identification.

8.3 Literature

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Appendix A: CV, Qualification, SACNASP registration

CURRICULUM VITAE

BARBARA KASL

Personal Information

- Full Name: Barbara Kasl
- Qualifications: PhD (Animal, Plant and Environmental Sciences)
- Phone: +27 71 988 6773
- E-mail: bk.zoology@gmail.com
- Date of Birth: 16 September 1976
- Nationality: South African, Czech Republic
- Languages: English, Afrikaans, Czech
- General: Single, RSA Drivers Licence
- References: (can be provided on request)

Education – ±10 years

Tertiary Institute:

University of the Witwatersrand

- 2002-2004: PhD (Animal, Plant and Environmental Sciences)
- 1999-2001: MSc (upgraded to PhD)
- 1998: B.Sc. Hon. (Zoology and Botany)
- 1995-1998: BSc (Zoology and Botany)

MSc AND PhD - South African Sugar Experiment Station (SAHRA) – On site research for MSc and PhD degree to determine habitat management strategies to control sugarcane borer (*Eldana saccharina*) in South African sugarcane (Mnt. Edgcombe, R. S. A.).

- Systematic and orderly work habits developed, which extended into the field, greenhouse and laboratory experiments, and associated data capturing.
- Gained competency on statistical programmes (Statistica, Origin and Excel).
- Data assessment, presentation and discussion of findings through written reports, presentations and posters.
- Good computer literacy and fully competent in MS Office.

Professional Experience – ±13 years

01/2008 – Current: CABANGA CONCEPTS: Environmental Scientist / Principal Consultant

Requested to join the company as an environmental consultant specialising in all environmental authorisation processes and related documents. I am one of three principal members/shareholders of Cabanga Concepts.

- One of two **principal report reviewers** of external reports supplied by subcontractors [soil assessments, ecological (terrestrial and aquatic) assessments groundwater and surface water assessments, heritage and cultural resource assessments to name a few] and internal reports compiled by staff.
- Overall **project manager** regarding mineral rights application processes as well as environmental authorisation processes in South Africa, including **management of a team** of external (sub-consultants) and internal specialists. Including **overview of budget** and spending of the budget during the life of the project.
- **Compilation of proposals and associated budgets** for various environmental requirements made by new and existing clients.
- Principal EMP report compiler and reviewer for a **World Bank mining project** in Rwanda, including review of external specialist reports. Familiar with **IFC, Equator Principals**. .
- Compilation of **environmental applications and documents** required under the various environmental acts (environmental act, waste act, air quality act and water act) in South Africa. This includes scoping reports, impact assessment reports, environmental management plans, environmental monitoring reports, environmental pre-feasibility reports and bankable feasibility studies, integrated water and waste management plans, audit reports, due diligence assessments, reports on monitoring findings (water quality, dust levels, ambient noise).
- Compilation of various **audit reports** including EMP Audits, Legal Compliance Audits, Due Diligences, Integrated Water and Waste Management Plan Audits, Licence and Permitting Audits.
- Compilation of draft sensitivity plans for internal GIS specialists to refine.
- Compiled a detailed and comprehensive **alien invasive management plan** for principal invasive plant species in the Highveld region of South Africa.
- Keep up-to-date with **environmental legislation** and relevant application processes.
- Keep up-to-date on various **standards, norms** and management requirements released through official organisations and institutes.

09/2004 – 11/2007: DIGBY WELLS & ASSOCIATES (Now DIGBY WELLS ENVIRONMENTAL): Unit Manager / Acting Department Head: Biophysical Department

- Initially hired as entomologist and fauna specialist.
- Responsible in **completion of full fauna assessments** and eventually **compilation of overall ecological reports**.
- Received training in full **environmental authorisation processes** including compilation of EIA and EMP reports.
- Various **sub-Saharan environmental projects** included Etoile Mine in DRC, Randgold Mine in Mali, Valencia uranium green-field mine in Namibia, Mmamabula coal mine and power plant in Botswana.

- **Unit Manager** for the Ecology Unit including management of a flora and wetland specialist.
- **Acting Department Head** and management of the Biophysical Department which included the Ecology Unit and Atmospheric Environment Unit.

2001-2003: Various University and Temp Research Jobs in Entomology

2001: Private Tutor - Private tutoring for first year student.

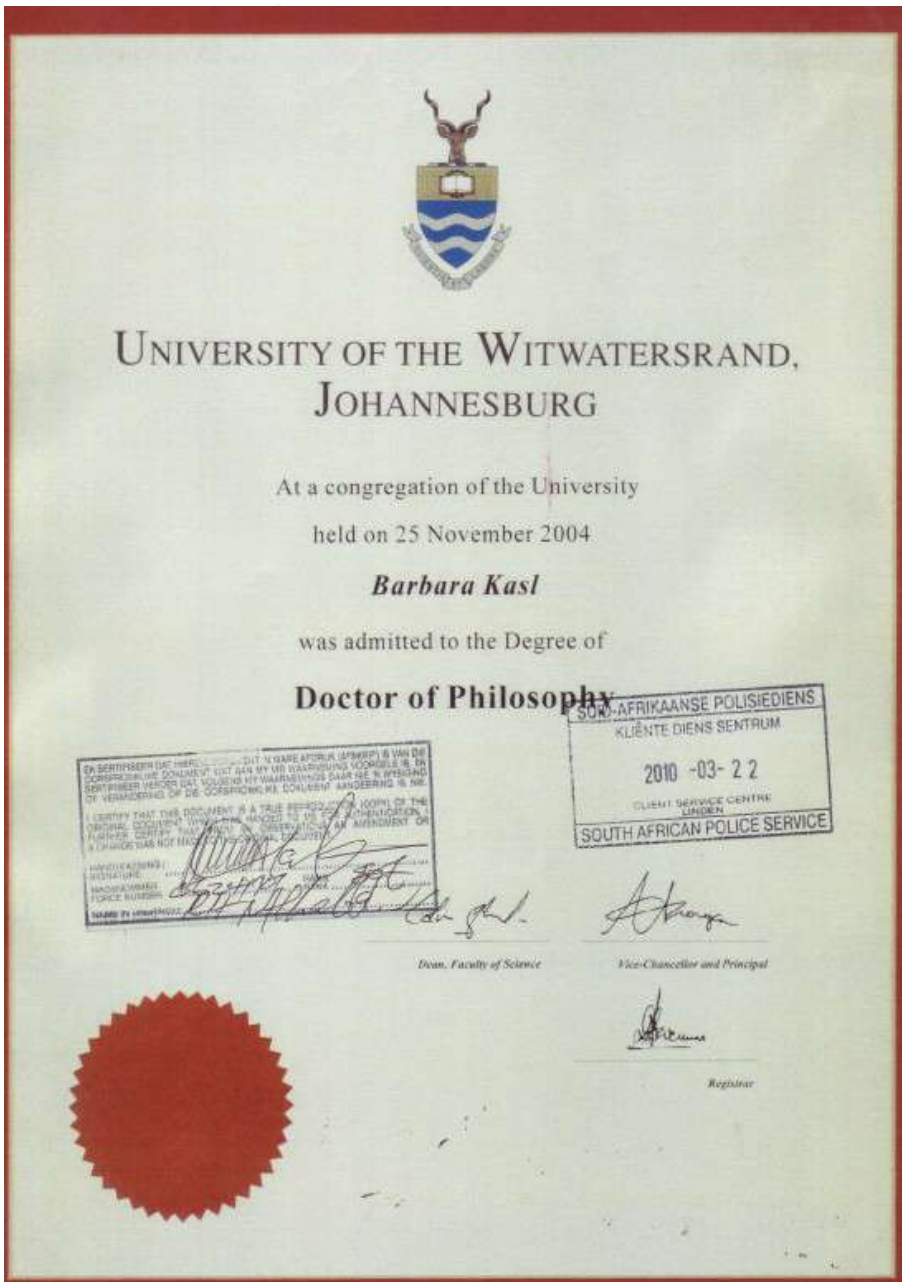
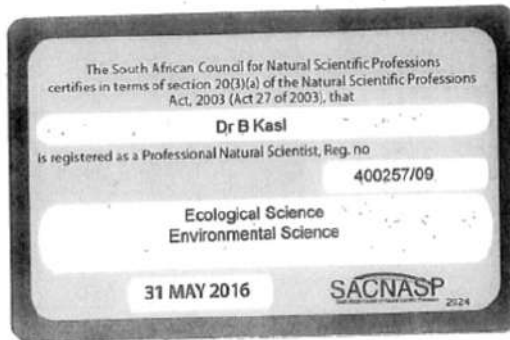
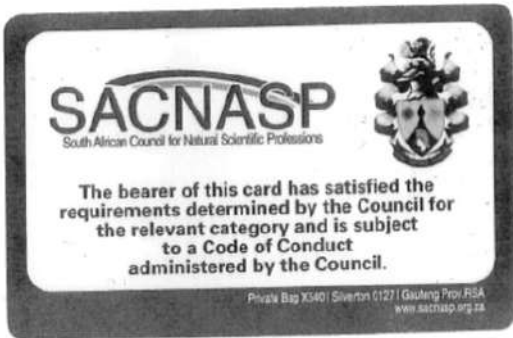
1993-1998: Part-Time Jobs

Professional Memberships and Affiliations

- **2011 – current:** Registered Professional Environmental And Ecological Scientist (RSA)
- **2015 – current:** EAPSA Certified Environmental Assessment Practitioner
- **1999, 2001 & 2008 – current:** Entomological Society of South Africa
- **2008-2011:** International Association for Impact Assessment
- **1998:** Zoological Society of Southern Africa

Courses Attended

- May 2017: SAGIC Invasive Species Training (Legislation and control plans) by Kay Montgomery Editorial Services Pty (Ltd)
- October 2010:NEM: Air Quality Act course through IMBEWU Sustainability Legal Specialists (Pty) Ltd
- August 2009: NEMA and NEMWA course through ECOLAW
- November 2007: Environmental Impact Assessment Training
- Feb/Mar 2007: Project Management for Non-Project Managers Course through Astro Tech
- September 2006:Unilever Introduction to Managing Environmental Water Quality - Practical, Theoretical and Policy; through Institute for Water Research – RHODES University.
- September 2005:Non-credited course in River health and SASS5 rapid methodology of water quality assessment through NEPID Consultants
- May 2005: Snake Identification and Snakebite Treatment Course



Appendix B: Mammal Probability List

Common name	Species Name	SA Status (SANBI, 2016)	IUCN (2016)	Likelihood Of Occurrence
Hare, Scrub	<i>Lepus saxatilis</i>			Confirmed – Dung
Bat, Cape Serotine	<i>Neoromicia (Pipistrellus) capensis</i>			Highly Likely
Bat, Egyptian Slit-faced	<i>Nycteris thebaica</i>			Highly Likely
Bat, Lesser Long-fingered	<i>Miniopterus fraterculus</i>			Highly Likely
Bat, Natal (Schreibers's) Long-fingered	<i>Miniopterus natalensis</i>			Highly Likely
Blesbok	<i>Damaliscus pygargus phillipsi</i>	Least Concern (Protected under GN389,2013)		Highly Likely
Fox, Cape	<i>Vulpes chama</i>	Least Concern (Protected under GN389,2013)		Highly Likely
Genet, Small-spotted	<i>Genetta genetta</i>			Highly Likely
Gerbil, Cape Short-tailed	<i>Desmodillus auricularis</i>			Highly Likely
Hedgehog, Southern African	<i>Atelerix frontalis</i>	Near-threatened		Highly Likely
Honey Badger (Ratel)	<i>Mellivora capensis</i>			Highly Likely
Jackal, Black-backed	<i>Canis mesomelas</i>			Highly Likely
Mongoose, Yellow	<i>Cynictis penicillata</i>			Highly Likely
Mouse, House	<i>Mus musculus</i>	Non-categorised Invasive		Highly Likely
Mouse, Mesic Four-striped Grass	<i>Rhabdomys dilectus</i>			Highly Likely
Mouse, Natal Multimammate	<i>Mastomys natalensis</i>			Highly Likely
Mouse, Pygmy	<i>Mus (Nannomys) minutoides</i>			Highly Likely
Mouse, Single-striped Grass	<i>Lemniscomys rosalia</i>			Highly Likely
Mouse, Southern Multimammate	<i>Mastomys coucha</i>			Highly Likely
Mouse, White-tailed	<i>Mystromys albicaudatus</i>	Vulnerable	Endangered	Highly Likely
Polecat, Striped	<i>Ictonyx Striatus</i>			Highly Likely
Porcupine, Cape	<i>Hystrix africaeaustralis</i>	Least Concern		Highly Likely
Rat, House	<i>Rattus rattus</i>	Non-categorised Invasive		Highly Likely
Rat, Red Veld	<i>Aethomys chrysophilus</i>	Least Concern		Highly Likely

Common name	Species Name	SA Status (SANBI, 2016)	IUCN (2016)	Likelihood Of Occurrence
Rat, Southern African Vlei (grassland)	<i>Otomys auratus</i>	Near-threatened	Near Threatened	Highly Likely
Rat, Tete Veld	<i>Aethomys ineptus</i>	Least Concern		Highly Likely
Shrew, Greater Dwarf	<i>Suncus lixus</i>	Least Concern		Highly Likely
Suricate (Meerkat)	<i>Suricata suricatta</i>	Least Concern		Highly Likely
Weasel, African Striped	<i>Poecilogale albinucha</i>	Near-threatened		Highly Likely
Aardvark	<i>Orycteropus afer</i>	Least Concern (Protected under GN389,2013)		Possible
Aardwolf	<i>Proteles cristatus</i>	Least Concern		Possible
Baboon, Chacma	<i>Papio ursinus</i>	Least Concern		Possible
Bat, Blasius's Horseshoe	<i>Rhinolophus blasii</i>	Near-threatened		Possible
Bat, Bushveld Horseshoe	<i>Rhinolophus simulator</i>	Least Concern		Possible
Bat, Darling's Horseshoe	<i>Rhinolophus darlingi</i>	Least Concern		Possible
Bat, Egyptian Free-tailed	<i>Tadarida aegyptiaca</i>	Least Concern		Possible
Bat, Geoffroy's Horseshoe	<i>Rhinolophus clivosus</i>	Least Concern		Possible
Bat, Percival's (Short-eared) Trident	<i>Cloetis percivali</i>	Endangered		Possible
Bat, Robert's Flat-headed	<i>Sauromys petrophilus</i>	Least Concern		Possible
Bat, Sundevall's Leaf-nosed	<i>Hipposideros caffer</i>	Least Concern		Possible
Bat, Yellow-bellied House (African Yellow Bat)	<i>Scotophilus dinganii</i>	Least Concern		Possible
Caracal	<i>Caracal caracal</i>	Least Concern		Possible
Cat, African Wild	<i>Felis silvestris</i>	Least Concern		Possible
Civet, African	<i>Civettictis civetta</i>	Least Concern		Possible
Dormouse, Woodland	<i>Graphiurus murinus</i>	Least Concern		Possible
Duiker, Common	<i>Sylvicapra grimmia</i>	Least Concern		Possible
Gemsbok (Southern Oryx)	<i>Oryx gazella</i>	Least Concern (Protected under GN389,2013)		Possible
Genet, Common Large-spotted	<i>Genetta maculata</i>	Least Concern		Possible

Common name	Species Name	SA Status (SANBI, 2016)	IUCN (2016)	Likelihood Of Occurrence
Hartebeest, Red	<i>Alcelaphus buselaphus caama</i>	Least Concern (Protected under GN389,2013)		Possible
Hyaena, Brown	<i>Hyaena brunnea</i>	Near-threatened (Protected under GN389,2013)	Near Threatened	Possible
Leopard	<i>Panthera pardus</i>	Vulnerable (Protected under GN389,2013)	Vulnerable	Possible
Mongoose, Banded	<i>Mungos Mungo</i>	Least Concern		Possible
Mongoose, Dwarf	<i>Helogale parvula</i>	Least Concern		Possible
Mongoose, Slender	<i>Herpestes (Galerella) sanguineus</i>	Least Concern		Possible
Mongoose, Water (Marsh)	<i>Atilax paludinosus</i>	Least Concern		Possible
Mongoose, White-tailed	<i>Ichneumia albicauda</i>	Least Concern		Possible
Monkey, Vervet	<i>Chlorocebus (Cercopithecus) pygerythrus</i>	Least Concern		Possible
Mouse, Chestnut Climbing	<i>Dendromus mystacalis</i>	Least Concern		Possible
Mouse, Grey Climbing	<i>Dendromus melanotis</i>	Least Concern		Possible
Myotis, Temminck's (Hairy Bat)	<i>Myotis tricolor</i>	Least Concern		Possible
Myotis, Welwitsch's (Hairy Bat)	<i>Myotis welwitschii</i>	Least Concern		Possible
Oribi	<i>Ourebia ourebia</i>	Endangered (Endangered under GN389,2013)		Possible
Otter, Cape Clawless	<i>Aonyx capensis</i>	Near-threatened	Near Threatened	Possible
Pangolin	<i>Smutsia (Manis) temminckii</i>	Vulnerable (Vulnerable under GN389,2013)	Vulnerable	Possible
Rabbit, Jameson's Red Rock	<i>Pronolagus randensis</i>	Least Concern		Possible
Rat, Acacia (Tree)	<i>Thallomys paedulus</i>	Least Concern		Possible
Rat, African Marsh	<i>Dasymys incomtus</i>	Near-threatened		Possible
Rat, Angoni Vlei	<i>Otomys angoniensis</i>	Least Concern		Possible
Rat, Brown	<i>Rattus norvegicus</i>	Non-categorised Invasive		Possible
Rat, Common Mole (African)	<i>Cryptomys hottentotus</i>	Least Concern		Possible
Rat, Greater Cane	<i>Thryonomys swinderianus</i>	Least Concern		Possible
Serval	<i>Leptailurus serval</i>	Near-threatened (Protected under GN389,2013)		Possible

Common name	Species Name	SA Status (SANBI, 2016)	IUCN (2016)	Likelihood Of Occurrence
Shrew, Forest	<i>Myosorex varius</i>	Least Concern		Possible
Shrew, Lesser Dwarf	<i>Suncus varilla</i>	Least Concern		Possible
Shrew, Lesser Grey-brown Musk	<i>Crocidura silacea</i>	Least Concern		Possible
Shrew, Lesser Red Musk	<i>Crocidura hirta</i>	Least Concern		Possible
Shrew, Maquassie Musk	<i>Crocidura maquassiensis</i>	Vulnerable		Possible
Shrew, Reddish-grey Musk	<i>Crocidura cyanea</i>	Least Concern		Possible
Shrew, Swamp Musk	<i>Crocidura mariquensis</i>	Near-threatened		Possible
Shrew, Tiny Musk	<i>Crocidura fuscomurina</i>	Least Concern		Possible
Squirrel, Tree	<i>Paraxerus cepapi</i>	Least Concern		Possible
Steenbok	<i>Raphicerus campestris</i>	Least Concern		Possible
Bat, Green House (Lesser Yellow)	<i>Scotophilus viridis</i>	Least Concern		Very Unlikely
Bat, Lesser Woolly	<i>Kerivoula lanosa</i>	Least Concern		Very Unlikely
Bat, Mauritian Tomb	<i>Taphozous mauritanus</i>	Least Concern		Very Unlikely
Bushbuck	<i>Tragelaphus sylvaticus</i>	Least Concern (Protected under GN389,2013)		Very Unlikely
Dormouse, Rock	<i>Graphiurus platyops</i>	Least Concern		Very Unlikely
Dormouse, Small-eared	<i>Graphiurus microtis</i>	Least Concern		Very Unlikely
Fox, Bat-eared	<i>Otocyon megalotis</i>	Least Concern (Protected under GN389,2013)		Very Unlikely
Fruit-bat, Straw-coloured	<i>Eidolon helvum</i>	Least Concern	Near Threatened	Very Unlikely
Galago, Southern Lesser	<i>Galago moholi</i>	Least Concern		Very Unlikely
Gerbil, Bushveld	<i>Gerbilliscus (Tatera) leucogaster</i>	Least Concern		Very Unlikely
Gerbil, Highveld	<i>Gerbilliscus (Tatera) brantsii</i>	Least Concern		Very Unlikely
Hare, Savanna	<i>Lepus microtis (victoriae)</i>	Least Concern		Very Unlikely
Hyrax, Rock (Dassie)	<i>Procavia capensis</i>	Least Concern		Very Unlikely
Hyrax, Yellow-Spotted Rock	<i>Heterohyrax brucei</i>	Least Concern		Very Unlikely

Common name	Species Name	SA Status (SANBI, 2016)	IUCN (2016)	Likelihood Of Occurrence
Impala	<i>Aepyceros melampus</i>	Least Concern		Very Unlikely
Klipspringer	<i>Oreotragus oreotragus</i>	Least Concern (Protected under GN389,2013)		Very Unlikely
Kudu, Greater	<i>Tragelaphus strepsiceros</i>	Least Concern		Very Unlikely
Mole, Highveld Golden	<i>Amblysomus septentrionalis</i>	Near-threatened	Near Threatened	Very Unlikely
Mole, Juliana's Golden	<i>Neamblysomus julianae</i>	Endangered	Endangered	Very Unlikely
Mouse, Fat	<i>Steatomys pratensis</i>	Least Concern		Very Unlikely
Mouse, Krebs's Fat	<i>Steatomys krebsii</i>	Least Concern		Very Unlikely
Mouse, Namaqua Rock	<i>Micaelamys (Aethomys) namaquensis</i>	Least Concern		Very Unlikely
Mouse, Pouched	<i>Saccostomus campestris</i>	Least Concern		Very Unlikely
Otter, Spotted-necked	<i>Hydrictis maculicollis</i>	Vulnerable	Near Threatened	Very Unlikely
Pipistrelle, Rusty	<i>Pipistrellus rusticus</i>	Least Concern		Very Unlikely
Rhebok, Grey	<i>Pelea capreolus</i>	Near-threatened (Protected under GN389,2013)	Near Threatened	Very Unlikely
Sengi, Eastern Rock	<i>Elephantulus myurus</i>	Least Concern		Very Unlikely
Sengi, Short-snouted	<i>Elephantulus brachyrhynchus</i>	Least Concern		Very Unlikely
Springbok	<i>Antidorcas marsupialis</i>	Least Concern		Very Unlikely
Springhare, Southern African	<i>Pedetes capensis</i>	Least Concern		Very Unlikely
Warthog, Common	<i>Phacochoerus africanus</i>	Least Concern		Very Unlikely
Wild Dog, African	<i>Lycaon Pictus</i>	Endangered (Endangered under GN389,2013)	Endangered	Very Unlikely
Wildebeest, Blue	<i>Connochaetes taurinus</i>	Least Concern (Protected under GN389,2013)		Very Unlikely
Zebra, Plains	<i>Equus quagga</i>	Least Concern	Neat threatened	Very Unlikely

Appendix C: Avifauna Probability List

Common name	Taxon name	Endemism (Chittenden <i>et al.</i> , 2016)	SA Status (BLSA)	IUCN	Migrants (Chittenden <i>et al.</i> , 2016)	Likelihood of occurrence
Bulbul, Dark-capped	<i>Pycnonotus tricolor</i>					Possible
Hornbill, African Grey	<i>Tockus nasutus</i>					Confirmed – surrounds
Kite, Black-shouldered	<i>Elanus caeruleus</i>					Confirmed – surrounds
Lapwing, Blacksmith	<i>Vanellus armatus</i>					Confirmed
Lapwing, Crowned	<i>Vanellus coronatus</i>					Confirmed
Martin, Banded	<i>Riparia cincta</i>				Breeding, Aug-Apr	Confirmed
Martin, Brown-throated	<i>Riparia paludicola</i>					Confirmed
Stork, White	<i>Ciconia ciconia</i>				Non-breeding, Oct-May	Confirmed – surrounds
Weaver, Cape	<i>Ploceus capensis</i>	Endemic				Confirmed
Bee-eater, Blue-cheeked	<i>Merops persicus</i>				Non-breeding, Oct-Apr	Highly Likely
Bishop, Southern Red	<i>Euplectes orix</i>					Highly Likely
Bishop, Yellow-crowned	<i>Euplectes afer</i>					Highly Likely
Buzzard, Common (Steppe)	<i>Buteo buteo (vulpinus)</i>				Non-breeding, Oct-Apr	Highly Likely
Buzzard, Steppe	<i>Buteo vulpinus</i>				Non-breeding migrant	Highly Likely
Chat, Anteating	<i>Myrmecocichla formicivora</i>	Endemic				Highly Likely
Chat, Familiar	<i>Cercomela familiaris</i>					Highly Likely
Cisticola, Cloud	<i>Cisticola textrix</i>					Highly Likely
Cisticola, Lazy	<i>Cisticola aberrans</i>					Highly Likely
Cisticola, Wing-snapping	<i>Cisticola ayresii</i>					Highly Likely
Cisticola, Zitting	<i>Cisticola juncidis</i>					Highly Likely
Courser, Temminck's	<i>Cursorius temminckii</i>					Highly Likely
Crane, Blue	<i>Anthropoides paradiseus</i>	Endemic	Near Threatened [Vulnerable (GN389)]	Vulnerable		Highly Likely

Common name	Taxon name	Endemism (Chittenden <i>et al.</i> , 2016)	SA Status (BLSA)	IUCN	Migrants (Chittenden <i>et al.</i> , 2016)	Likelihood of occurrence
Crow, Pied	<i>Corvus albus</i>					Highly Likely
Dove, Cape Turtle	<i>Streptopelia capicola</i>					Highly Likely
Dove, Rock	<i>Columba livia</i>		Category 3 Invasive (GN864, 2016)			Highly Likely
Eagle-owl, Spotted	<i>Bubo africanus</i>					Highly Likely
Egret, Cattle	<i>Bubulcus ibis</i>					Highly Likely
Falcon, Amur	<i>Falco amurensis</i>				Non-breeding, Nov-May	Highly Likely
Falcon, Lanner	<i>Falco biarmicus</i>		Vulnerable	Least Concern		Highly Likely
Finch (Weaver), Scaly-feathered	<i>Sporopipes squamifrons</i>					Highly Likely
Finch, Red-headed	<i>Amadina erythrocephala</i>					Highly Likely
Fiscal, Common (Southern)	<i>Lanius collaris</i>					Highly Likely
Francolin, Coqui	<i>Peliperdix coqui</i>					Highly Likely
Francolin, Shelley's	<i>Scleroptila shelleyi</i>					Highly Likely
Guineafowl, Helmeted	<i>Numida meleagris</i>					Highly Likely
Harrier-Hawk, African	<i>Polyboroides typus</i>					Highly Likely
Harrier, Montagu's	<i>Circus pygargus</i>				Non-breeding, Oct-Apr	Highly Likely
Heron, Black-headed	<i>Ardea melanocephala</i>					Highly Likely
Ibis, African Sacred	<i>Threskiornis aethiopicus</i>					Highly Likely
Kestrel, Greater	<i>Falco rupicoloides</i>					Highly Likely
Kestrel, Lesser	<i>Falco naumanni</i>				Non-breeding, Oct-Apr	Highly Likely
Kestrel, Rock	<i>Falco rupicolus</i>					Highly Likely
Korhaan, Northern Black	<i>Afrotis afraoides</i>	Endemic				Highly Likely

Common name	Taxon name	Endemism (Chittenden et al., 2016)	SA Status (BLSA)	IUCN	Migrants (Chittenden et al., 2016)	Likelihood of occurrence
Lapwing, African Wattled	<i>Vanellus senegallus</i>					Highly Likely
Lark, Flappet	<i>Mirafra rufocinnamomea</i>					Highly Likely
Lark, Melodious	<i>Mirafra cheniana</i>	Near Endemic	Least Concern	Near threatened		Highly Likely
Longclaw, Cape	<i>Macronyx capensis</i>	Endemic				Highly Likely
Martin, Common House	<i>Delichon urbicum</i>				Non-breeding & Breeding, Sep-May	Highly Likely
Myna, Common	<i>Acridotheres tristis</i>		Category 3 Invasive (GN864, 2016)			Highly Likely
Neddicky	<i>Cisticola fulvicapilla</i>					Highly Likely
Pipit, African	<i>Anthus cinnamomeus</i>					Highly Likely
Pipit, Buffy	<i>Anthus vaalensis</i>					Highly Likely
Pipit, Long-billed	<i>Anthus similis</i>					Highly Likely
Pipit, Plain-backed	<i>Anthus leucophris</i>					Highly Likely
Pratincole, Black-winged	<i>Glareola nordmanni</i>		Near Threatened	Near Threatened	Non-breeding, Oct-Mar	Highly Likely
Quail, Common	<i>Coturnix coturnix</i>				Breeding, Sep-Apr	Highly Likely
Quail, Harlequin	<i>Coturnix delegrorguei</i>				Resident & Breeding migrants, Aug-Mar	Highly Likely
Quailfinch, African	<i>Ortygospiza atricollis</i>					Highly Likely
Quelea, Red-billed	<i>Quelea quelea</i>					Highly Likely
Sandgrouse, Yellow-throated	<i>Pterocles gutturalis</i>		Near Threatened			Highly Likely
Secretarybird, Secretarybird	<i>Sagittarius serpentarius</i>		Vulnerable	Vulnerable		Highly Likely
Snake-eagle, Black-	<i>Circaetus pectoralis</i>					Highly Likely

Common name	Taxon name	Endemism (Chittenden <i>et al.</i> , 2016)	SA Status (BLSA)	IUCN	Migrants (Chittenden <i>et al.</i> , 2016)	Likelihood of occurrence
cheded						
Sparrow, House	<i>Passer domesticus</i>		Introduced: Category 3 Invasive (GN864, 2016)			Highly Likely
Sparrowlark, Chestnut-backed	<i>Eremopterix leucotis</i>					Highly Likely
Starling, Cape Glossy	<i>Lamprotornis nitens</i>					Highly Likely
Stork, Abdim's	<i>Ciconia abdimii</i>		Near Threatened; Non-breeding, migrant	Least Concern	Non-breeding, Oct-Apr	Highly Likely
Stork, Marabou	<i>Leptoptilos crumeniferus</i>		Near Threatened	Least Concern		Highly Likely
Swallow, Barn	<i>Hirundo rustica</i>				Non-breeding, Sep-Mar	Highly Likely
Swallow, Red-breasted	<i>Hirundo semirufa</i>				Breeding, Jul-Apr	Highly Likely
Swallow, South African Cliff	<i>Hirundo spilodera</i>	Breeding endemic			Breeding, Aug-Apr	Highly Likely
Swallow, White-throated	<i>Hirundo albigularis</i>				Breeding, Jul-May	Highly Likely
Swift, African Black	<i>Apus barbatus</i>				Resident & Breeding migrants, Aug-May	Highly Likely
Swift, Alpine	<i>Tachymarptis melba</i>				Resident & Breeding migrants, Aug-Mar	Highly Likely
Swift, Common	<i>Apus apus</i>				Non-breeding, Oct-Mar	Highly Likely
Swift, Horus	<i>Apus horus</i>				Resident & Breeding migrants, Oct-Apr	Highly Likely
Swift, Little	<i>Apus affinis</i>				Resident & Breeding migrants, Sep-Apr	Highly Likely
Swift, White-rumped	<i>Apus caffer</i>				Breeding, Aug-May	Highly Likely
Thick-knee, Spotted	<i>Burhinus capensis</i>					Highly Likely

Common name	Taxon name	Endemism (Chittenden et al., 2016)	SA Status (BLSA)	IUCN	Migrants (Chittenden et al., 2016)	Likelihood of occurrence
Waxbill, Swee	<i>Coccygia melanotis</i>	Endemic				Highly Likely
Wheatear, Capped	<i>Oenanthe pileata</i>					Highly Likely
Whinchat	<i>Saxicola ruberta</i>				Vagrant	Highly Likely
Whydah, Pin-tailed	<i>Vidua macroura</i>					Highly Likely
Widowbird, Long-tailed	<i>Euplectes progne</i>					Highly Likely
Widowbird, Red-collared	<i>Euplectes ardens</i>					Highly Likely
Wryneck, Red-throated	<i>Jynx ruficollis</i>					Highly Likely
Apalis, Bar-throated	<i>Apalis Thoracica</i>					Possible
Babbler, Arrow-marked	<i>Turdoides jardineii</i>					Possible
Babbler, Southern Pied	<i>Turdoides bicolor</i>	Endemic				Possible
Barbet, Acacia Pied	<i>Tricholaema leucomelas</i>					Possible
Barbet, Black-collared	<i>Lybius torquatus</i>					Possible
Barbet, Crested	<i>Trachyphonus vaillantii</i>					Possible
Batis, Chinspot	<i>Batis molitor</i>					Possible
Bee-eater, European	<i>Merops apiaster</i>				Non-breeding & Breeding, Oct-Apr	Possible
Bee-eater, Little	<i>Merops pusillus</i>					Possible
Bee-eater, Southern Carmine	<i>Merops nubicoides</i>				Non-breeding & Breeding, Aug-Apr	Possible
Bee-eater, White-fronted	<i>Merops bullockoides</i>					Possible
Bittern, Dwarf	<i>Ixobrychus sturmii</i>				Breeding, Oct-Apr	Possible
Bittern, Little	<i>Ixobrychus minutus</i>				Resident & non-breeding migrants, Dec-Apr	Possible

Common name	Taxon name	Endemism (Chittenden <i>et al.</i> , 2016)	SA Status (BLSA)	IUCN	Migrants (Chittenden <i>et al.</i> , 2016)	Likelihood of occurrence
Bokmakierie, Bokmakierie	<i>Telophorus zeylonus</i>					Possible
Boubou, Southern	<i>Laniarius ferrugineus</i>	Endemic				Possible
Bulbul, African Red-eyed	<i>Pycnonotus nigricans</i>					Possible
Bunting, Cape	<i>Emberiz capensis</i>					Possible
Bunting, Golden-breasted	<i>Emberiza flaviventris</i>					Possible
Bush-shrike, Grey-headed	<i>Malaconotus blanchoti</i>					Possible
Bush-shrike, Orange-breasted	<i>Telophorus sulfureopectus</i>					Possible
Buttonquail Common	<i>Turnix sylvaticus</i>					Possible
Buzzard, European Honey	<i>Pernis apivorus</i>				Non-breeding, Nov-May	Possible
Buzzard, Jackal	<i>Buteo rufufuscus</i>	Near Endemic				Possible
Buzzard, Lizard	<i>Kaupifalco monogrammicus</i>					Possible
Camaroptera, Grey-backed	<i>Camaroptera brevicaudata</i>					Possible
Canary, Black-throated	<i>Crithagra atrogularis</i>					Possible
Canary, Yellow	<i>Crithagra flaviventris</i>					Possible
Canary, Yellow-fronted	<i>Crithagra mozambica</i>					Possible
Chat, Mocking Cliff	<i>Thamnolaea cinnamomeiventris</i>					Possible
Cisticola, Desert	<i>Cisticola aridulus</i>					Possible
Cisticola, Levaillant's	<i>Cisticola tinniens</i>					Possible

Common name	Taxon name	Endemism (Chittenden et al., 2016)	SA Status (BLSA)	IUCN	Migrants (Chittenden et al., 2016)	Likelihood of occurrence
Cisticola, Rattling	<i>Cisticola chiniana</i>					Possible
Cisticola, Tinkling	<i>Cisticola rufilatus</i>					Possible
Cisticola, Wailing	<i>Cisticola lais</i>					Possible
Coot, Red-knobbed	<i>Fulica cristata</i>					Possible
Cormorant, Reed	<i>Phalacrocorax africanus</i>					Possible
Cormorant, White-breasted	<i>Phalacrocorax carbo</i>					Possible
Coucal, Burchell's	<i>Centropus Burchellii</i>					Possible
Courser, Bronze-winged	<i>Rhinoptilus chalconotus</i>					Possible
Crake, African	<i>Crecopsis egregia</i>				Breeding, Nov-Apr	Possible
Crake, Black	<i>Amaurornis flavirostra</i>					Possible
Crake, Corn	<i>Crex crex</i>				Non-breeding, Nov-Apr	Possible
Crake, Spotted	<i>Porzana porzana</i>				Non-breeding, Dec-Apr	Possible
Crombec, Long-billed	<i>Sylvietta rufescens</i>					Possible
Cuckoo-finch	<i>Anomalospiza imberbis</i>				Resident & Breeding migrants	Possible
Cuckoo-shrike, Black	<i>Campephaga flava</i>					Possible
Cuckoo, African	<i>Cuculus gularis</i>				Breeding, Jan-Apr	Possible
Cuckoo, Black	<i>Cuculus clamosus</i>				Breeding, Sep-Apr	Possible
Cuckoo, Common	<i>Cuculus canorus</i>				Non-breeding, Oct-Apr	Possible
Cuckoo, Diderick	<i>Chrysococcyx caprius</i>				Breeding, Oct-Mar	Possible
Cuckoo, Great Spotted	<i>Clamator glandarius</i>				Breeding, Aug-May	Possible
Cuckoo, Jacobin	<i>Clamator jacobinus</i>				Breeding, Oct-Apr	Possible
Cuckoo, Klaas's	<i>Chrysococcyx klaas</i>				Resident & Breeding migrants, Sep-Apr	Possible

Common name	Taxon name	Endemism (Chittenden <i>et al.</i> , 2016)	SA Status (BLSA)	IUCN	Migrants (Chittenden <i>et al.</i> , 2016)	Likelihood of occurrence
Cuckoo, Levaillant's	<i>Clamator levaillantii</i>				Breeding, Oct-May	Possible
Cuckoo, Red-chested	<i>Cuculus solitarius</i>				Breeding, Sep-Mar	Possible
Darter, African	<i>Anhinga rufa</i>					Possible
Dove, Emerald-spotted Wood	<i>Turtur chalcospilos (afer)</i>					Possible
Dove, European Turtle	<i>Streptopelia turtur</i>			Vulnerable	Vagrant	Possible
Dove, Laughing	<i>Streptopelia senegalensis</i>					Possible
Dove, Namaqua	<i>Oena capensis</i>					Possible
Dove, Red-eyed	<i>Streptopelia semitorquata</i>					Possible
Drongo, Fork-tailed	<i>Dicrurus adsimilis</i>					Possible
Duck, African Black	<i>Anas sparsa</i>					Possible
Duck, Fulvous Whistling	<i>Dendrocygna bicolor</i>					Possible
Duck, Hybrid Mallard	<i>Anas hybrid</i>		HYBRIDS Category 1a Invasive (GN864, 2016)			Possible
Eagle-owl, Verreaux's	<i>Bubo lacteus</i>					Possible
Eagle, Lesser Spotted	<i>Aquila pomarina</i>				Non-breeding, Oct-Mar	Possible
Eagle, Martial	<i>Polmaetus bellicosus</i>		Endangered [Vulnerable, GN389, 2013]	Vulnerable		Possible
Eagle, Steppe	<i>Aquila nipalensis</i>			Endangered	Non-breeding, Oct-Apr	Possible
Eagle, Tawny	<i>Aquila rapax</i>		Endangered [Vulnerable, GN389, 2013]			Possible
Eagle, Verreaux's	<i>Aquila verreauxii</i>		Vulnerable	Least Concern		Possible
Eagle, Wahlberg's	<i>Aquila wahlbergi</i>				Breeding, Aug-Apr	Possible

Common name	Taxon name	Endemism (Chittenden et al., 2016)	SA Status (BLSA)	IUCN	Migrants (Chittenden et al., 2016)	Likelihood of occurrence
Egret, Great	<i>Egretta alba</i>					Possible
Egret, Little	<i>Egretta garzetta</i>					Possible
Egret, Yellow-billed (Intermediate)	<i>Egretta intermedia</i>					Possible
Eremomela, Burnt-necked	<i>Eremomela usticollis</i>					Possible
Eremomela, Yellow-bellied	<i>Eremomela icteropygialis</i>					Possible
Falcon, Eleonora's	<i>Falco Eleonora</i>				Vagrant, Nov-May	Possible
Falcon, Peregrine	<i>Falco peregrinus</i>				Resident & non-breeding migrants, Sep-Mar	Possible
Falcon, Red-footed	<i>Falco vespertinus</i>		Near threatened	Near threatened	Non-breeding Sep-May	Possible
Finch, Cuckoo	<i>Anomalospiza imberbis</i>				Resident & Breeding migrants, Oct-May	Possible
Finch, Cut-throat	<i>Amadina fasciata</i>					Possible
Firefinch, African	<i>Lagonosticta rubricata</i>					Possible
Firefinch, Jameson's	<i>Lagonosticta rhodopareia</i>					Possible
Firefinch, Red-billed	<i>Lagonosticta senegala</i>					Possible
Fish-eagle, African	<i>Haliaeetus vocifer</i>					Possible
Flufftail, Red-chested	<i>Sarothrura rufa</i>					Possible
Flycatcher, African Paradise	<i>Terpsiphone viridis</i>				Resident & breeding, Sep-Apr	Possible
Flycatcher, Fairy	<i>Stenostira scita</i>	Endemic				Possible
Flycatcher, Fiscal	<i>Sigelus silens</i>	Endemic				Possible
Flycatcher, Marico	<i>Bradornis mariquensis</i>					Possible

Common name	Taxon name	Endemism (Chittenden <i>et al.</i> , 2016)	SA Status (BLSA)	IUCN	Migrants (Chittenden <i>et al.</i> , 2016)	Likelihood of occurrence
Flycatcher, Southern Black	<i>Melaenornis pammelaina</i>					Possible
Flycatcher, Spotted	<i>Muscicapa striata</i>				Non-breeding, Oct-Apr	Possible
Francolin, Crested	<i>Dendroperdix sephaena</i>					Possible
Go-away-bird, Grey	<i>Corythaixoides concolor</i>					Possible
Goose, Domestic	<i>Anser anser</i>					Possible
Goose, Egyptian	<i>Alopochen aegyptiacus</i>					Possible
Goose, Spur-winged	<i>Plectropterus gambensis</i>					Possible
Goshawk, Gabar	<i>Melierax gabar</i>					Possible
Goshawk, Southern Pale Chanting	<i>Melierax canorus</i>					Possible
Grassbird, Cape	<i>Sphenoeacus afer</i>	Endemic				Possible
Grebe, Little	<i>Tachybaptus ruficollis</i>					Possible
Greenshank, Common	<i>Tringa nebularia</i>				Non-breeding, Jul-Aug	Possible
Gull, Grey-headed	<i>Larus cirrocephalus</i>					Possible
Hamerkop, Hamerkop	<i>Scopus umbretta</i>					Possible
Harrier, African Marsh	<i>Circus ranivorus</i>		Endangered			Possible
Harrier, Wetsern Marsh	<i>Circus aeruginosus</i>				Non-breeding, Oct-Apr	Possible
Hawk-eagle, African	<i>Aquila spilogaster</i>					Possible
Helmet-shrike, White-crested	<i>Prionops plumatus</i>					Possible
Heron, Black	<i>Egretta ardesiaca</i>					Possible
Heron, Black-crowned Night	<i>Nycticorax nycticorax</i>					Possible
Heron, Goliath	<i>Ardea goliath</i>					Possible

Common name	Taxon name	Endemism (Chittenden et al., 2016)	SA Status (BLSA)	IUCN	Migrants (Chittenden et al., 2016)	Likelihood of occurrence
Heron, Green-backed (Striated)	<i>Butorides striata</i>					Possible
Heron, Grey	<i>Ardea cinerea</i>					Possible
Heron, Purple	<i>Ardea purpurea</i>					Possible
Heron, Squacco	<i>Ardeola ralloides</i>					Possible
Hobby, Eurasian	<i>Falco subbuteo</i>				Non-breeding	Possible
Honeybird, Brown-backed	<i>Prodotiscus regulus</i>					Possible
Honeyguide, Greater	<i>Indicator indicator</i>					Possible
Honeyguide, Lesser	<i>Indicator minor</i>					Possible
Hoopoe, African	<i>Upupa africana</i>					Possible
Hornbill, Red-billed	<i>Tockus erythrorhynchus</i>					Possible
Hornbill, Southern Red-billed	<i>Tockus rufirostris</i>					Possible
Hornbill, Southern Yellow-billed	<i>Tockus leucomelas</i>					Possible
Ibis, Glossy	<i>Plegadis falcinellus</i>					Possible
Ibis, Hadedda	<i>Bostrychia hagedash</i>					Possible
Indigobird, Dusky	<i>Vidua funerea</i>					Possible
Indigobird, Purple	<i>Vidua purpurascens</i>					Possible
Indigobird, Village	<i>Vidua chalybeata</i>					Possible
Kingfisher, African Pygmy	<i>Ispidina picta</i>				Breeding, Sep-Mar	Possible
Kingfisher, Brown-hooded	<i>Halcyon albiventris</i>					Possible
Kingfisher, Giant	<i>Megaceryle maximus</i>					Possible

Common name	Taxon name	Endemism (Chittenden et al., 2016)	SA Status (BLSA)	IUCN	Migrants (Chittenden et al., 2016)	Likelihood of occurrence
Kingfisher, Half-collared	<i>Alcedo semitorquata</i>		Near threatened	Least Concern		Possible
Kingfisher, Malachite	<i>Alcedo (Corythornis) cristata</i>					Possible
Kingfisher, Pied	<i>Ceryle rudis</i>					Possible
Kingfisher, Striped	<i>Halcyon chelicuti</i>					Possible
Kingfisher, Woodland	<i>Halcyon senegalensis</i>				Breeding, Nov-Apr	Possible
Kite, Black	<i>Milvus migrans</i>				Non-breeding, Oct-Mar	Possible
Korhaan (Bustard), White-bellied	<i>Eupodotis senegalensis</i>		Vulnerable	Least Concern		Possible
Korhaan, Red-crested	<i>Lophotis ruficrista</i>					Possible
Lark, Monotonous	<i>Mirafra passerina</i>					Possible
Lark, Rufous-naped	<i>Mirafra africana</i>					Possible
Lark, Sabota	<i>Calendulauda sabota</i>					Possible
Mannikin, Bronze	<i>Spermestes cucullatus</i>					Possible
Martin, Rock	<i>Hirundo fuligula</i>					Possible
Martin, Sand	<i>Riparia riparia</i>				Non-breeding, Sep-Apr	Possible
Masked-weaver, Lesser	<i>Ploceus intermedius</i>					Possible
Masked-weaver, Southern	<i>Ploceus velatus</i>					Possible
Moorhen, Common	<i>Gallinula chloropus</i>					Possible
Moorhen, Lesser	<i>Gallinula angulata</i>				Breeding, Nov-Apr	Possible
Mousebird, Red-faced	<i>Urocolius indicus</i>					Possible
Mousebird, Speckled	<i>Colius striatus</i>					Possible
Mousebird, White-backed	<i>Colius colius</i>	Endemic				Possible
Night-Heron, White-	<i>Gorsachius leuconotus</i>					Possible

Common name	Taxon name	Endemism (Chittenden et al., 2016)	SA Status (BLSA)	IUCN	Migrants (Chittenden et al., 2016)	Likelihood of occurrence
backed						
Nightingale, Thrush	<i>Luscinia luscinia</i>				Non-breeding, Dec-Mar	Possible
Nightjar, European	<i>Caprimulgus europaeus</i>				Non-breeding, Sep-Apr	Possible
Nightjar, Fiery-necked	<i>Caprimulgus pectoralis</i>					Possible
Nightjar, Freckled	<i>Caprimulgus tristigma</i>					Possible
Nightjar, Rufous-cheeked	<i>Caprimulgus rufigena</i>				Breeding, Aug-Apr	Possible
Oriole, Black-headed	<i>Oriolus larvatus</i>					Possible
Oriole, Eurasian Golden	<i>Oriolus oriolus</i>				Non-breeding, Oct-Apr	Possible
Osprey, Osprey (Western)	<i>Pandion haliaetus</i>				Non-breeding, Aug-May	Possible
Ostrich, Common	<i>Struthio camelus</i>					Possible
Owl, African Grass	<i>Tyto capensis</i>		Vulnerable	Least Concern		Possible
Owl, African Scops	<i>Otus senegalensis</i>					Possible
Owl, Marsh	<i>Asio capensis</i>					Possible
Owl, Southern White-faced	<i>Ptilopsis granti</i>					Possible
Owl, Western Barn	<i>Tyto alba</i>					Possible
Owlet, Pearl-spotted	<i>Glaucidium perlatum</i>					Possible
Palm-swift, African	<i>Cypsiurus parvus</i>					Possible
Parrot, Meyer's	<i>Poicephalus meyeri</i>					Possible
Petronia, Yellow-throated	<i>Petronia superciliaris</i>					Possible
Pigeon, African Green	<i>Treron calvus</i>					Possible
Pigeon, African Olive	<i>Columba arquatrix</i>					Possible
Pigeon, Speckled	<i>Columba guinea</i>					Possible

Common name	Taxon name	Endemism (Chittenden <i>et al.</i> , 2016)	SA Status (BLSA)	IUCN	Migrants (Chittenden <i>et al.</i> , 2016)	Likelihood of occurrence
Pintail, Northern	<i>Anas acuta</i>				Vagrant, Nov-Mar	Possible
Pipit, Bushveld	<i>Anthus caffer</i>					Possible
Pipit, Golden	<i>Tmetothylacus tenellus</i>				Vagrant, Nov-Mar	Possible
Pipit, Striped	<i>Anthus lineiventris</i>					Possible
Pipit, Tree	<i>Anthus trivialis</i>				Non-breeding, Oct-Apr	Possible
Plover, Kittlitz's	<i>Charadrius pecuarius</i>					Possible
Plover, Three-banded	<i>Charadrius tricollaris</i>					Possible
Pochard, Southern	<i>Netta erythrophthalma</i>					Possible
Prinia, Black-chested	<i>Prinia flavicans</i>					Possible
Prinia, Tawny-flanked	<i>Prinia subflava</i>					Possible
Puffback, Black-backed	<i>Dryoscopus cubla</i>					Possible
Pytilia, Green-winged	<i>Pytilia melba</i>					Possible
Redshank, Spotted	<i>Tringa erythropus</i>				Vagrant, Dec-Feb	Possible
Reed-warbler, African	<i>Acrocephalus baeticatus</i>				Resident & Breeding migrants, Aug-May	Possible
Reed-warbler, Great	<i>Acrocephalus arundinaceus</i>				Non-breeding, Dec-Apr	Possible
Robin-chat, Cape	<i>Cossypha caffra</i>					Possible
Robin-chat, White-throated	<i>Cossypha humeralis</i>	Endemic				Possible
Rock-thrush, Cape	<i>Monticola rupestris</i>	Endemic				Possible
Rock-thrush, Short-toed	<i>Monticola brevipes</i>					Possible
Roller, European	<i>Coracias garrulus</i>		Near Threatened	Near Threatened	Non-breeding, Dec-Apr	Possible
Roller, Lilac-breasted	<i>Coracias caudatus</i>					Possible
Roller, Purple	<i>Coracias naevius</i>					Possible

Common name	Taxon name	Endemism (Chittenden <i>et al.</i> , 2016)	SA Status (BLSA)	IUCN	Migrants (Chittenden <i>et al.</i> , 2016)	Likelihood of occurrence
Ruff / Reeve	<i>Philomachus pugnax</i>				Non-breeding, Sep-Apr	Possible
Rush-warbler, Little	<i>Bradypterus baboecala</i>					Possible
Sandpiper, Common	<i>Actitis hypoleucos</i>				Non-breeding, Jul-Apr	Possible
Sandpiper, Curlew	<i>Calidris ferruginea</i>		Least Concern	Near Threatened	Non-breeding, Aug-Apr	Possible
Sandpiper, Marsh	<i>Tringa stagnatilis</i>				Non-breeding, Sep-Mar	Possible
Sandpiper, Pectoral	<i>Calidris melanotos</i>				Vagrant, Sep-May	Possible
Sandpiper, Wood	<i>Tringa glareola</i>				Non-breeding, Aug-May	Possible
Scimitarbill, Common	<i>Rhinopomastus cyanomelas</i>					Possible
Scrub-robin, Kalahari	<i>Cercotrichas paena</i>					Possible
Scrub-robin, White-browed	<i>Cercotrichas leucophrys</i>					Possible
Seedeater, Streaky-headed	<i>Crithagra gularis</i>					Possible
Shelduck, South African	<i>Tadorna cana</i>	Endemic				Possible
Shikra	<i>Accipiter badius</i>					Possible
Shrike, Crimson-breasted	<i>Laniarius atrococcineus</i>					Possible
Shrike, Lesser Grey	<i>Lanius minor</i>				Non-breeding, Nov-Apr	Possible
Shrike, Magpie	<i>Corvinella melanoleuca</i>					Possible
Shrike, Red-backed	<i>Lanius collurio</i>				Non-breeding, Oct-Apr	Possible
Shrike, Southern White-crowned	<i>Eurocephalus anguitimens</i>					Possible
Snake-eagle, Brown	<i>Circaetus cinereus</i>					Possible
Snipe, African	<i>Gallinago nigripennis</i>					Possible
Snipe, Great	<i>Gallinago media</i>		Not Assessed	Near Threatened	Non-breeding Vagrant,	Possible

Common name	Taxon name	Endemism (Chittenden et al., 2016)	SA Status (BLSA)	IUCN	Migrants (Chittenden et al., 2016)	Likelihood of occurrence
					Nov-Mar	
Snipe, Greater Painted	<i>Rostratula benghalensis</i>					Possible
Sparrow-weaver, White-browed	<i>Plocepasser mahali</i>					Possible
Sparrow, Cape	<i>Passer melanurus</i>					Possible
Sparrow, Great	<i>Passer motitensis</i>					Possible
Sparrow, Southern Grey-headed	<i>Passer diffusus</i>					Possible
Sparrowhawk, Black	<i>Accipiter melanoleucus</i>					Possible
Sparrowhawk, Little	<i>Accipiter minullus</i>					Possible
Sparrowhawk, Ovambo	<i>Accipiter ovampensis</i>					Possible
Spoonbill, African	<i>Platalea alba</i>					Possible
Spurfowl, Natal	<i>Pternistis natalensis</i>					Possible
Spurfowl, Swainson's	<i>Pternistis swainsonii</i>					Possible
Starling, Burchell's	<i>Lamprotornis australis</i>					Possible
Starling, Red-winged	<i>Onychognathus morio</i>					Possible
Starling, Violet-backed	<i>Cinnyricinclus leucogaster</i>				Breeding, Oct-Apr	Possible
Starling, Wattled	<i>Creatophora cinerea</i>				Resident & Breeding migrants	Possible
Stilt, Black-winged	<i>Himantopus himantopus</i>					Possible
Stint, Little	<i>Calidris minuta</i>				Non-breeding, Sep-Apr	Possible
Stint, Temminck's	<i>Calidris temminckii</i>				Vagrant, Oct-Apr	Possible
Stonechat, African	<i>Saxicola torquatus</i>					Possible
Stork, Black	<i>Ciconia nigra</i>		Vulnerable	Least Concern		Possible

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Stork, Yellow-billed	<i>Mycteria ibis</i>		Endangered	Least Concern	Resident & Non-breeding migrants, Oct-Apr	Possible
Sunbird, Amethyst	<i>Chalcomitra amethystina</i>					Possible
Sunbird, Greater Double-collared	<i>Cinnyris afer</i>	Endemic				Possible
Sunbird, Malachite	<i>Nectarinia famosa</i>					Possible
Sunbird, Marico	<i>Cinnyris mariquensis</i>					Possible
Sunbird, White-bellied	<i>Cinnyris talatala</i>					Possible
Swallow, Greater Striped	<i>Hirundo cucullata</i>				Breeding, Jul-May	Possible
Swallow, Lesser Striped	<i>Hirundo abyssinica</i>				Resident & Breeding migrants, Jul-Apr	Possible
Swallow, Pearl-breasted	<i>Hirundo dimidiata</i>				Resident & Breeding migrants, Aug-Apr	Possible
Swamphen, African Purple	<i>Porphyrio madagascariensis</i>					Possible
Tchagra, Black-crowned	<i>Tchagra senegalus</i>					Possible
Tchagra, Brown-crowned	<i>Tchagra australis</i>					Possible
Teal, Hottentot	<i>Anas hottentota</i>					Possible
Teal, Red-billed	<i>Anas erythrorhyncha</i>					Possible
Tern, Whiskered	<i>Chlidonias hybrida</i>					Possible
Tern, White-winged	<i>Chlidonias leucopterus</i>				Non-breeding, Sep-Apr	Possible
Thrush, Groundscraper	<i>Psophocichla litsipsirupa</i>					Possible
Thrush, Karoo	<i>Turdus smithi</i>	Endemic				Possible

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Thrush, Kurrichane	<i>Turdus libonyanus</i>					Possible
Tinkerbird, Yellow-fronted	<i>Pogoniulus chrysoconus</i>					Possible
Tit-babbler (Warbler), Chestnut-vented	<i>Parisoma subcaeruleum</i> (<i>Sylvia subcaerulea</i>)					Possible
Tit-flycatcher, Grey	<i>Myioparus plumbeus</i>					Possible
Tit, Ashy	<i>Parus cinerascens</i>					Possible
Tit, Cape Penduline	<i>Anthoscopus minutus</i>					Possible
Tit, Grey Penduline	<i>Anthoscopus caroli</i>					Possible
Tit, Southern Black	<i>Parus niger</i>					Possible
Vulture, Cape	<i>Gyps coprotheres</i>	Endemic	Endangered [Vulnerable, GN389, 2013]	Endangered		Possible
Vulture, Lappet-faced	<i>Torgos tracheliotus</i>		Endangered [Vulnerable, GN389, 2013]	Endangered		Possible
Vulture, White-backed	<i>Gyps africanus</i>		Endangered [Protected, GN389, 2013]	Critically Endangered		Possible
Wagtail, African Pied	<i>Motacilla aguimp</i>					Possible
Wagtail, Cape	<i>Motacilla capensis</i>					Possible
Wagtail, Western Yellow	<i>Motacilla flava</i>				Non-breeding, Oct-Apr	Possible
Warbler, Garden	<i>Sylvia borin</i>				Non-breeding, Oct-Apr	Possible
Warbler, Icterine	<i>Hippolais icterina</i>				Non-breeding, Nov-Apr	Possible
Warbler, Lesser Swamp	<i>Acrocephalus gracilirostris</i>					Possible
Warbler, Marsh	<i>Acrocephalus palustris</i>				Non-breeding, Nov-Apr	Possible
Warbler, Olive-tree	<i>Hippolais olivetorum</i>				Non-breeding, Nov-Apr	Possible

Common name	Taxon name	Endemism (Chittenden et al., 2016)	SA Status (BLSA)	IUCN	Migrants (Chittenden et al., 2016)	Likelihood of occurrence
Warbler, River	<i>Locustella fluviatilis</i>				Non-breeding, Dec-Apr	Possible
Warbler, Sedge	<i>Acrocephalus schoenibaenus</i>				Non-breeding, Oct-Apr	Possible
Warbler, Willow	<i>Phylloscopus trochilus</i>				Non-breeding, Oct-Apr	Possible
Waxbill Black-faced	<i>Estrilda erythronotos</i>					Possible
Waxbill, Blue	<i>Uraeginthus angolensis</i>					Possible
Waxbill, Common	<i>Estrilda astrild</i>					Possible
Waxbill, Orange-breasted	<i>Amandava subflava</i>					Possible
Waxbill, Violet-eared	<i>Granatina granatina</i>					Possible
Weaver, Red-billed Buffalo	<i>Bubalornis niger</i>					Possible
Weaver, Red-headed	<i>Anaplectes rubriceps</i>					Possible
Weaver, Thick-billed	<i>Amblyospiza albifrons</i>					Possible
Weaver, Village	<i>Ploceus cucullatus</i>					Possible
Wheatear, Mountain	<i>Oenanthe monticola</i>					Possible
Wheatear, Northern	<i>Oenanthe oenanthe</i>				Vagrant	Possible
White-eye, Cape	<i>Zosterops virens</i>	Endemic				Possible
Whitethroat, Common	<i>Sylvia communis</i>				Non-breeding, Nov-Apr	Possible
Whydah, Long-tailed Paradise	<i>Vidua paradisaea</i>					Possible
Whydah, Shaft-tailed	<i>Vidua regia</i>					Possible
Widowbird, White-winged	<i>Euplectes albonotatus</i>					Possible
Wood-hoopoe, Green	<i>Phoeniculus purpureus</i>					Possible
Woodpecker, Bearded	<i>Dendropicos namaquus</i>					Possible

Common name	Taxon name	Endemism (Chittenden <i>et al.</i> , 2016)	SA Status (BLSA)	IUCN	Migrants (Chittenden <i>et al.</i> , 2016)	Likelihood of occurrence
Woodpecker, Bennett's	<i>Campethera bennettii</i>					Possible
Woodpecker, Cardinal	<i>Dendropicos fuscescens</i>					Possible
Woodpecker, Golden-tailed	<i>Campethera abingoni</i>					Possible
Wren-warbler, Barred	<i>Calamonastes fasciolatus</i>					Possible
Avocet, Pied	<i>Recurvirostra avosetta</i>					Very unlikely
Bee-eater, Swallow-tailed	<i>Merops hirundineus</i>					Very unlikely
Brubru	<i>Nilaus afer</i>					Very unlikely
Bunting, Cinnamon-breasted	<i>Emberiza tahapisi</i>					Very unlikely
Bustard, Kori	<i>Ardeotis kori</i>		Near threatened [Protected, GN389, 2013]	Near threatened		Very unlikely
Courser, Double-banded	<i>Rhinoptilus africanus</i>					Very unlikely
Crow, Cape	<i>Corvus capensis</i>					Very unlikely
Duck, Knob-billed	<i>Sarkidiornis melanotos</i>				Resident & Breeding migrants, Aug-May	Very unlikely
Duck, Mallard	<i>Anas platyrhynchos</i>		Category 2 Invasive (GN864, 2016)			Very unlikely
Duck, White-backed	<i>Thalassornis leuconotus</i>					Very unlikely
Duck, White-faced Whistling	<i>Dendrocygna viduata</i>					Very unlikely
Duck, Yellow-billed	<i>Anas undulata</i>					Very unlikely
Eagle, Long-crested	<i>Lophaetus occipitalis</i>					Very unlikely
Flamingo, Greater	<i>Phoenicopterus ruber</i>		Near threatened	Least Concern		Very unlikely

Common name	Taxon name	Endemism (Chittenden et al., 2016)	SA Status (BLSA)	IUCN	Migrants (Chittenden et al., 2016)	Likelihood of occurrence
Grebe, Great Crested	<i>Podiceps cristatus</i>					Very unlikely
Greenbul, Yellow-bellied	<i>Chlorocichla flaviventris</i>					Very unlikely
Harrier, Pallid	<i>Circus macrourus</i>		Near threatened	Near threatened	Non-breeding, Nov-Apr	Very unlikely
Jacana, African	<i>Actophilornis africanus</i>					Very unlikely
Kingfisher, Grey-headed	<i>Halcyon leucocephala</i>				Breeding, Sep-May	Very unlikely
Kite, Yellow-billed	<i>Milvus aegyptius</i>				Breeding & non-breeding, Jul-Apr	Very unlikely
Lark, Eastern Long-billed	<i>Certhilauda semitorquata</i>	Endemic				Very unlikely
Lark, Red-capped	<i>Calandrella cinerea</i>					Very unlikely
Openbill, African	<i>Anastomus lamelligerus</i>				Breeding & resident	Very unlikely
Oxpecker, Red-billed	<i>Buphagus erythrorhynchus</i>					Very unlikely
Peacock, Common	<i>Pavo cristatus</i>			Exotic		Very unlikely
Pochard, Red-crested	<i>Netta rufina</i>					Very unlikely
Shoveler, Cape	<i>Anas smithii</i>	Endemic				Very unlikely
Teal, Cape	<i>Anas capensis</i>					Very unlikely
Tern, Caspian	<i>Sterna caspia</i>		Vulnerable			Very unlikely
Vulture, Palm-nut	<i>Gypohierax angolensis</i>					Very unlikely

Appendix D: Reptile Probability List

Common name	Taxon name	Endemism	SA Status	IUCN (2016)	Likelihood of occurrence
Adder, Puff	<i>Bitis arietans arietans</i>				Highly Likely
Agama, Eastern Ground	<i>Agama aculeata distanti</i>	Endemic			Highly Likely
Gecko, Cape	<i>Pachydactylus capensis</i>		Protected, GN389, 2013		Highly Likely
Lizard, Coppery Grass (Transvaal Grass)	<i>Chamaesaura aenea</i>	Endemic	Near Threatened		Highly Likely
Lizard, Delalande's Sandveld	<i>Nucras laladii</i>	Endemic			Highly Likely
Lizard, Dusky (Dusky spade-snouted) Worm	<i>Monopeltis infuscata</i>				Highly Likely
Lizard, Yellow-throated Plated	<i>Gerrhosaurus flavigularis</i>				Highly Likely
Rinkhals	<i>Hemachatus haemachatus</i>	Near Endemic			Highly Likely
Shovel-snout, Sundevall's	<i>Prosymna sundevalli</i>	Near Endemic			Highly Likely
Skink, Cape	<i>Trachylepis capensis</i>				Highly Likely
Skink, Savanaa Legless	<i>Acontias occidentalis</i>				Highly Likely
Skink, Variable	<i>Trachylepis varia</i>				Highly Likely
Skink, Wahlberg's Snake-eyed	<i>Afroablepharus wahlbergii</i> (<i>Panaspis wahlbergii</i>)				Highly Likely
Slug-eater, Common	<i>Duberria lutrix lutrix</i>	Endemic			Highly Likely
Snake, Brown House	<i>Boaedon capensis</i>				Highly Likely
Snake, Common Purple-glossed	<i>Amblyodipsas polylepis polylepis</i>				Highly Likely
Snake, Common Wolf	<i>Lycophidion capense capense</i>				Highly Likely
Snake, Crossed Whip	<i>Psammophis crucifer</i>	Near Endemic			Highly Likely
Snake, Delalande's Beaked Blind	<i>Rhinotyphlops lalandei</i>				Highly Likely
Snake, Distant's Thread	<i>Leptotyphlops distanti</i>	Near Endemic			Highly Likely
Snake, Incognito Worm	<i>Leptotyphlops incognitus</i>				Highly Likely
Snake, Olive Ground	<i>Lycodonormorphus inornatus</i>	Endemic			Highly Likely
Snake, Peters' Worm	<i>Leptotyphlops scutifrons</i>				Highly Likely
Snake, Short-snouted Grass	<i>Psammophis brevirostris</i>				Highly Likely

Common name	Taxon name	Endemism	SA Status	IUCN (2016)	Likelihood of occurrence
Snake, Spotted Grass (Spotted Skaapsteker)	<i>Psammophylax rhombeatus</i>				Highly Likely
Snake, Striped Grass (Striped Skaapsteker)	<i>Psammophylax tritaeniatus</i>				Highly Likely
Adder, Rhombic Night	<i>Causus rhombeatus</i>				Possible
Agama, Southern Rock	<i>Agama atra</i>	Near Endemic			Possible
Agama, Southern Tree	<i>Acanthocercus atricollis atricollis</i>				Possible
Boomslang	<i>Dispholidus typus</i>				Possible
Chameleon, Common Flap-Neck	<i>Chamaeleo dilepis dilepis</i>				Possible
Cobra, Mozambique Spitting	<i>Naja mossambica</i>				Possible
Cobra, Snouted	<i>Naja annulifera</i>				Possible
Egg-eater, Common	<i>Dasypeltis scabra</i>				Possible
Gecko, Cape (Common) Dwarf Day	<i>Lygodactylus capensis</i>				Possible
Gecko, Spotted Dwarf	<i>Lygodactylus ocellatus ocellatus</i>	Endemic			Possible
Gecko, Transvaal Thick-toed	<i>Pachydactylus affinis</i>	Endemic	Protected, GN389, 2013		Possible
Gecko, Tropical House	<i>Hemidactylus mabouia</i>				Possible
Gecko, Turner's (Turner's Tubercled)	<i>Chondrodactylus turneri</i>				Possible
Lizard, Common Girdled (Transvaal Girdled)	<i>Cordylus vittifer</i>	Near Endemic			Possible
Lizard, Holub's Sandveld	<i>Nucras holubi</i>				Possible
Lizard, Jone's Girdled	<i>Cordylus jonesii</i>				Possible
Lizard, Ornate Sandveld	<i>Nucras ornata</i>				Possible
Lizard, Spotted Sand	<i>Pedioplanis lineocellata lineocellata</i>				Possible
Monitor, Rock	<i>Varanus albigularis albigularis</i>				Possible
Monitor, Water	<i>Varanus niloticus</i>				Possible
Python, Southern African	<i>Python natalensis</i>		Protected, GN389, 2013		Possible
Shovel-snout, Two-striped	<i>Prosymna bivittata</i>				Possible

Common name	Taxon name	Endemism	SA Status	IUCN (2016)	Likelihood of occurrence
Skink, Speckled Rock	<i>Trachylepis punctatissima</i>				Possible
Skink, Thin-tailed Legless	<i>Acontias gracilicauda</i>	Endemic			Possible
Snake, Aurora House	<i>Lamprophis aurora</i>	Endemic			Possible
Snake, Bibron's Stiletto	<i>Atractaspis bibronii</i>				Possible
Snake, Bibron's Blind	<i>Afrotyphlops bibronii</i>	Near Endemic			Possible
Snake, Black File	<i>Gonionotophis nyassae</i>				Possible
Snake, Common File	<i>Gonionotophis capensis capensis</i>				Possible
Snake, Common Tiger	<i>Telescopus semiannulatus semiannulatus</i>				Possible
Snake, Common Water	<i>Lycodonomorphus rufulus</i>				Possible
Snake, Dwarf Sand	<i>Psammophis angolensis</i>				Possible
Snake, Green Water	<i>Philothamnus hoplogaster</i>				Possible
Snake, Herald	<i>Crotaphopeltis hotamboeia</i>				Possible
Snake, Kalahari Sand	<i>Psammophis trinasalis</i>				Possible
Snake, Mole	<i>Pseudaspis cana</i>				Possible
Snake, Southern Twig	<i>Thelotornis capensis capensis</i>				Possible
Snake, Spotted Bush	<i>Philothamnus semivariiegatus</i>				Possible
Snake, Striped Harlequin	<i>Homoroselaps dorsalis</i>	Endemic	Near Threatened	Near Threatened	Possible
Snake, Sundevall's Garter	<i>Elapsoidea sundevalli</i>				Possible
Snake, Western Natal Green	<i>Philothamnus natalensis occidentalis</i>	Endemic			Possible
Snake, Western Stripe-bellied Sand	<i>Psammophis subtaeniatus</i>				Possible
Tortoise, Leopard (Mountain)	<i>Stigmochelys pardalis</i>				Possible
Tortoise, Lobatse Hinged-back	<i>Kinixys lobatsiana</i>	Near Endemic			Possible
Tortoise, Speke's Hinged-back	<i>Kinixys spekii</i>				Possible
Adder, Horned	<i>Bitis caudalis</i>		Protected, GN389, 2013		Very Unlikely

Common name	Taxon name	Endemism	SA Status	IUCN (2016)	Likelihood of occurrence
Centipede-eater, Black-headed	<i>Aparallactus capensis</i>				Very Unlikely
Cobra, Common Shield	<i>Aspidelaps scutatus scutatus</i>				Very Unlikely
Lizard, Crag	<i>Pseudocordylus melanotus</i>	Endemic			Very Unlikely
Lizard, Common Rough-scaled	<i>Meroles squamulosus</i>				Very Unlikely
Lizard, Common Sand	<i>Pedioplanis lineocellata pulchella</i>	Near Endemic			Very Unlikely
Lizard, Ornate Rough-scaled	<i>Ichnotropis capensis</i>				Very Unlikely
Lizard, Spotted Sandveld	<i>Nucras intertexta</i>				Very Unlikely
Skink, Rainbow	<i>Trachylepis margaritifer</i>				Very Unlikely
Skink, Sundevall's Writhing	<i>Mochlus sundevallii sundevallii</i>				Very Unlikely
Snake, Duerden's Stiletto	<i>Atractaspis duerdeni</i>				Very Unlikely
Snake, Spotted Harlequin	<i>Homoroselaps lacteus</i>	Endemic			Very Unlikely

Appendix E: Amphibian Probability List

Common name	Taxon name	SA Status	IUCN (2016)	Likelihood of occurrence
Caco, Boettger's	<i>Cacosternum boettgeri</i>			Highly Likely
Sand Frog, Natal	<i>Tomopterna natalensis</i>			Highly Likely
Sand Frog, Tandy's	<i>Tomopterna tandyi</i>			Highly Likely
Sand Frog, Tremolo	<i>Tomopterna cryptotis</i>			Highly Likely
Toad, Red	<i>Schismaderma carens</i>			Highly Likely
Bullfrog, Giant	<i>Pyxicephalus adspersus</i>	Previously Near Threatened. Habitat at risk from increased urbanisation and agriculture.		Highly Likely
Kassina, Bubbling	<i>Kassina senegalensis</i>			Possible
Platanna, Common	<i>Xenopus laevis</i>			Possible
Puddle Frog, Snoring	<i>Phrynobatrachus natalensis</i>			Possible
Pygmy Toad, Northern	<i>Poyntonophrynus fenoulheti</i>			Possible
River Frog, Common	<i>Amietia queckettii</i>			Possible
Stream Frog, Striped	<i>Strongylopus fasciatus</i>			Possible
Toad, Guttural	<i>Amietophrynus gutturalis</i>	Categorised Invasive in WC		Possible
Toad, Raucous	<i>Amietophrynus rangeri</i>			Possible
Toad, Western Olive	<i>Amietophrynus poweri</i>			Possible
Frog, Rattling	<i>Semnodactylus wealii</i>			Very Unlikely
Grass Frog, Broad-banded	<i>Ptychadena mossambica</i>			Very Unlikely
Rain Frog, Bushveld	<i>Breviceps adspersus</i>			Very Unlikely
River Frog, Poynton's	<i>Amietia poyntoni</i>			Very Unlikely



UNOHEMU
ENVIRONMENTAL SOLUTIONS
AND GENERAL TRADING(Pty)LTD

WETLAND ASSESSMENT REPORT:

PROPOSED EXPANSION OF A CHICKEN LAYER FACILITY ON PORTION 348 OF
KAMEELDRIFT, PRETORIA WEST, GAUTENG.

26 APRIL 2018

PREPARED FOR:

CSIR

our future through science

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1. TERMS OF REFERENCE / BACKGROUND

The Council for Scientific and Industrial Research (CSIR) appointed UNOHEMU ENVIRONMENTAL SOLUTIONS (Pty) Ltd to conduct a wetland assessment to facilitate the proposed expansion of a Chicken Layer Facility on Portion 348 of Kameeldrift, Pretoria West, Gauteng. The proposed project is located on 2 hectares of land, on Portion 348 of Kameeldrift Farm 313, Pretoria West, Gauteng. The main objectives of the study were to

- Assess fauna, flora;
- Locate and delineate potential wetlands;
- Provide mitigation measures or recommendations, including appropriate buffers to prevent/minimise negative environmental impacts and where relevant optimize potential positive environmental impacts.

2. SCOPE OF WORK

The following tasks formed part of the agreed upon scope of work:

- i) Confirmation/rejection of the presence of wetlands on site;
- ii) If present, delineation of wetland boundary;
- iii) Establishment of the Health status of the wetland using WET-Health;
- iv) Assessment of the potential impact of the proposed expansion of a Chicken Layer Facility on the wetland;
- v) Assess flora and fauna;
- vi) Identification and description of mitigation measures associated with the proposed activity.

3. INTRODUCTION

Biodiversity is a characteristic of nature and a property of living systems. The most common definition of biodiversity is that adopted by Convention on Biological Diversity that defines biodiversity as the variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and ecological complexes of which they are part. Biodiversity includes diversity within species, between species and within and between ecosystems (Maltby and Barker 2009). Globally the term biodiversity has been used loosely by different interest groups due to global interest in the social, economic, political, legal and other dimensions of biodiversity and its loss (Maltby and Barker 2009). Biodiversity in inland aquatic environments has been given attention recently, and wetlands have been extensively investigated for their ecology, management, conservation and restoration (Mitsch and Gosselink 2000). However, their biodiversity related issues have received far less attention until recently (Maltby and Barker 2009).

Wetlands are of inestimable value for the supply of goods and services to society (Begg 1987; Kotze and Breen, 1994; Mitsch and Gosselink 2000). These include provisioning services such as food and water; regulating services such as regulation of floods, drought, land degradation, and disease; supporting services such as soil formation and nutrient cycling; and cultural services such as recreational, spiritual, religious, and other nonmaterial benefits (Table 1). However, despite all their benefits wetlands continue to be threatened globally (Maltby 1991; Ramsar Convention Bureau 1997). South Africa has also had many of its valuable wetland systems lost or degraded largely as a result of modification and conversion for purposes considered to provide of more direct benefits (e.g commercial and subsistence agriculture, urban and industrial development, mining, and others). Great efforts are being made globally to increase wetland awareness in order to ensure their protection and sustainable use. In South Africa wetlands are granted protection through the (i) Constitution of South Africa, (ii) National Water Act, (iii) National Environmental Management Act, (iv) National Environmental Management of Biodiversity Act, (v) and the Conservation for Agricultural Resources Act.

Table 3.1. Ecosystem services provided by wetlands

SERVICE	COMMENTS OR EXAMPLES
Provisioning	
Food	production of fish, wild game, fruits, and grains
Freshwater	storage and retention of water for domestic, industrial, and agricultural use
Fibre and fuel	production of logs, fuelwood, peat, fodder
Biochemical	extraction of medicines and other materials from biota
Regulating	
Climate regulation	source of and sink for greenhouse gases; influence local and regional temperature, precipitation, and other climatic processes
Water regulation	groundwater recharge / discharge
Water purification & waste treatment	retention, recovery, and removal of excess nutrients and other pollutants
Erosion regulation	retention of soils and sediments
Natural hazard regulation	flood control, storm protection
Cultural	
Spiritual and inspirational	source of inspiration; many religions attach spiritual and religious values to aspects of wetland ecosystems
Recreational	opportunities for recreational activities
Aesthetic	many people find beauty or aesthetic value in aspects of wetland ecosystems
Educational	opportunities for formal and informal education and training
Supporting	
Soil formation	sediment retention and accumulation of organic matter
Nutrient cycling	storage, recycling, processing, and acquisition of nutrients

These pieces of legislation individually and in support of each other, seek to minimize the negative impacts of development on the environment, which includes wetlands and other key water resources. The Environmental Impact Assessment (EIA) process, promulgated in terms of National Environmental Management Act (NEMA), is a key tool used to facilitate informed and environmentally sound decision making.

4. PROJECT SITE AND CATCHMENT DESCRIPTION

4.1 Site Description

This project is located in Gauteng, City of Tshwane Municipality, within the Crocodile Catchment. The Crocodile Catchment is one of the few catchments in Gauteng which still have pristine wetlands and rivers flowing through it. The project will be occurring next to a tributary of the Hartebeest River (dam), which is the Swartspruit River. The Swartspruit River is one of the rivers within the crocodile catchment that is heavily and negatively impacted through farming, sewer, mining and residential development within the catchments (Figure 4.1). IDCNKE is a small-scale poultry production and vegetable farm, located on 2 hectares of land on Portion 348 of Kameeldrift Farm 313, Pretoria West, Gauteng. IDCNKE proposes to expand on the existing chicken layer facility, as well as develop a vegetable production facility and goat farm (Figure 4.2). The chicken layer facility expansion and proposed land for cultivation will encompass 1.06 ha of the 2 ha farm. The existing facility currently has 1000 chicken layers, and proposes to expand by erecting new structures with a capacity of 40 000 chicken layers each, as well as utilise 0.2 ha of land within the farm for vegetable production. This development area is proposed to take place on a previously disturbed area (Figure 4.3 and 4.4) and there are a lot of farming activities in the proposed area.

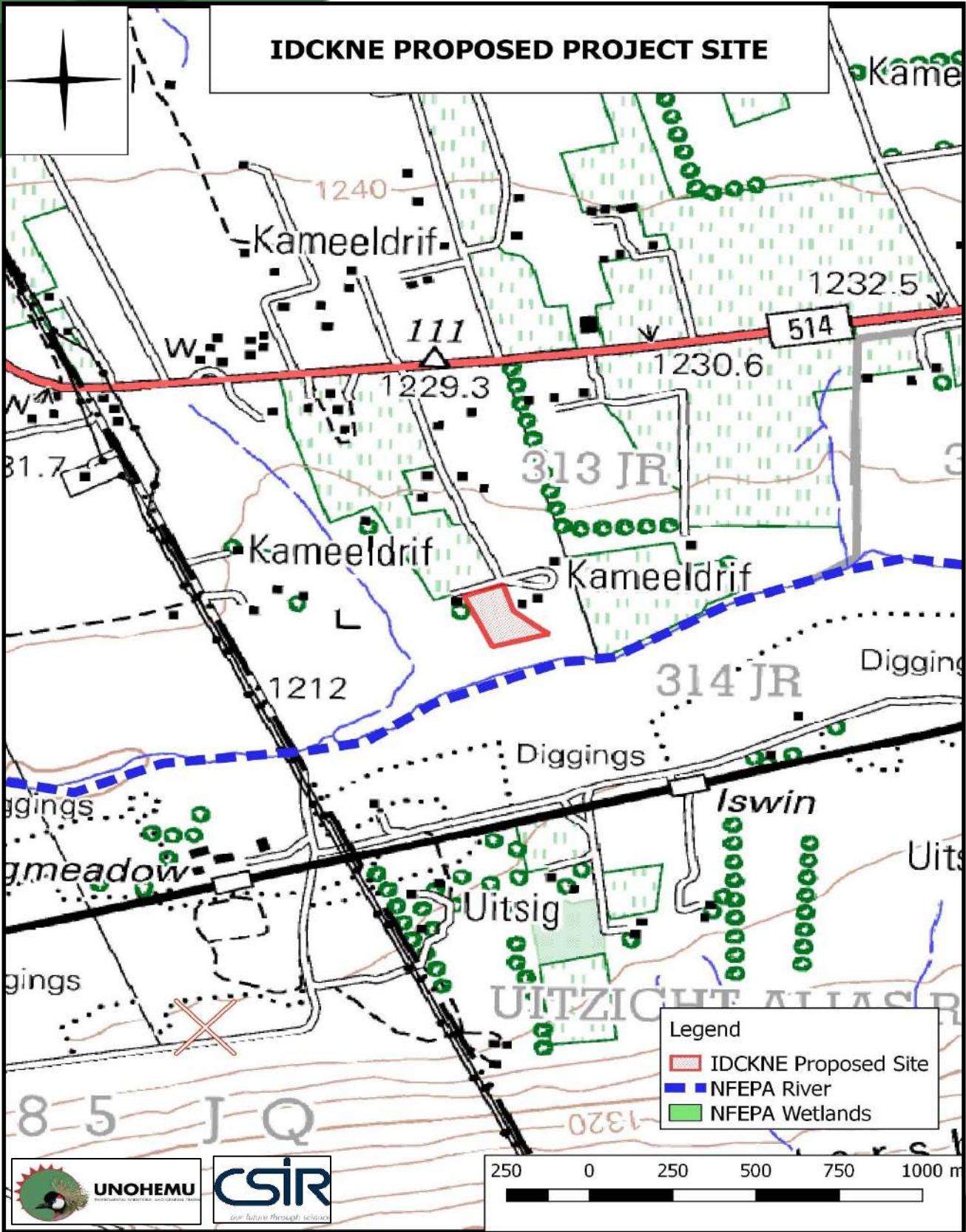


Figure 4.1. Location of the proposed development

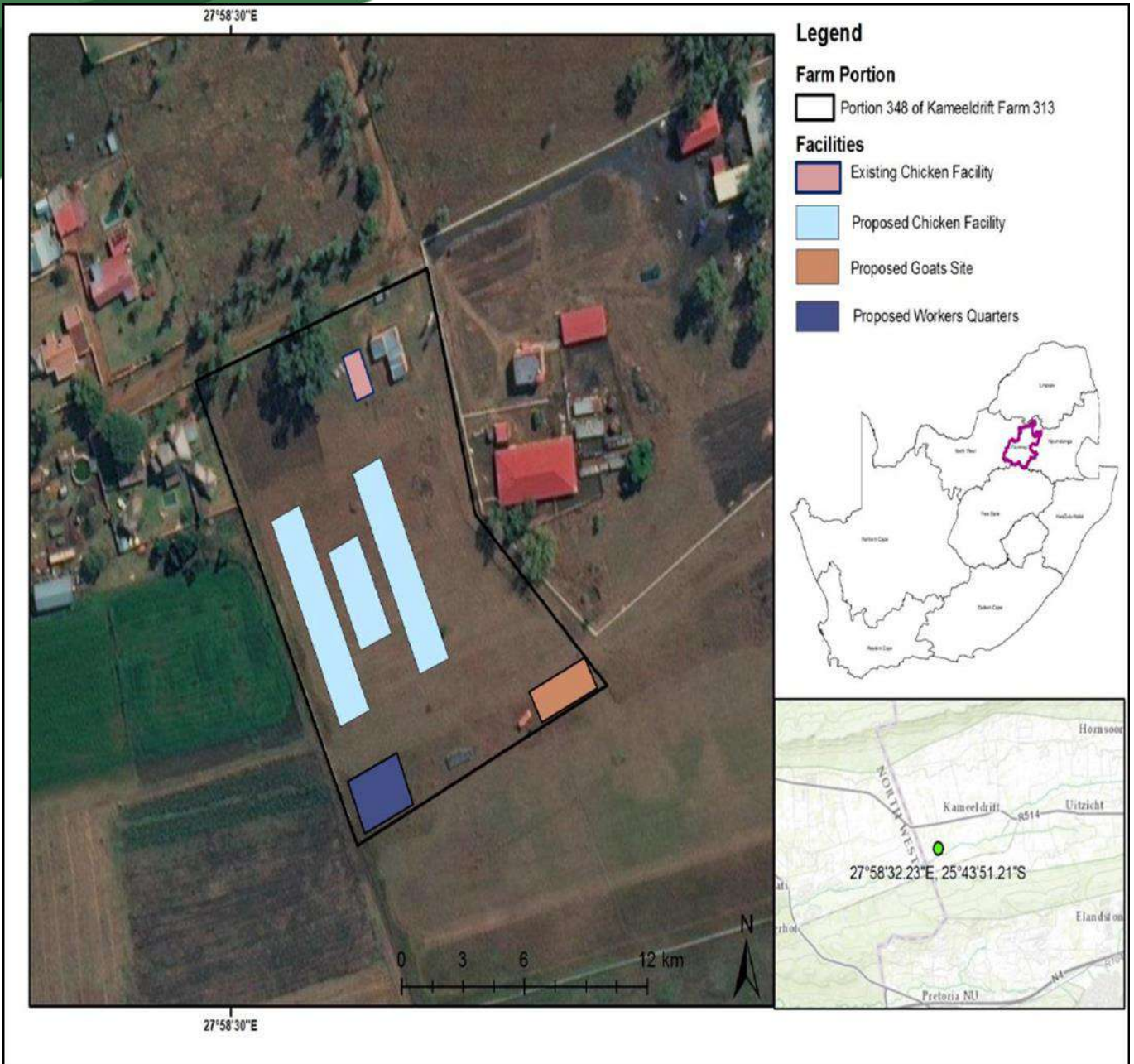


Figure 4.2. Layout plan for the proposed IDCNKE project



Figure 4.3. Location of the proposed development site on google earth.



Figure 4.4. Google image of proposed project site taken in 2004.

5. APPROACH

5.1 Wetland Delineation and Classification

The National Water Act, Act 36 of 1998, defines wetlands as follows:

“Land which is transitional between terrestrial and aquatic systems where the water table is usually at or near the surface, or the land is periodically covered with shallow water, and which land in normal circumstances supports or would support vegetation typically adapted to life in saturated soil.”

The presence of wetlands in the landscape can be linked to the presence of both surface water and perched groundwater. Wetland types are differentiated based on their hydro-geomorphic (HGM) characteristics; i.e. on the position of the wetland in the landscape, as well as the way in which water moves into, through and out of the wetland systems. A schematic diagram of how these wetland systems are positioned in the landscape is given in the figure below.

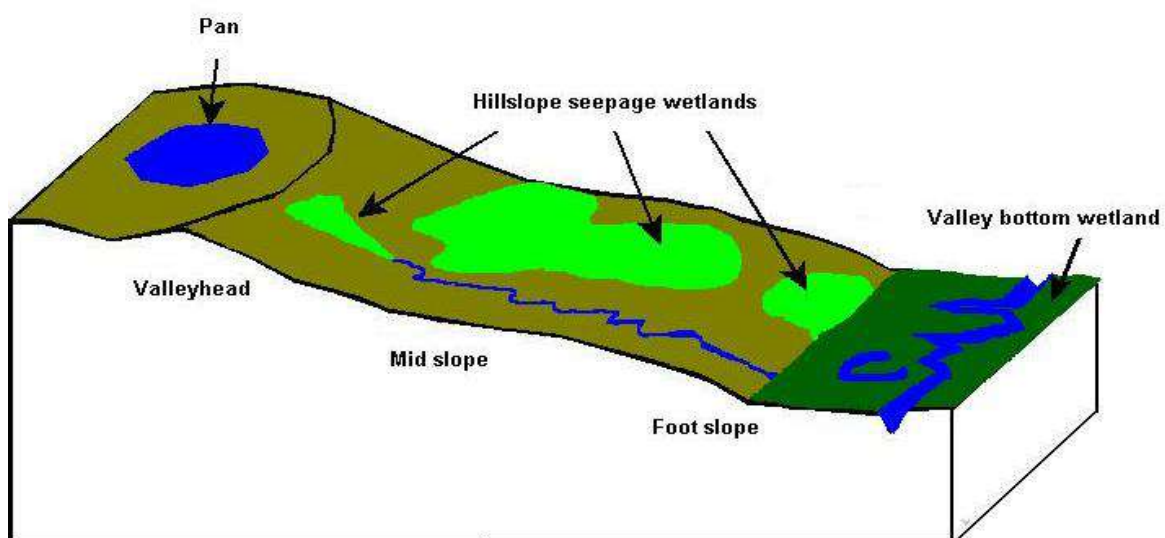


Figure 5.1. Illustration of the position of the various wetland types within the landscape

Digital base maps of the study area were created using 1:50 000 topographical maps, 1:10 000 orthophotos and Google Earth Imagery, onto which the wetland boundaries could be delineated using ArcMap 9.0. A desktop delineation of the suspected wetland area was undertaken by identifying rivers and wetness signatures on the digital base maps.

5.2 Impact assessment

The risk rating was calculated based on input from the assessments following the recommended methodology. The severity of the impact was calculated by adding scores for the extent, duration and intensity of the impact. The incidence of occurrence was calculated by adding the scores of the frequency and probability of the impact. The significance of the risk was based on the identified impacts and expressed qualitatively from very low to very high (Figure 5.2)

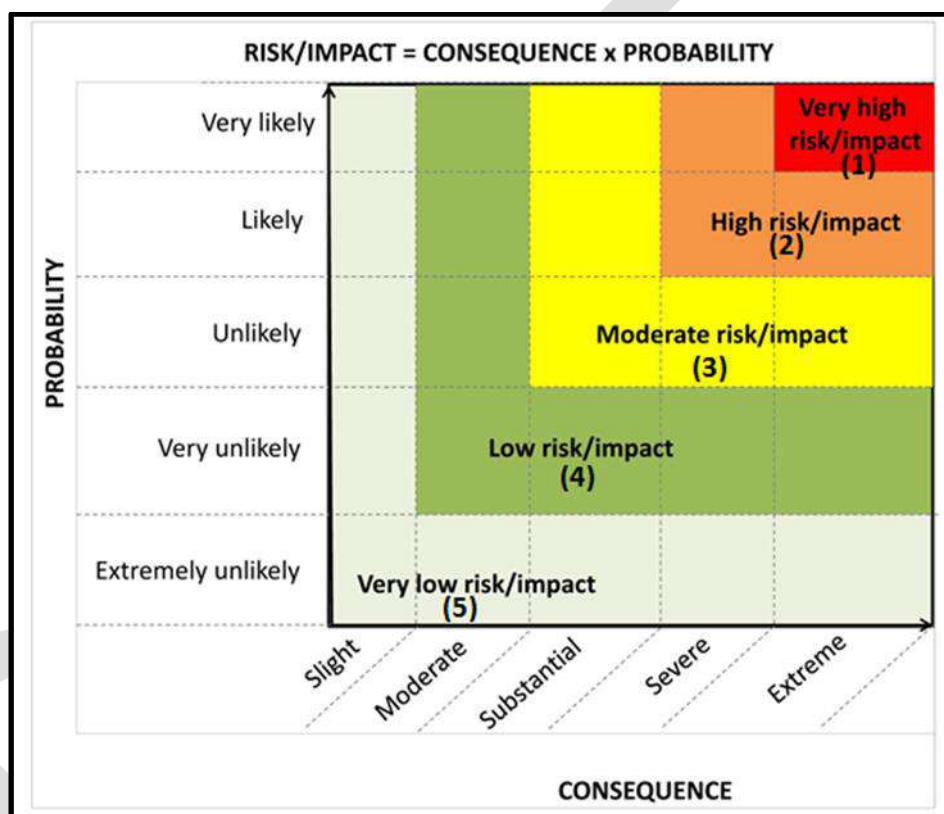


Figure 5.2 Guide to assessing impact significance as a result of consequence and probability

5.3 Assumptions and limitations

The following assumptions and limitations are applicable to this report:

- The current information received from the client and existing data is correct;
- The maps available are still relevant and can be used as representation of site conditions;

- Global Positioning System (GPS) technology is inherently inaccurate and some inaccuracies, due to the use of handheld GPS instrumentation, may occur. If more accurate assessments are required, the wetlands will need to be surveyed and pegged according to surveying principles; and aquatic wetland and riparian ecosystems are dynamic and complex. The effects of natural seasonal and long-term variation in the ecological conditions are therefore largely unknown.

DRAFT

6. FINDINGS / RESULTS

6.1 Wetland Delineation and Classification

A site visit to Portion 348 of Kameeldrift Farm 313, Pretoria West, Gauteng where the proposed project will be constructed was undertaken on 28 March 2018, during the Autumn season. During this season the plants are still green and water is still near or on the surface, which makes it easy to separate wetlands from terrestrial land. The site visit revealed that there is a wetland that is completely transformed in this project area (Figure 4.3), this was confirmed by the site visit. It is important to note that under normal conditions hydromorphic soils must display signs of wetness (mottling and greying) within 50cm of the soil surface for an area to be classified as a wetland (*A practical field procedure for identification and delineation of wetlands and riparian areas*, DWAF). For flora and fauna the GDARD database was used and it revealed that there is no important fauna and flora within and around the proposed development. Auguring also confirmed that there is a wetland. There is a wetland (flood plain), adjacent to the proposed site, the wetland is connected to the river further downstream of the site. Flood plain wetlands, are a very gently sloping wetland area adjacent to a river channel in its lower reaches that is subject to periodic inundation due to flood events in the wet season. These flood events can be quite turbulent and leave many features in the landscape such as levees, oxbow lakes and depressions. Floodplains are areas where sediment is typically deposited, often for very long periods of time.

The proposed project (chicken and goat farm) is most likely to negatively impact on the wetland as both projects will be occurring in close proximity to the wetland, more especially the goat stable. However, the construction of both activities could be laid in a manner which will have less impact on the wetland and the river adjacent to the proposed site (Figure 7.2). The vegetation occurring on the site is of low ecological importance, and a large section of the proposed development area has been completely transformed.

6.2 Wetland Ecological Integrity Assessment

The magnitude of impacts for all activities in the catchment and the wetland are combined in a structured way to give an overall magnitude of impact score for hydrology, geomorphology and vegetation, which can be combined to produce an overall magnitude of impact score. "Wetland health", which is synonymous with "wetland integrity" and "ecological condition", is viewed as being inversely related to the overall magnitude of impacts as conceptualised in WET-Health (Figure 1.1). The WET-Health scoring system views habitat impact as increasing from 0 to 10 along an imaginary human disturbance gradient. Conversely, habitat health decreases in an inverse manner as habitat impact increases along the human disturbance gradient (Macfarlane *et. al* 2007). The ecological integrity assessment included the wetland Present Ecological Status (PES) and discussed in relation to the impacts on the wetlands identified on site. The study area consisted of a floodplain wetland according to the HGM classification system. Level 1 Wet-Health assessment method was utilised to describe the Present Ecological Status (PES) on wetland onsite (Macfarlane, et al. 2008). The method utilises geomorphology, hydrology and vegetation to determine the health of a wetland.

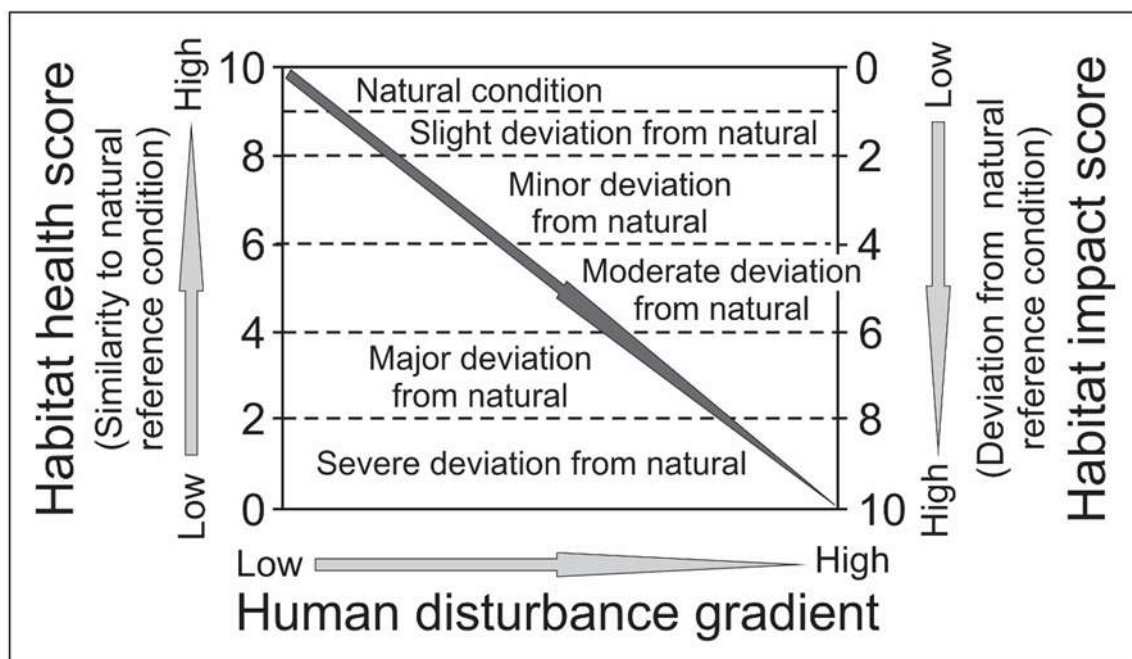


Figure 6.1. The relationship between the impacts of human disturbance on habitat condition as conceived in WET-Health (Macfarlane *et al.* 2009)

WET-Health relies primarily on transformations to a wetland that result from human impacts in both the catchment and the wetland itself. Using the tool, a health score is obtained that is consistent with the Department of Water Affairs (DWA) current "present ecological state" as applied to river health assessment. The system used in WET-Health is described in Table 6.1, showing the relationship between the magnitude of impact score, the present ecological condition category and a description of the present ecological condition category. The intervals on the magnitude of impact score are not equal for all health classes, but they do not overlap. The present ecological condition of a wetland is given a score of "A" if it is unmodified and a score of "F" if it is critically modified. Wetland integrity is defined as a measure of deviation of wetlands structure and function from the pristine state ("natural reference condition") of the wetland.

Table 6.1. Health classes used by WET-Health for describing wetland ecological condition (Macfarlane *et. al* 2007 & Kotze *et al.* 2012)

Magnitude Of Impact Score	Present Ecological Condition	Description
0-0.9	A	Unmodified, natural.
1-1.9	B	Largely natural with few modifications. A slight change in ecosystem processes is discernible and a small loss of natural habitats and biota may have taken place.
2-3.9	C	Moderately modified. A moderate change in ecosystem processes and loss of natural habitats has taken place but the natural habitat remains predominantly intact
4-5.9	D	Largely modified. A large change in ecosystem processes and loss of natural habitat and biota and has occurred.
6-7.9	E	The change in ecosystem processes and loss of natural habitat and biota is great but some remaining natural habitat features are still recognizable.
8-10	F	Modifications have reached a critical level and the ecosystem processes have been modified completely with an almost complete loss of natural habitat and biota.

6.2.1 Hydrological Changes

The formation, persistence, size, and function of wetlands are controlled by hydrologic processes. Seasonal changes in water levels and the effect of recent precipitation events must be considered when evaluating an area's hydrology, particularly outside of the growing season or during the dry

summer months. Hence, wetlands are characterised by the movement of water through or within them, water quality, and the degree of natural or human-induced disturbance. During the time of assessment, a few excavations were observed in the wetland seasonal zone. Natural vegetation around the wetland was minimal due to its removal for agricultural land. This reduces surface runoff in the wetland. There are also human settlements within and in the wetland catchment. This subsequently affects the water budget and degree of wetness of the wetland. The hydrological state of the wetland was regarded as largely modified. The table below provides a description of the hydrological impacts on the wetland.

6.2.2 Geomorphological Changes

The Geomorphology module evaluates the effects of changed sediment and erosion distribution and retention patterns on a wetland. Evidence of this would relate to accelerated erosion in the catchment and in the wetland. Topographic alteration was observed due to ploughing around and in the wetland zone, which affects the deposition and retention of solutes in the wetland. The wetland permanent and seasonal zone showed signs of past excavations that had occurred. The geomorphological state of the wetland at the site was regarded as moderately modified. The table below describes the impacts on the wetland geomorphology.

6.2.3 Vegetation Changes

This module has an important contribution to the composition, structure and function of a wetland, and is also important in terms of the habitat. A robust vegetation cover assists in holding soil particles therefore minimising soil erosion intensity. This is also important for water retention, which aids in water quality improvement. The vegetation type that exists in an area can serve as an indication of the type of landscape features that area may host. Using vegetation as a wetland indicator is considered one of the indicator tools; however, the use of vegetation as an indicator may bring along confusion based on the fact that, vegetation differs with season, especially when working with seasonal wetlands that are not permanently inundated to hold hydrophytes. Vegetation indicator during rainy season is ideal; however during dry season it may not be easy to identify certain vegetation species. Natural vegetation from the wetland has been removed for the development of agricultural areas around and within the wetland. Due to the infrastructural development around the wetland area, natural vegetation was also cleared. There was Alien vegetation was observed at the site. The overall change in ecosystem processes and loss of natural

habitat and biota is great but some remaining natural habitat features are still recognizable, which put the wetland at the proposed site in Category E (Table 6.2).

Table 6.2. Impact score of the floodplain wetland

	Hydrology	Geomorphology	Vegetation
	Impact Score	Impact Score	Impact Score
AREA WEIGHTED IMPACT SCORES	7	4.5	6.5
PES CATEGORY	E	D	E
OVERALL IMPACT SCORES	6		
PES SCORE	E		

7. IMPACTS AND MITIGATING MEASURES

7.1 Existing Impacts

The proposed project expansion to be developed at Portion 348 of Kameeldrift Farm 313, Pretoria West, Gauteng province, will be undertaken in a disturbed area. Just outside the boundary of the proposed development, there is a completely transformed floodplain wetland. Looking at the google images taken in 2004, the wetland was even drained. The Swartspruit River where this floodplain serviced is polluted with added nutrients from the bad agricultural practice and mining on the sides of the river (Figure 4.4). The wetland vegetation is completely lost with only a few species of moist grassland dominant.

7.2 Potential Impacts

The project is going to impact negatively on the wetland and mainly the stream when it rains, particularly the goat faecal matter will be washed into the river (Figure 7.1). The waste from the chicken facility development can potentially impact on the wetland if not managed, and disposed of appropriately. Although the proposed development and the surrounding businesses and the fields are in close proximity to the floodplain wetland/wetland boundary, this development poses a low risk to the natural resources due to the fact that the wetland is completely transformed. Further impacts however, still need to be managed and mitigated to prevent further loss of the wetland habitat. The PES of the wetland is E (Table 6.1); the development will impose a long term impact on the water quality within the wetland and further down the stream. The impact of the proposed development will add on the existing impacts but won't result in a wetland being pushed to category F. The significance of the potential impact is 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.

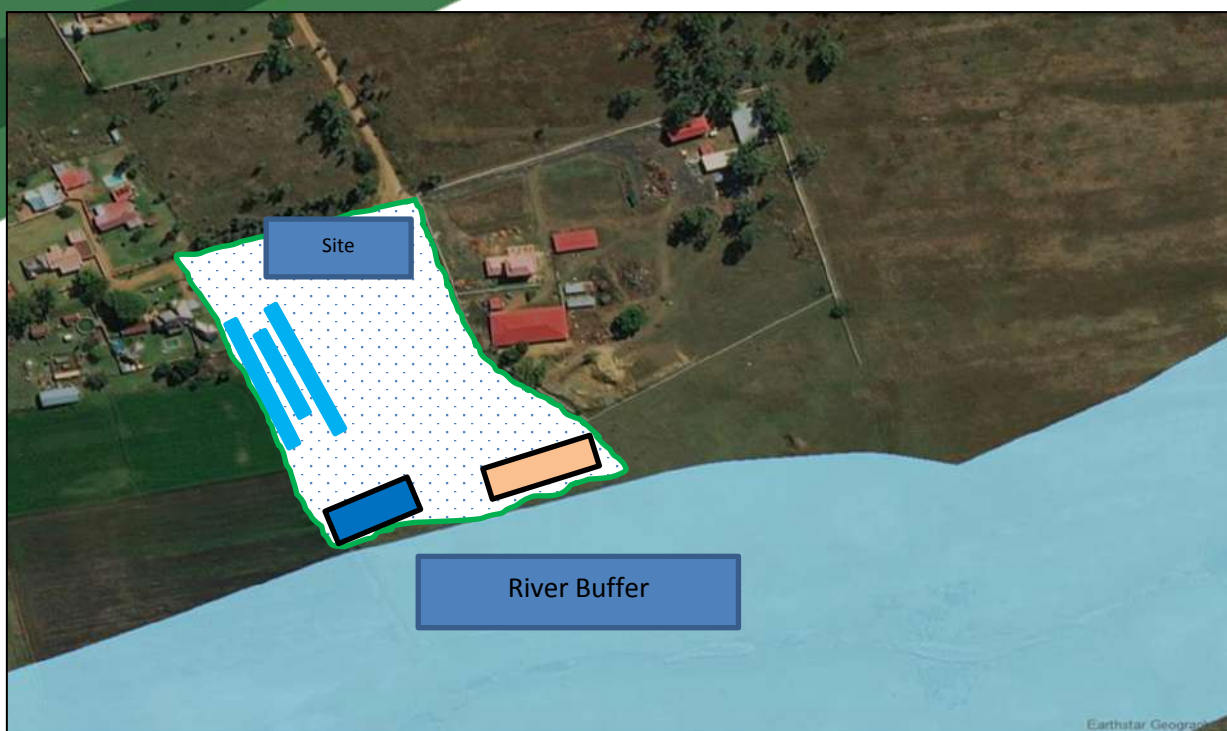


Figure 7.1. Current proposed layout plan of the project.

7.3 Recommended Mitigating Measures

The applicant is advised to consider the alternative layout plan (Figure 7.2), as this would allow the project to be just outside the permanent zone of the wetland and also will have accommodated the 50m buffer required by the Gauteng regulations. The wetland will also act as buffer from the negative impact associated with the proposed development, as the little services of purifying water will help with the pollution impact from the project during the rainy season. The wetland was delineated just to cover the proposed project, the flood plain wetland is bigger than the one delineated for this project. Should the project continue a storm water management plan must be developed. From a biodiversity maintenance/conservation perspective, a review of available biodiversity data revealed that there is no important/protected flora and fauna within the footprint of the project.



Figure 7.2. Alternative layout plan of the proposed project.

It is expected that the construction activities for the proposed development will require the removal of vegetation for the site preparation. As result it is expected that soil will be exposed and become vulnerable to erosion, especially during the rainfall events. Given the fact that the project site is near watercourses, it is expected that site preparation will impact the nearby stream. Eroded sediment does not only affect the geomorphological condition of the river but it also affects the water quality by increasing the load of suspended sediments in the water column.

Sedimentation still needs to be minimized as it ends up in streams, rivers and dams downstream, thus negatively impacting on the water quality. The following mitigation measures should be considered to reduce the risk of sediment loss:

- i) The extent of exposed soil at any one time should be limited
- ii) The construction footprint should be minimized to avoid unnecessarily exposing soils to erosion.
- iii) Construction of low level berms and placement of sediment traps in obvious low points should be explored to contain the extent of erosion and deposition.

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8. CONCLUSION AND RECOMANDATIONS

There is a wetland in close proximity to the proposed site and was verified on site by auguring. The nature of the planned activity is such that it will not have an impact on the biodiversity as there is no important/protected fauna and flora. Sediment generated during construction and from the faecal matter of the goats could end up in water sources further downstream, thus degrading the quality of the water. This will have to be managed in compliance with the Construction Environmental Management Plan (CEMP). Thus from a wetland management perspective and biodiversity the proposed project locality will have minor negative impact on biodiversity. As a specialist on the environmental management, the project is supported if the applicant will consider layout plan proposed as option 2, as this option will ensure that the footprint is outside the required watercourse buffers.

Below are a set of simple guidelines highlighting some common measures to control pollution during construction. These measures should be included in the future EMPr:

- Land disturbance must be minimized in order to prevent erosion and run-off; this includes leaving exposed soils open for a prolonged period of time. As soon as vegetation is cleared (including alien) the area must be re-vegetated;
- Control dust through fine water sprays used to dampen down the exposed surfaces;
- Stockpiles of building materials must be located where they will not be washed into the rivers or surrounding environment.
- Waste water must not be allowed to come into direct contact with exposed soils or run across the site. Vehicles and machinery may not be washed on site. All waste water must be collected in a sealed container and disposed of by an approved waste contractor. Waybills proving correct disposal must be retained for inspection.
- No materials may be burned on site.

These are only a few of the basic practices which must be incorporated into development of the proposed project. This is a project which has the potential to result in contamination of a sensitive environment upon which the local communities are dependent. The significance of this must not be overlooked when the final decision is being made and procedures are being drafted.

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HERITAGE IMPACT ASSESSMENT

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

FOR THE PROPOSED IDCNKE CHICKEN FARM, GAUTENG PROVINCE

Type of development:

Agricultural Development

Client:

CSIR

Client info:

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Project Reference:

HCAC Project number 218314

Report date:

March 2018

APPROVAL PAGE

Project Name	IDCNKE Chicken Farm
Report Title	Heritage Impact Assessment IDCNKE Chicken
Authority Reference Number	TBC
Report Status	Final Report
Applicant Name	IDCNKE

	Name	Qualifications and Certifications	Date
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Field Work	Marko Hutten	BA Hons Archaeology	April 2018
Palaeontology	Dr Barry Millstead	B.Sc Geology (Hons), Ph.D Geology,	April 2018

DOCUMENT PROGRESS**Distribution List**

Date	Report Reference Number	Document Distribution	Number of Copies
6 April 2018	2183014	CSIR	Electronic Copy

Amendments on Document

Date	Report Reference Number	Description of Amendment

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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	<i>Declaration of Independence</i>
(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 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
(l) 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 11

Executive Summary

The CSIR is conducting a Basic Assessment for the proposed IDCNKE Chicken Farm, 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 the development footprint as development plans were not available at the time of the survey.


The study area is entirely transformed by previous agricultural activities and in terms of the archaeological component of Section 35 of the NHRA Act 25 of 1999 no raw material suitable for stone tool manufacture occurs in the study area and no ceramics or stone walls attributed to the Iron Age were recorded. Therefore, no further mitigation prior to construction is recommended in terms of the archaeological component of Section 35 for the proposed development to proceed. A desktop study was conducted by Dr Barry Millstead (2018) and did not identify any palaeontological reason to prejudice the progression of the proposed expansion of farming activities. No damage mitigation protocols need to be implemented to minimise the potential negative impact of the project.

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 study area is surrounded by existing developments and infrastructure and the proposed development will not impact negatively on significant cultural landscapes or views. 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 EMP and based on approval from SAHRA:

- Implementation of a chance find procedure;
- A Professional palaeontologist should monitor fresh exposures should large scale excavations into unweathered sedimentary bedrock be conducted during the construction phase of the development.

Declaration of Independence

Specialist Name	Jaco van der Walt
Declaration of Independence	<p>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:</p> <ul style="list-style-type: none"> • 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	06/042018

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 IDCNKE Chicken Farm Expansion. 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, compiled 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	2 hectares of land on Portion 348 of Kameeldrift Farm 313, Pretoria West, Gauteng
Magisterial District	Tshwane Local Municipality
1: 50 000 map sheet number	2527DB
Central co-ordinate of the development	25°43'52.15"S 27°58'32.73"E

Table 3: Infrastructure and project activities

Type of development	Agricultural Development
Project size	Approximately 2 hectares
Project Components	The development comprises new structures with a capacity of 40 000 chicken layers, as well as utilise 0.2 ha of land within the farm for vegetable production

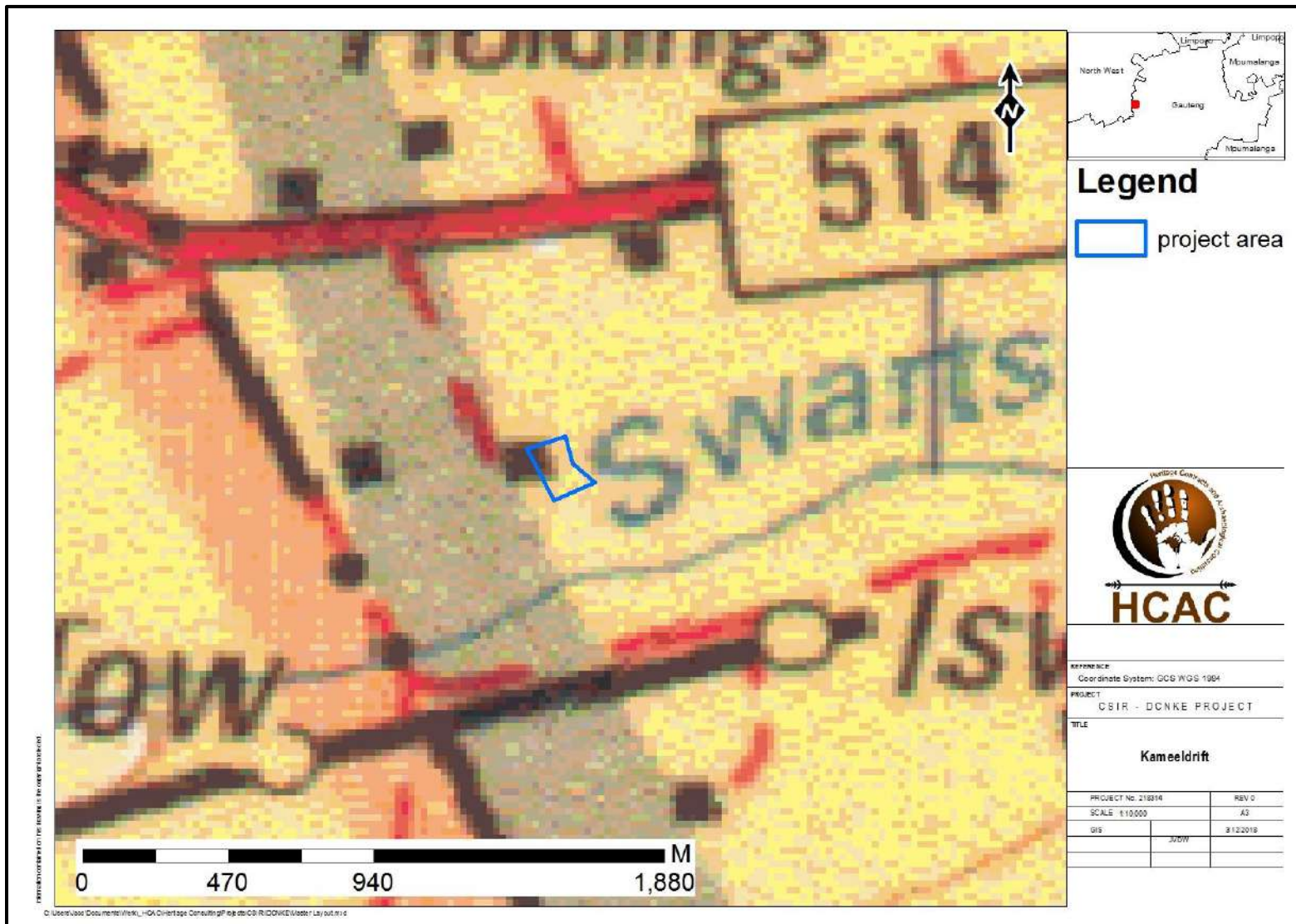


Figure 1. Provincial locality map (1: 250 000 topographical map)

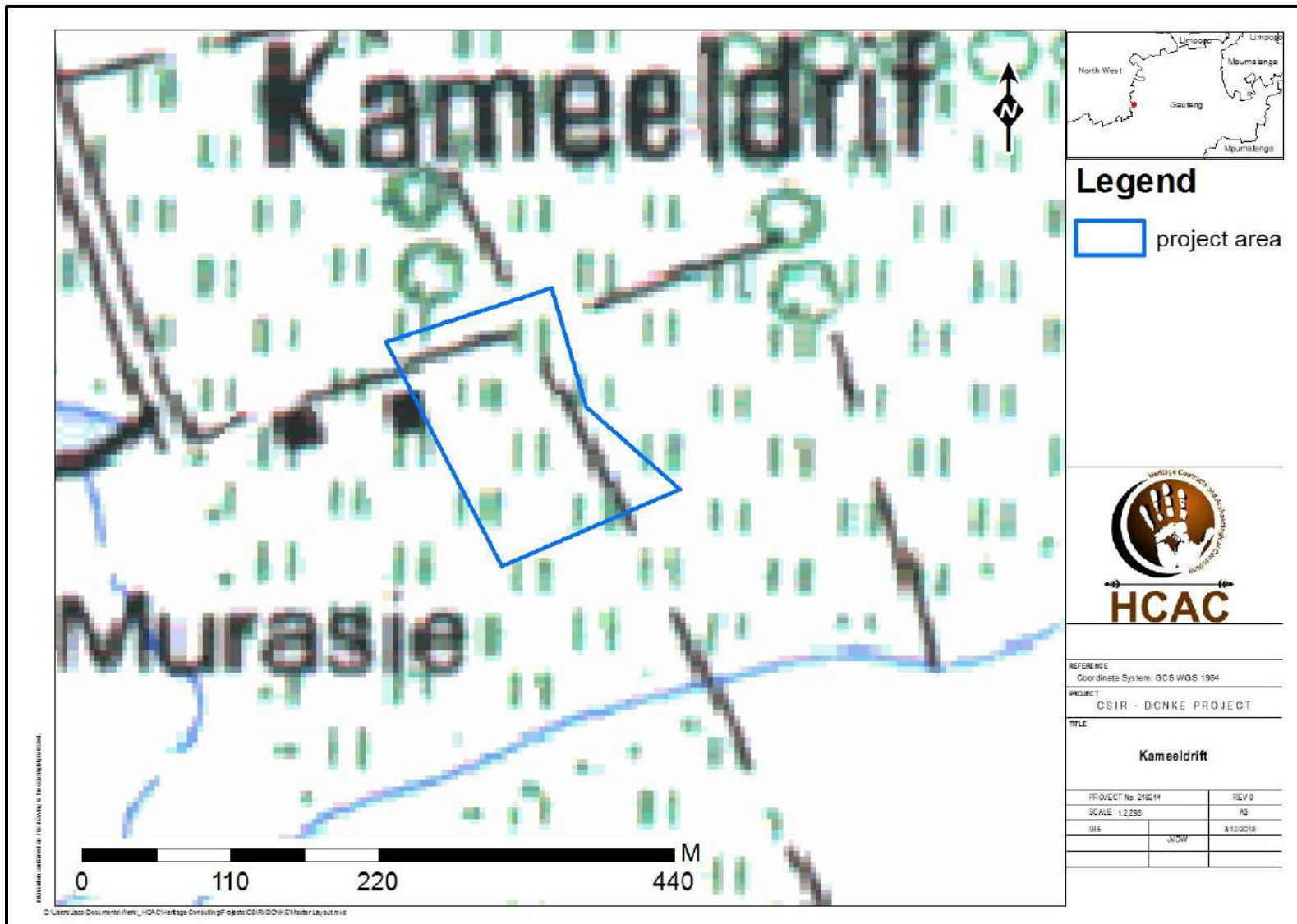


Figure 2: Regional locality map (1:50 000 topographical map).



Figure 3. Satellite image of the study area (Google Earth 2018).

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	23 March 2018
Season	Summer – vegetation in the study area is low with good archaeological visibility. The impact area was sufficiently covered (Figure 4) to adequately record the presence of heritage resources.

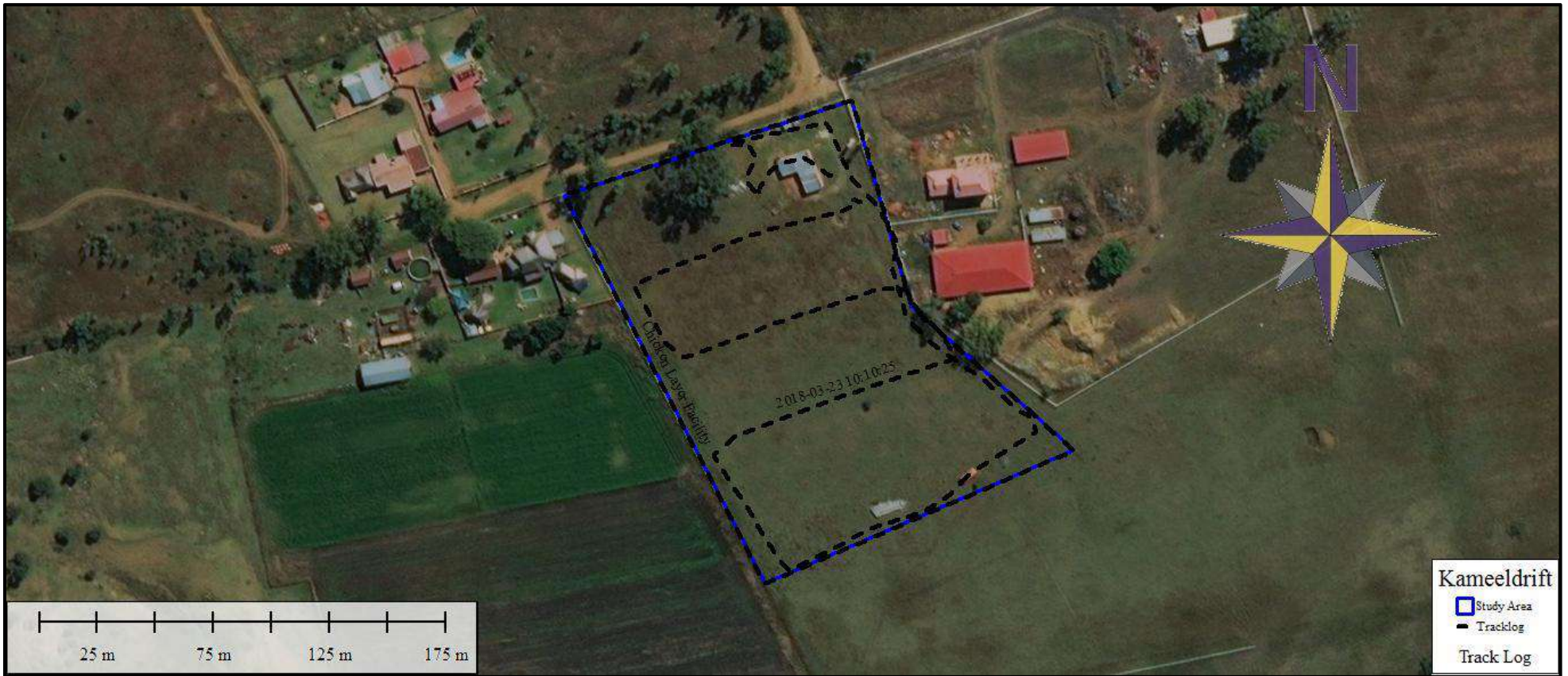


Figure 4: Track logs of the survey in black.

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

As per StatsSA and the 2011 Census data, the City of Tshwane is home to approximately 2,9 million people. Tshwane's population is predominantly black Africans representing 2,2 million people, followed by a White population of approximately 600000 people, 59 166 Coloured individuals and 51 547 Asian individuals. About 37% of the population is classified as youth, making Tshwane one of the youngest cities in South Africa.

The overall number of men and women in Tshwane are equivalent; however, men have more job opportunities than women. Tshwane is home to different languages such as Afrikaans, English, Northern Sotho, Tsonga and Tswana. From an education perspective, as per the 2011 Census estimates, 25 per cent of Tshwane's population are matriculants; whilst 3,7 per cent of the population has no education.

Unemployment, whilst below the provincial and national averages, continues to be a major issue for the City and this is further highlighted by the City's annual household income profile. According to Census 2011 data, nearly 15 per cent of households have no source of income and approximately 46 per cent of households in the City earn an annual income of less than R76 401. The average annual household income in the City is around R60 642 with only 0,65% of households in the City earning more than R457 600 per annum. Individual monthly incomes vary greatly amongst population groups and over 44 per cent of individuals in the City have no source of income whilst another 9,6 per cent of the population earns less than R401 per month and almost 21 per cent of the population earns between R401 and R1 600 per month.

5 Description of the Physical Environment:

The proposed IDCNKE Chicken Layer Facility and associated developments will be situated on Portion 348 of the Farm Kameeldrift 313 JR. The property is situated on the western fringes of the municipal area of the City of Tshwane Metropolitan Municipality within the Gauteng Province. The proposed facility is situated approximately 9km to the east of Hartebeespoort Dam.

The farm Kameeldrift and surrounding properties were at first commercial farms with their main focus on the production of crops and the raising of live-stock. Most of these farms were later sub-divided into smaller units or small holdings which support a wider range of businesses and agricultural activities. The study area measures approximately 2ha in size and is situated to the north of the Swart Spruit which flows into Hartebeespoort Dam situated approximately 9km further to the west. It is also situated approximately 800m south of the R514 tar road from Pretoria to Hartebeespoort and approximately 3km south of the Magalies Mountain Range.



Figure 5. General Site conditions



Figure 6. General site conditions.

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.

7 Literature / Background Study:

7.1 Literature Review

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

Author	Year	Project	Findings
Kusel, U.	2007	Cultural Heritage Resources Impact Assessment Of Portions 259, 260, 266 And 267 Of The Farm Rietfontein 485 JQ Madibeng North West Province	No sites of significance
De Jong, R.	2002	Heritage Scoping for the extension of the SABRIX Quarry on the farm Boekenhoutkloof 315 JR,	Ruin and informal graves
Van der Walt, J.	2008	Archaeological Impact Assessment Andeon Extension 23 Holdings 149 Andeon A.H, Pretoria, Gauteng Province	No sites of significance
Van der Walt, J.	2008	Archaeological Impact Assessment Subdivision of a part of the remainder of Portion 131 of the farm Zandfontein 317 JR, Andeon – Pretoria West, Gauteng Province	No sites of significance
Coetzee, T.	2017	Archaeological Desktop Study for the application of a on portions 36, 37, 38, 39, 40. And 41 of the Farm Boekenhoutkloof 315 JR, Pretoria, North, Gauteng	No sites of significance

□

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

The archaeological record for the greater study area consists of the Stone Age, Iron Age and Historical Period.

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.

The ESA is represented in the greater area by the Wonderboom site on the southern slopes of the Magaliesberg north of Pretoria. This site is characterised by numerous cleavers, hand axes, cores and flakes (Mason, 1958). The nearby Jubilee shelter has been excavated and provides a record from the Late Pleistocene to the 7th Century AD (Turner, 1986), an extended cultural sequence with assemblages' characteristic of the Middle Stone Age, Early Later Stone Age and Later Stone Age including assemblages from the Oakhurst and Wilton industries (Wadley, 1986). The Jubilee shelter provides evidence of hunter–gatherer occupation during three phases of agro pastoralist contact, beginning in 225 AD and characterised by cooperative contact, prior to the hunter-gatherers being either assimilated or dispersed to other areas (Wadley, 1996).

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. There are however signs that the present-day Rustenburg is located in an area that used to be a large Late Iron Age (1000-1800) terrain. (Bergh 1999: 7)

For the area in question the history and archaeology of the Sotho Tswana are of interest. The ceramic sequence for the Sotho Tswana is referred to as Moloko and consists of different facies with origins in either the Icon facies or a different branch associated with Nguni speakers. Several sites belonging to the Madikwe and Olifantspoort facies (from Icon) have been recorded close to the project area. These sites date to between AD 1500 and 1700 and predate stone walling ascribed to Sotho-Tswana speakers. What is of interest here is the Swartkoppies mountain range that is located to the south of the study area. This area is renowned for its LIA stone walled settlements. A detailed survey of the mountain range on the farm Hoekfontein (located to the south west of the current study area) identified 470 individual archaeological

sites (Kusel 2003) covering an area of about 1000 hectares (Pelser 2007). Unfortunately, almost 110 of these sites were already negatively impacted on in 2007.

Another site worth mentioning is the LIA stone walled complex at Medunsa to the south east of the area. These sites belong to Mike Taylor's (1979) group 2, particularly group 2a. These sites date to between AD 1650 and AD 1840. Sotho Tswana stonewalled sites with Uitkomst pottery have been found close to the study area and dates to the seventeenth to nineteenth centuries.

Archaeological excavations on the farm Roodekoopjes located about 1.5 km west of the town of Brits confirm the material heritage of Sotho and Tswana tribal origin in this area. It would seem that the Tswana tribes settled in the Rustenburg area around 1500 AD. There is evidence that the Bakwena-Ba-Magopa (which has as its totem the crocodile) settled on the banks of the Crocodile River in the 17th century. According to local reminiscences the Magaliesberg was named after one of their chiefs, either Mogale or Mamogale. (Steyn et al, 1978)

The Broederstroom Early Iron Age site to the east of the study area is characterised by around 250 years of occupation by iron and copper producers (Mason, 1981) and provided evidence on the role of cattle and the central cattle pattern in spatial arrangement of Early Iron Age sites (Huffman 1993). The copper smelting sites (Middle Iron Age) at Uitkomst and Ifafa from the 15th/16th Centuries were described by Mason (1962). The Late Iron Age in the area is characterised by extensive stone walled sites (Mason, 1986; Dreyer, 1995) of the Sotho-Tswana (Pistorius 1992). Rock engravings from the Magaliesberg include depictions of animals, shields, animal pens and settlements and are attributed to the Tswana people who occupied the area (Mason, 1986; Maggs, 1995).

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: 14; 116-119) In 1825 as a result of the Mfecane Mzilikazi of the Matabeles conquered the area and displaced the Tswana tribes that used to live in the area. Mzilikazi established his kraal north of the Magaliesberg in the vicinity of the present day Hartbeespoort Dam. (Steyn et al, 1978).

Pretoria was founded in 1855 and became the capital of South Africa, then known as the Zuid-Afrikaanse Republiek (ZAR), in 1860. By 1900, Pretoria was a thriving Transvaal town, with shaded streets, well-kept gardens and a lively economy. In mid-1899, the Pretoria district had a white population of 21 000 men and 19 000 women, while the black, coloured and Indian population totalled 38 618. (Theron 1984: 1-3). Between 1939 and 1940, farm boundaries were drawn up in an area that includes the present-day Pretoria. (Bergh 1999: 15).

7.2.3 Anglo-Boer War

The Anglo-Boer War, which took place between 1899 and 1902 in South Africa, was one of the most turbulent times in South Africa's history. Even before the outbreak of war in October 1899 British politicians, including Sir Alfred Milner and Mr. Chamberlain, had declared that should Britain's differences with the Z.A.R. result in violence, it would mean the end of republican independence. This decision was not immediately publicized, and as a consequence, republican leaders based their assessment of British intentions on the more moderate public utterances of British leaders. Consequently, in March 1900, they asked Lord Salisbury to agree to peace on the basis of the status quo ante bellum. Salisbury's reply was; however, a clear statement of British war aims. (Du Preez 1977). No battles occurred in the study area but one battalion of British troops moved through Rustenburg between February and September 1900. This was the regiment of General Major R. S. S. Baden-Powell. The Boer war-hero General Jacobus Herculaa de la Rey (more commonly known as Koos de la Rey) also moved past Rustenburg on his route between Barberton and Lichtenburg. (Bergh 1999: 51).

7.3.1. Cultural Landscape

The site under investigation is located about a kilometre south of the R514 road and 8 km east of Hartbeespoort Dam, north west of Pretoria in Gauteng Province.

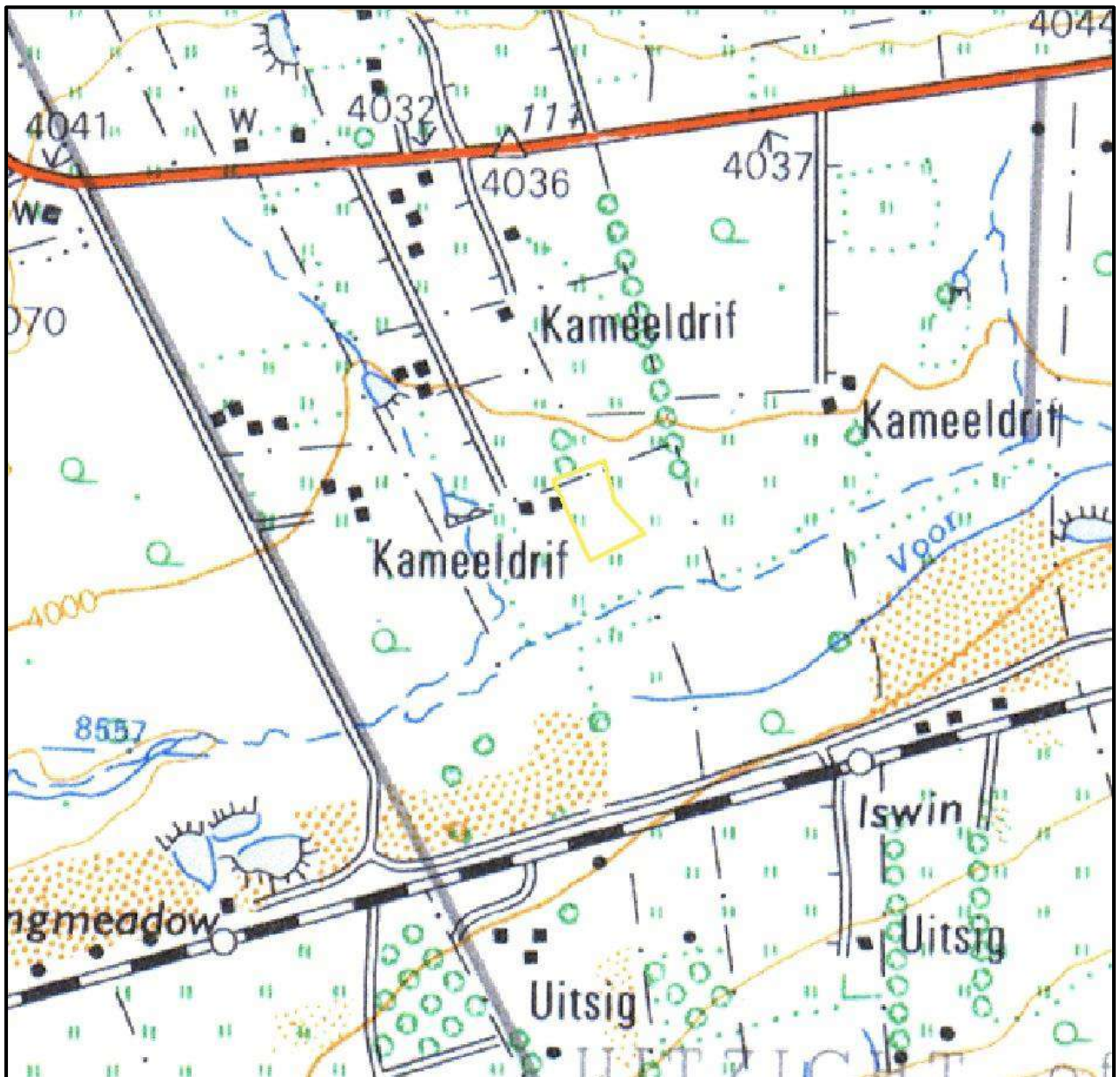


Figure 7. 1968 Topographical map of the site under investigation. The approximate study area is indicated with a yellow border. The site was used as cultivated lands at the time. No buildings or other developments can be seen in the study area. (Topographical Map 1968)

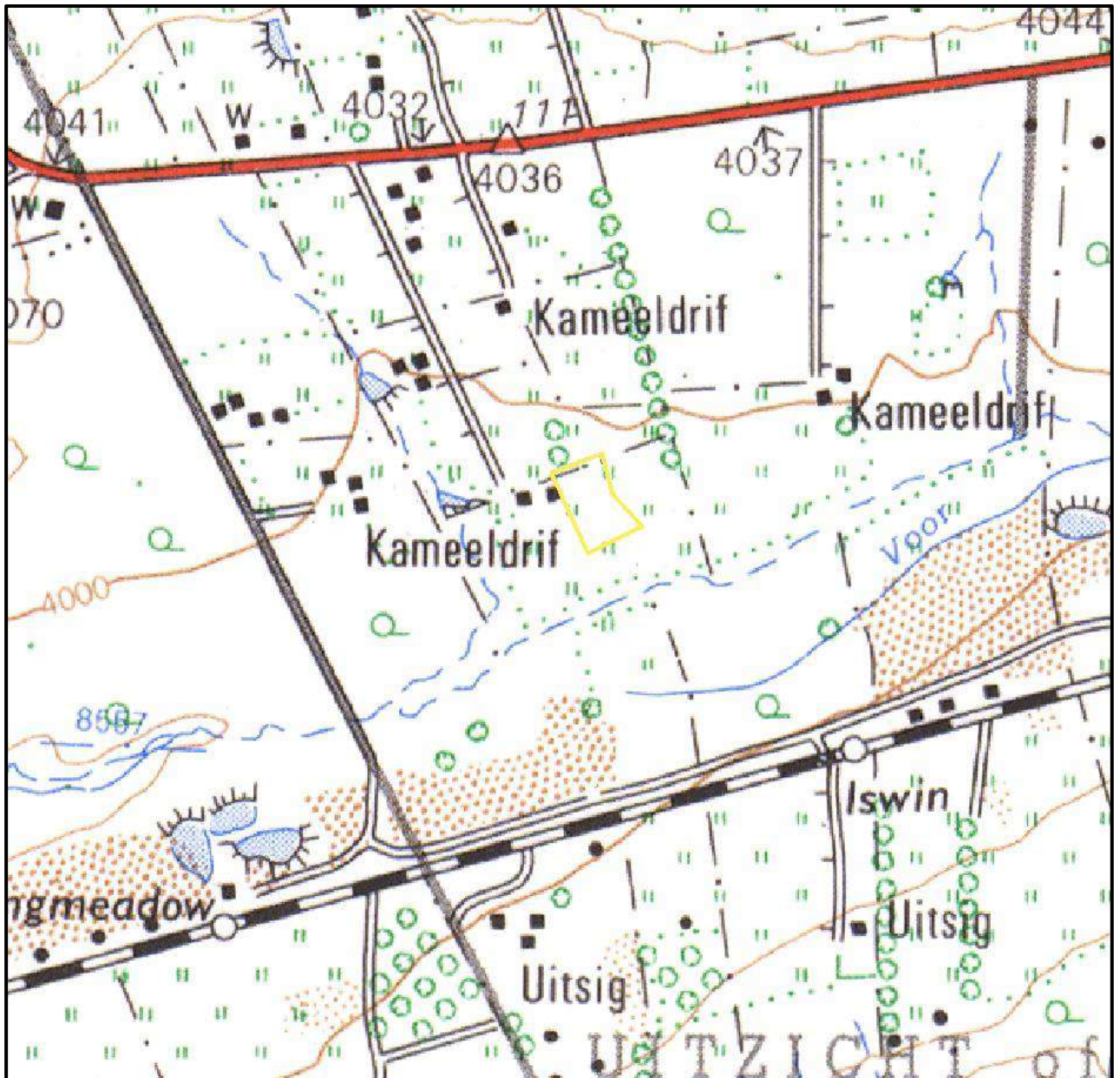


Figure 8. 1980 Topographical map of the site under investigation. The approximate study area is indicated with a yellow border. The site was used as cultivated lands at the time. No buildings or other developments can be seen in the study area. (Topographical Map 1980)

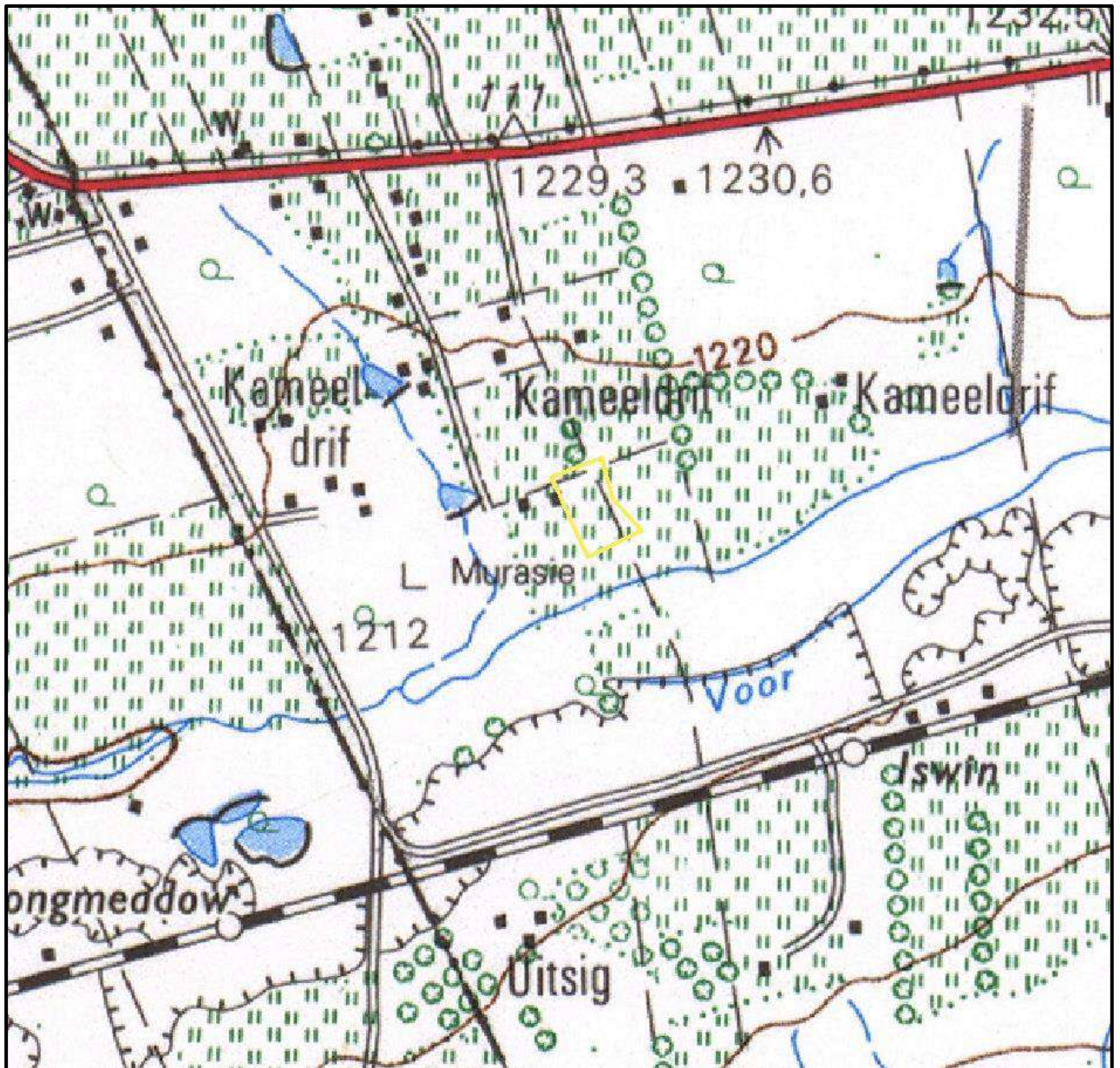


Figure 9. 1985 Topographical map of the site under investigation. The approximate study area is indicated with a yellow border. The site was used as cultivated lands at the time. No buildings or other developments can be seen in the study area. (Topographical Map 1985)

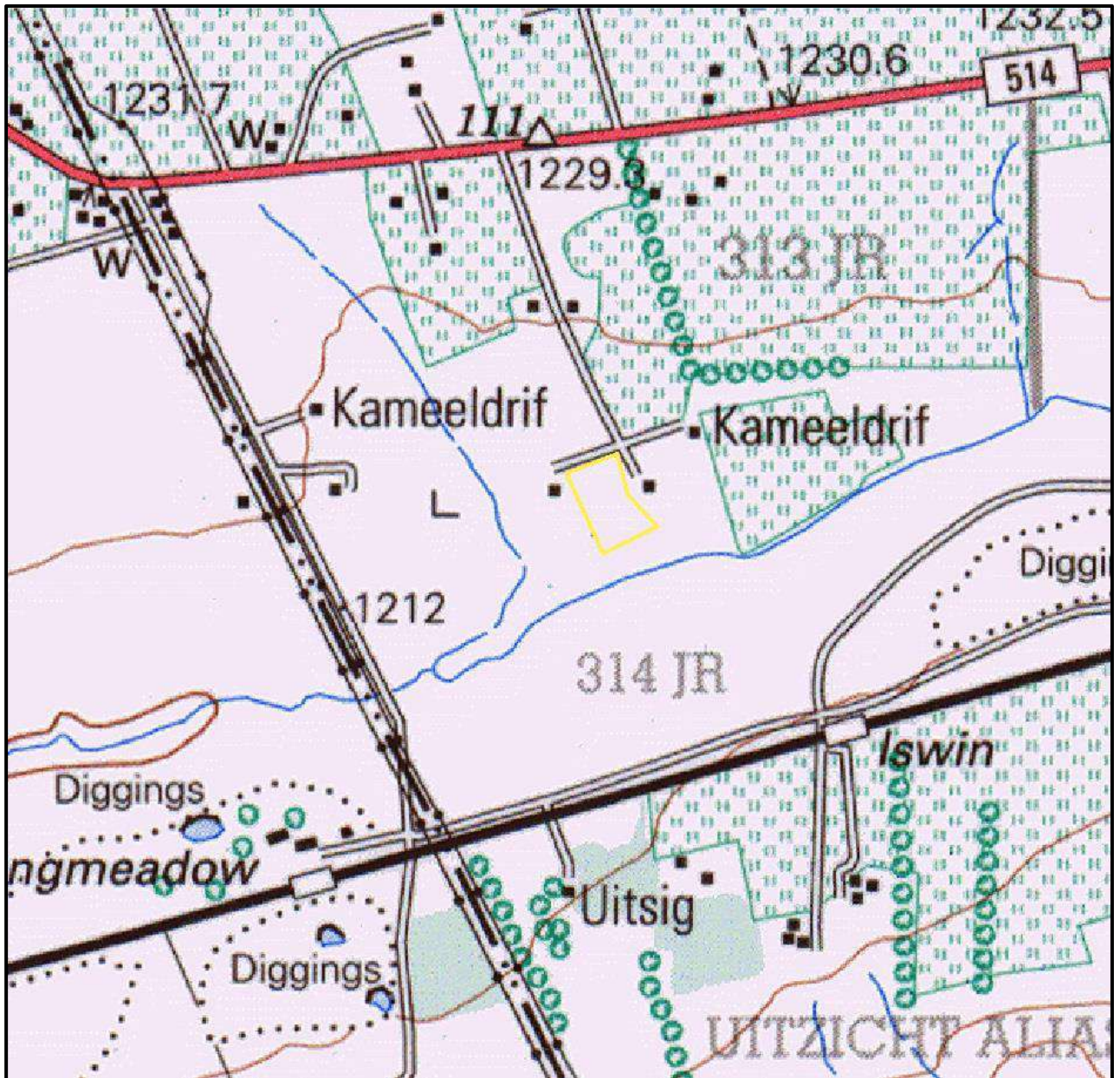


Figure 10. 1996 Topographical map of the site under investigation. The approximate study area is indicated with a yellow border. No developments can be seen in the study area. Minor roads formed the northern boundary and a part of the eastern boundary of the property. (Topographical Map 1996)

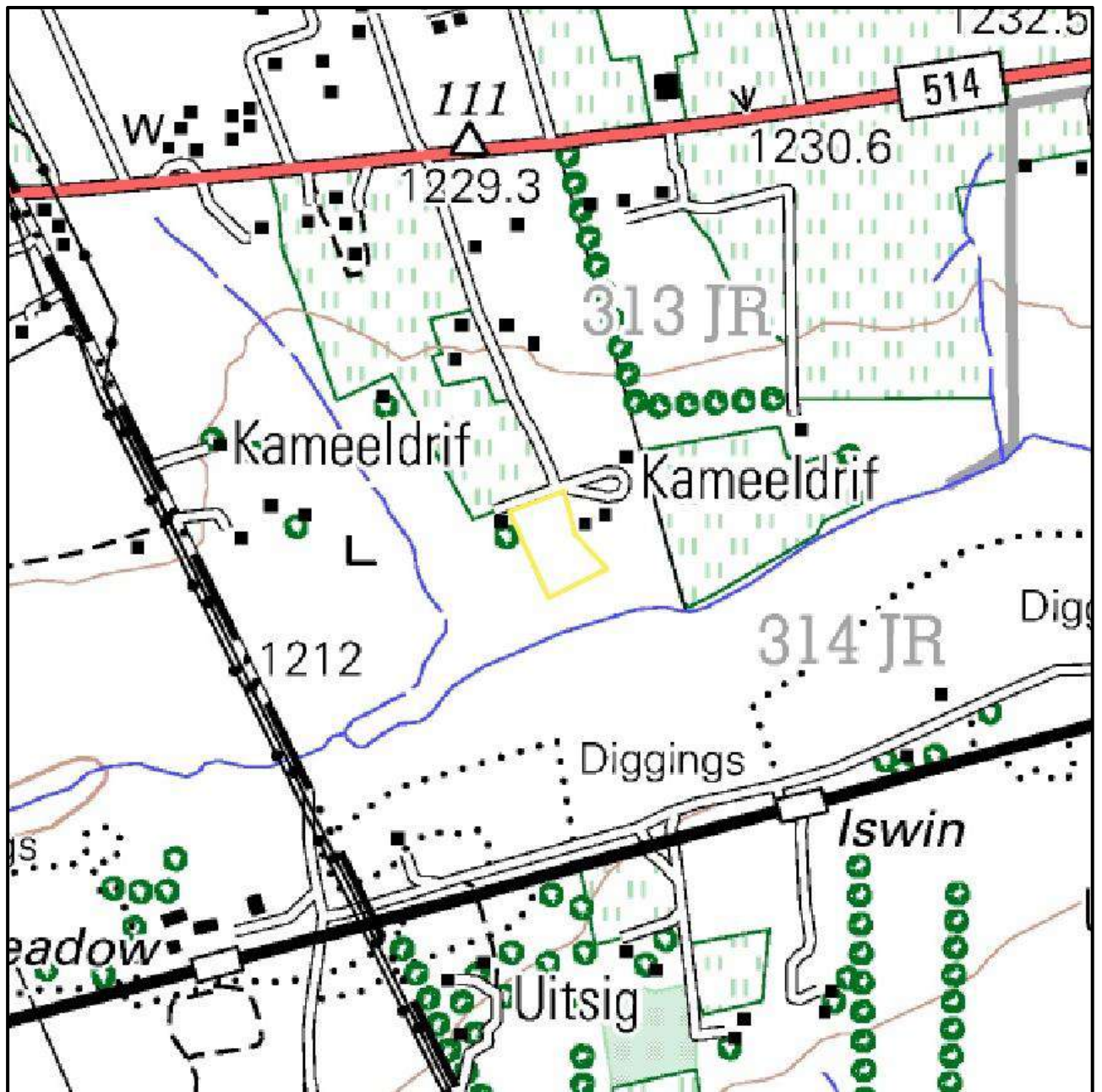


Figure 11. 2001 Topographical map of the site under investigation. The approximate study area is indicated with a yellow border. No developments can be seen in the study area, and a minor road formed the northern boundary of the site. (Topographical Map 2001)

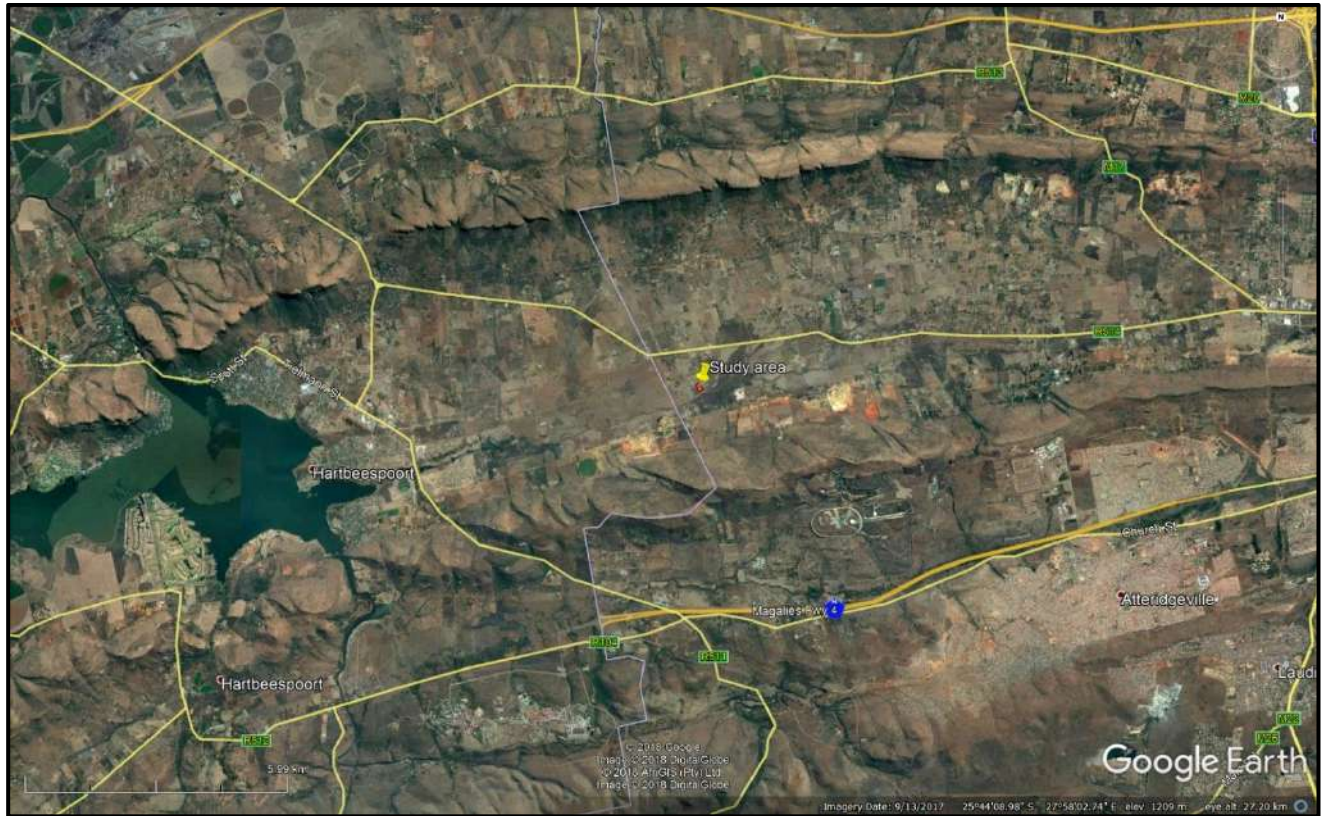


Figure 12. 2017 Google Earth image showing the study area in relation to Hartbeespoort, the R514, Atteridgeville and other sites. (Google Earth 2017)

8 Findings of the Survey

It is important to note that only the development footprint of the project was surveyed. The study area was surveyed over a period of one day. The majority of the site is devoid of trees and shrubs except for the north-western corner and the northern boundary of the property. A few Blue Gum trees are situated along the boundary fence. The site gently slopes down to the Swart Spruit further to the south.

A small poultry production facility is currently situated in the north eastern corner of the investigated area. The chicken production facility is situated next to a house and a storeroom in that corner of the property. A pile of packed bricks, a container and a destroyed corrugated iron structure line the southern boundary of the property. The property is fenced off with a metal fence. Low fences are situated within the metal fence of which some were removed. The neighbouring properties are all being used for small scale agricultural purposes or as residential stands.

In terms of the national estate as defined by the NHRA no sites of significance were found during the survey as described below.



Figure 13. Existing structures



Figure 14. Fencing



Figure 15. Fencing



Figure 16. Trees in study area

8.1 Built Environment (Section 34 of the NHRA)

No standing structures older than 60 years occur in the study area. No further actions are recommended based on approval from SAHRA.

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

8.2.1 Archaeological Resources

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.

8.2.2 Paleontological resources

Dr Barry Millsteed conducted a study and concluded that the effects of the implementation of the proposed project upon the geological strata underlying the project area will be restricted to the early Proterozoic rocks of the Pretoria Group, Transvaal Supergroup and any associated regolith. The Silverton Formation rocks are known to be unfossiliferous. Thus, the probability and significance of any negative impact upon the palaeontological heritage of these rocks is assessed as being nil. Similarly, the authors experience of the region containing the project area suggests that the regolith underlying the project area is probably either derived from *in situ* decomposition of the unfossiliferous Silverton Formation rocks (soil) or from erosion and down-hill transport of unfossiliferous bedrock of the prominent topographic ridge to the south (colluvium). The probability and significance of any negative impact upon the palaeontological heritage of the regolith is assessed as being nil. Please refer to the full report for more details.

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 negligible as the surrounding area consists of an area that has been subjected to agricultural activities. Visual impacts to scenic routes and sense of place are also considered to be low due to the other developments in 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 for the recorded heritage resources 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 heritage resources no further mitigation is required prior to construction. A Chance Find Procedure should be implemented for the project should any sites be identified during the construction process as well as palaeontological monitoring of fresh exposures should large scale excavations into unweathered sedimentary bedrock be conducted.		
Cumulative impacts: As the project area has been previously impacted on by agricultural activities cumulative impacts of this development is considered to be negligible.		
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 expansion of the IDCNKE Chicken Farm in the Gauteng Province. The chicken layer facility expansion and proposed land for cultivation will encompass 1.06 ha of the 2-ha farm. The existing facility currently has 1000-layer chickens and proposes to expand by erecting new structures with a capacity of 40 000 chicken layers, as well as utilise 0.2 ha of land within the farm for vegetable production. is located on Portion 348 of Kameeldrift Farm 313, Kameeldrift West, Pretoria. The entire study area has been subjected to cultivation activities from the 1960's onwards.

These agricultural activities entirely transformed the study area and would have destroyed surface indicators archaeological and palaeontological resources. In terms of the archaeological component of Section 35 of the NHRA Act 25 of 1999 no raw material suitable for stone tool manufacture occurs in the study area and no ceramics or stone walls attributed to the Iron Age were recorded. Therefore, no further mitigation prior to construction is recommended in terms of the archaeological component of Section 35 for the proposed development to proceed. A desktop paleontological study was conducted by Dr Barry Millstead (2018) and did not identify any palaeontological reason to prejudice the progression of the proposed expansion of farming activities. No damage mitigation protocols need to be implemented to minimise the potential negative impact of the project.

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 study area is surrounded by existing agricultural developments and infrastructure and the proposed development will not impact negatively on significant cultural landscapes or viewsapes. 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 EMP and based on approval from SAHRA:

- Implementation of a chance find procedure as outlined under Section 9.1.
- A Professional palaeontologist should monitor fresh exposures should large scale excavations into unweathered sedimentary bedrock be conducted during the construction phase of the development if excavation activities exceeds depths of >1 m.

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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StatsSa

11. Appendices:**Curriculum Vitae of Specialist**

Jaco van der Walt
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 Booyensdal 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)

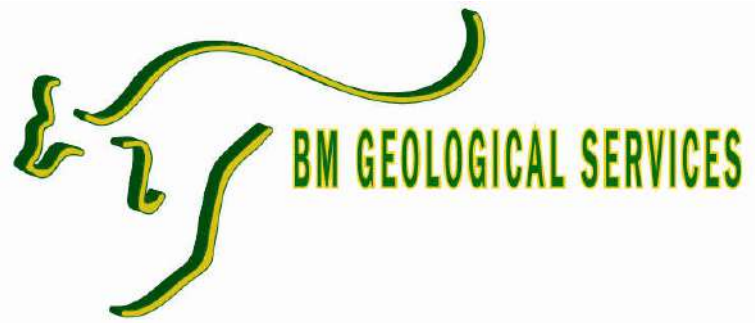
PUBLICATIONS AND PRESENTATIONS

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 - 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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**DESKTOP PALAEOLOGICAL
HERITAGE IMPACT ASSESSMENT
REPORT ON THE SITE OF A
PROPOSED EXPANSION OF A
CHICKEN LAYER FACILITY, ON
PORTION 348 OF KAMEELDRIFT
FARM 313, KAMEELDRIFT WEST,
PRETORIA, GAUTENG**

25 April 2018

Prepared for:
Heritage Contracts and Archaeological
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On behalf of:
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**DESKTOP PALAEOLOGICAL HERITAGE IMPACT ASSESSMENT REPORT ON
THE SITE OF A PROPOSED EXPANSION OF A CHICKEN LAYER FACILITY, ON
PORTION 348 OF KAMEELDRIFT FARM 313, KAMEELDRIFT WEST, PRETORIA,
GAUTENG**

Prepared for:

Heritage Contract and Archaeological Consulting CC

On Behalf of:

IDCNKE Holdings

Prepared By:

Dr B.D. Millstead

Desktop Palaeontological Heritage Impact Assessment Report on the site of a proposed expansion of a chicken layer facility, on Portion 348 of Kameeldrift Farm 313, Kameeldrift West, Pretoria, Gauteng

EXECUTIVE SUMMARY

IDCNKE Holdings proposes to expand its operations upon the site of an existing a small-scale poultry farm, located on 2 ha of land on Portion 348 of Kameeldrift Farm 313, Pretoria West, Gauteng. The business proposes to expand on the existing chicken layer facility, as well as develop a vegetable production facility and goat farm. The chicken layer facility expansion and proposed land for cultivation will encompass 1.06 ha of the 2 ha farm. The existing facility currently has 1000 layer chickens, and proposes to expand by erecting new structures with a capacity of 40 000 chicken layers, as well as utilise 0.2 ha of land within the farm for vegetable production.

The project area is located to the north-west of Pretoria where it is approximately 10 km north-west of Atteridgeville, 8 km north of Pelindaba and ca. 12 km south of De Wildt. The project area lies within Gauteng Province, but is also immediately proximal to the provincial boundary with North West Province.

CSIR has appointed Heritage Contract and Archaeological Consulting CC to produce a Heritage Impact Assessment Report for the project. Heritage Contract and Archaeological Consulting CC has contracted BM Geological Services to provide a Desktop Palaeontological Heritage Impact Assessment Report in respect of the proposed project that will form part of the final Heritage Impact Assessment Report for the project.

The effects of the implementation of the proposed project upon the geological strata underlying the project area will be restricted to the early Proterozoic rocks of the Pretoria Group, Transvaal Supergroup and any associated regolith. The Silverton Formation rocks are known to be unfossiliferous. Thus, the probability and significance of any negative impact upon the palaeontological heritage of these rocks is assessed as being nil. Similarly, the authors experience of the region containing the project area suggests that the regolith underlying the project area is probably either derived from *in situ* decomposition of the unfossiliferous Silverton Formation rocks (soil) or from erosion and down-hill transport of unfossiliferous bedrock of the prominent topographic ridge to the south (colluvium). The probability and significance of any negative impact upon the palaeontological heritage of the regolith is assessed as being nil.

This desktop study has not identified any palaeontological reason to prejudice the progression of the proposed expansion of farming activities. No damage mitigation protocols need to be implemented to minimise the potential negative impact of the project.

Desktop Palaeontological Heritage Impact Assessment Report on the site of a proposed expansion of a chicken layer facility, on Portion 348 of Kameeldrift Farm 313, Kameeldrift West, Pretoria, Gauteng

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Desktop Palaeontological Heritage Impact Assessment Report on the site of a proposed expansion of a chicken layer facility, on Portion 348 of Kameeldrift Farm 313, Kameeldrift West, Pretoria, Gauteng

INTRODUCTION

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CSIR has appointed Heritage Contract and Archaeological Consulting CC to produce a Heritage Impact Assessment Report for the project. Heritage Contract and Archaeological Consulting CC has contracted BM Geological Services to provide a Desktop Palaeontological Heritage Impact Assessment Report in respect of the proposed project that will form part of the final Heritage Impact Assessment Report for the project.

1 TERMS OF REFERENCE AND SCOPE OF THE STUDY

The terms of reference for this study were as follows:-

- Conduct a desktop assessment of the potential impact of the proposed project on the palaeontological heritage of the project area.
- Describe the possible impact of the proposed development on the palaeontological heritage of the site, according to a standard set of conventions.
- Quantify the possible impact of the proposed development on the palaeontological heritage of the site, according to a standard set of conventions.
- Provide an overview of the applicable legislative framework.
- Make recommendations concerning future work programs as, and if, necessary.

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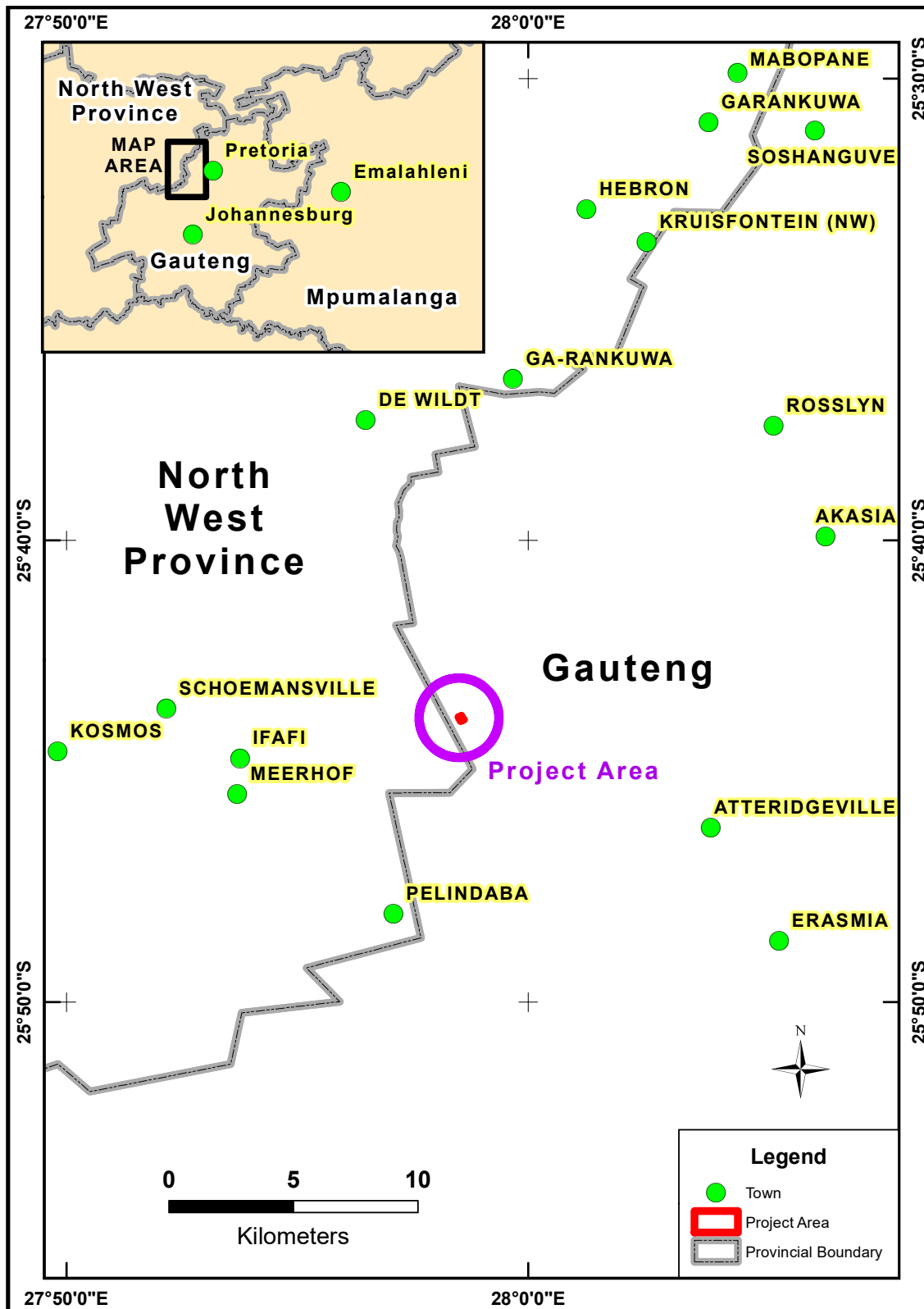


Figure 1: Location map showing the position of the proposed expanded farming operations.

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2 LEGISLATIVE REQUIREMENTS

South Africa's cultural resources are primarily dealt with in two Acts. These are the National Heritage Resources Act (Act 25 of 1999) and the National Environmental Management Act (Act 107 of 1998).

2.1 The National Heritage Resources Act

The following are protected as cultural heritage resources by the National Heritage Resources Act:

- Archaeological artefacts, structures and sites older than 100 years,
- Ethnographic art objects (e.g. prehistoric rock art) and ethnography,
- Objects of decorative and visual arts,
- Military objects, structures and sites older than 75 years,
- Historical objects, structures and sites older than 60 years,
- Proclaimed heritage sites,
- Grave yards and graves older than 60 years,
- Meteorites and fossils,
- Objects, structures and sites of scientific or technological value.

The Act also states that those heritage resources of South Africa which are of cultural significance or other special value for the present community and for future generations must be considered part of the national estate and fall within the sphere of operations of heritage resources authorities. The national estate includes the following:

- Places, buildings, structures and equipment of cultural significance,
- Places to which oral traditions are attached or which are associated with living heritage,
- Historical settlements and townscapes,
- Landscapes and features of cultural significance,
- Geological sites of scientific or cultural importance,
- Sites of Archaeological and palaeontological importance,
- Graves and burial grounds,
- Sites of significance relating to the history of slavery,
- Movable objects (e.g. archaeological, palaeontological, meteorites, geological specimens, military, ethnographic, books etc.).

2.2 Need for Impact Assessment Reports

Section 38 of the Act stipulates that any person who intends to undertake an activity that falls within the following:

- The construction of a linear development (road, wall, power line, canal etc.) exceeding 300 m in length,

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- The construction of a bridge or similar structure exceeding 50 m in length,
- Any development or other activity that will change the character of a site and exceed 5 000 m² or involve three or more existing erven or subdivisions thereof,
- Re-zoning of a site exceeding 10 000 m²,
- Any other category provided for in the regulations of SAHRA or a provincial heritage 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. If there is reason to believe that heritage resources will be affected by such development, the developer may be notified to submit an impact assessment report. A Palaeontological Impact Assessment (PIA) only looks at the potential impact of the development palaeontological resources of the proposed area to be affected.

2.3 Legislation Specifically Pertinent to Palaeontology*

*Note: Section 2 of the Act defines "palaeontological" material as "any fossilised remains or fossil trace of animals or plants which lived in the geological past, other than fossil fuels or fossiliferous rock intended for industrial use, and any site which contains such fossilised remains".

Section 35(4) of this Act specifically deals with archaeology, palaeontology and meteorites. The Act states that no person may, without a permit issued by the responsible heritage resources authority (national or provincial):

- Destroy, damage, excavate, alter, deface or otherwise disturb any archaeological or palaeontological site or any meteorite,
- Destroy, damage, excavate, remove from its original position, collect or own any archaeological or palaeontological material or object or any meteorite,
- Trade in, sell for private gain, export or attempt to export from the Republic any category of archaeological or palaeontological material or object, or any meteorite; or
- Bring onto or use at an archaeological or palaeontological site any excavation equipment or any equipment that assists in the detection or recovery of metals or archaeological and palaeontological material or objects, or use such equipment for the recovery of meteorites,
- Alter or demolish any structure or part of a structure which is older than 60 years as protected.

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The above mentioned palaeontological objects may only be disturbed or moved by a palaeontologist, after receiving a permit from the South African Heritage Resources Agency (SAHRA). In order to demolish such a site or structure, a destruction permit from SAHRA will also be needed.

Further to the above point, Section 35(3) of this Act indicates that “any person who discovers archaeological or palaeontological objects or material or a meteorite in the course of development or agricultural activity must immediately report the find to the responsible heritage resources authority, or to the nearest local authority offices or museum, which must immediately notify such heritage resources authority”. Thus, regardless of the granting of any official clearance to proceed with any development based on an earlier assessment of its impact on the Palaeontological Heritage of an area, the development should be halted and the relevant authorities informed should fossil objects be uncovered during the progress of the development.

2.4 The National Environmental Management Act [as amended]

This Act does not provide the detailed protections and administrative procedures for the protection and management of the nation’s Palaeontological Heritage as are detailed in the National Heritage Resources Act, but is more general in its application. In particular Section 2(2) of the Act states that environmental management must place people and their needs at the forefront of its concerns and, amongst other issues, serve their cultural interests equitably. Further to this point section 2(4)(a)(iii) states that disturbances of sites that constitute the nation’s cultural heritage should be avoided, and where it cannot be avoided should be minimised and remedied.

Section 23(1) indicates that a general objective of integrated environmental management is to identify, predict and evaluate the actual and potential impact of activities upon the cultural heritage. This section also highlights the need to identify options for mitigating of negative effects of activities with a view to minimising negative impacts.

In order to give effect to the general objectives of integrated environmental management outlined in the Act the potential impact on cultural heritage of activities that require authorisation or permission by law must be investigated and assessed prior to their implementation and reported to the relevant organ of state. Thus, a survey and evaluation of cultural resources must be done in areas where development projects that will potentially negatively affect the cultural heritage will be performed. During this process the impact on the cultural heritage will be determined and proposals for the mitigation of the negative effects made.

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3 RELEVANT EXPERIENCE

Dr Millstead holds a PhD in palaeontology and has previously been employed as a professional palaeontologist with the Council for Geoscience in South Africa. He is currently the principle of BM Geological Services and has sufficient knowledge of palaeontology and the relevant legislation required to produce this Palaeontological Impact Assessment Report. Dr Millstead is registered with the South African Council for Natural Scientific Professions (SACNASP), is a member of the Palaeontological Society of South African and is a Fellow of the Geological Society of South Africa.

4 INDEPENDENCE

Dr Millstead was contracted as an independent consultant to conduct this Palaeontological Heritage Impact Assessment study and shall receive fair remuneration for these professional services. Neither Dr Millstead nor BM Geological Services has any financial interest either in the construction of the farming operation nor any companies or individuals associated with the project.

5 GEOLOGY AND FOSSIL POTENTIAL

Figure 2 shows that the project area is completely underlain by early Proterozoic rocks of the Transvaal Supergroup. The strata immediately underlying the project area consist of the Silverton Formation. Strata occurring immediately to the south of the Silverton Formation consist of the Daspoort Formation, and this unit dips to the north beneath the Silverton Formation. The strata occurring to the north of the Silverton Formation dip to the north and, as such, do not occur below the project area. A summary of the characteristics of the Silverton and Daspoort Formations and their fossiliferous potential follows.

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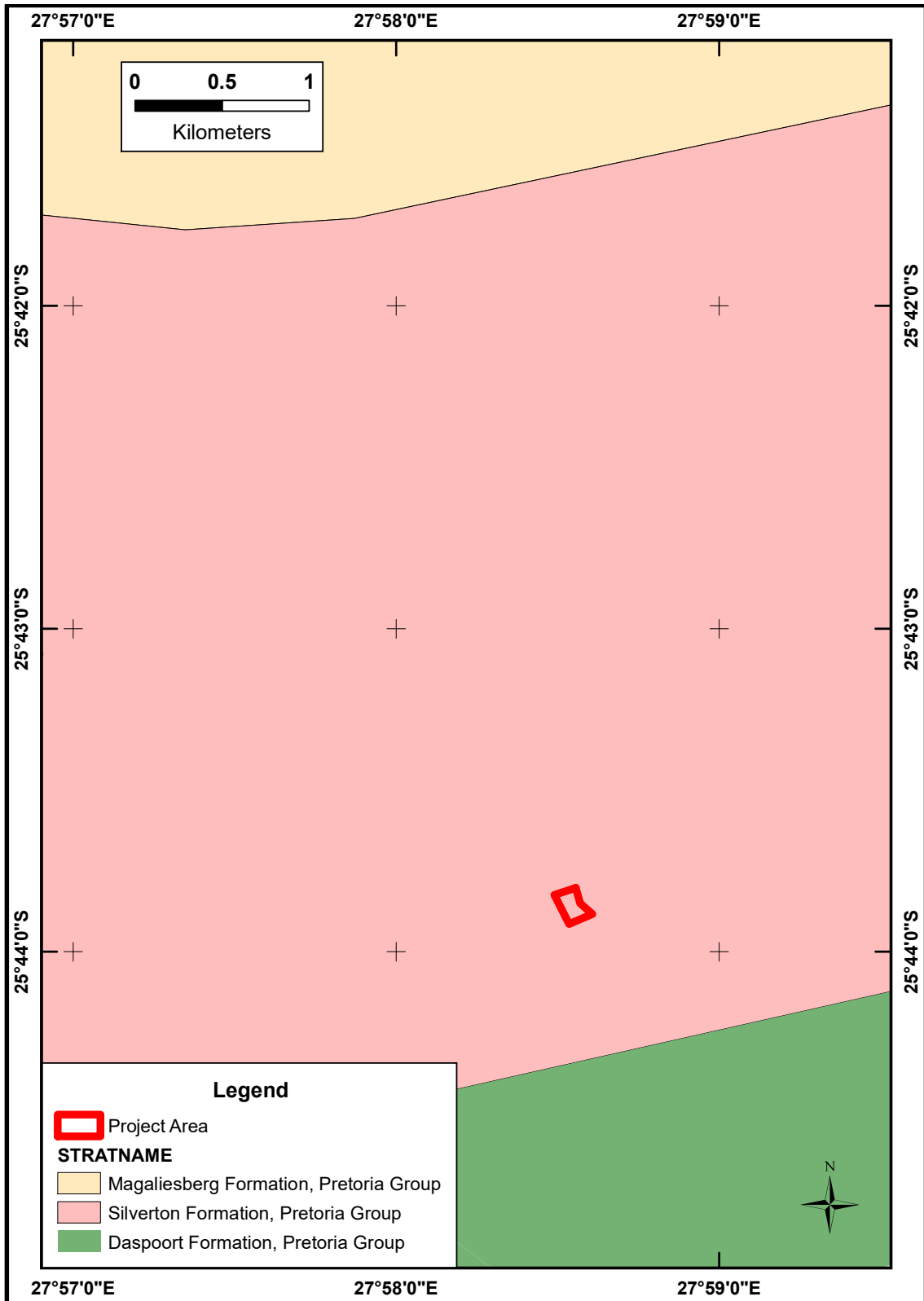


Figure 2: Geological map of the area underlying the proposed project area and its immediate environs.

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5.1 Daspoort Formation

5.1.1 Geology

The Daspoort Formation underlies the Silverton Formation and dips to the north beneath it and, as such, occur at significant depth below the project area. The unit is characterised by mature quartz arenites with subordinate mudrocks and ironstones also present in the east of the Transvaal Basin. The Daspoort Formation probably reflects the beginning of a major marine transgression onto the Kaapvaal Craton. This scenario is supported by the local occurrence of thin stromatolitic carbonates at the top of the formation Eriksson *et al.*, 2006).

5.1.2 Palaeontological potential

No fossil materials are known to occur within the terrigenous sediments of the Daspoort Formation; the thin, localised carbonate occurrences near the top of the formation are known to be stromatolitic. Accordingly, the palaeontological potential of the majority of the unit is nil. The stromatolites within the carbonates in the Transvaal Supergroup tend to be abundant where they occur and can dominate the lithology. The palaeontological potential of the carbonate facies is in the upper Daspoort Formation, accordingly, high but the chances of this facies being present beneath the pipeline are low due to their localised nature.

5.2 Silverton Formation

5.2.1.1 Geology

In the central portion of the basin (near Pretoria) the Silverton Formation consists of (listed in order from oldest to youngest) a basal Boven Shale member, an overlying Machadodorp Volcanic Member, the Lydenburg Shale Member and an uppermost thin sequence of carbonate rocks. The shales of the Silverton Formation reflect a period of higher sea levels than those which existed during the deposition of the Daspoort Formation. They were deposited during the further advance of an epi-iric sea onto the Kaapvaal Craton with the associated deepening of sea levels (Eriksson *et al.*, 2006). The upper-most portion of the Lydenburg Shale Member contains high magnesium/manganese tuffs (Reczko, 1994). The Machadodorp Volcanic Member is composed of basalts which have been interpreted as shallow marine volcanic extrusive rocks (Reczko *et al.*, 1995).

5.2.1.2 Palaeontological potential

No fossil materials are known to occur within the Silverton Formation. The palaeontological potential of the formation is accordingly assessed as being nil.

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6 ENVIRONMENT OF THE PROPOSED PROJECT SITE

The area reported upon, herein, is approximately 2 ha in extent. The area lies approximately 1 km north of a prominent east-west oriented ridge. Lying parallel to the toe of the ridge and approximately 90 m south of the project area is the Swartspruit (Figure 3). A northwest-southeast oriented ephemeral tributary of the Swartspruit lies 200 m west of the project area. However, neither of these waterways nor any other significant drainage lines traverse the project area (Figure 3). Thus, no potentially fossiliferous fluvial terraces area expected to occur in the project area. It is apparent from Figure 3 that the project area itself is topographically flat and featureless, and this is also evident from examination of Google earth imagery of the area (Figure 4).

The entire extent of the project area was originally underlain vegetation cover of the Moot Plain Bushveld Biome (Figure 5). Mucina and Rutherford (2006) describe the conservation status of the Moot Plain Bushveld as being vulnerable. However, it is evident from Figures 6 and 7 that the area is presently dominantly vegetated by expanses of grass veld.

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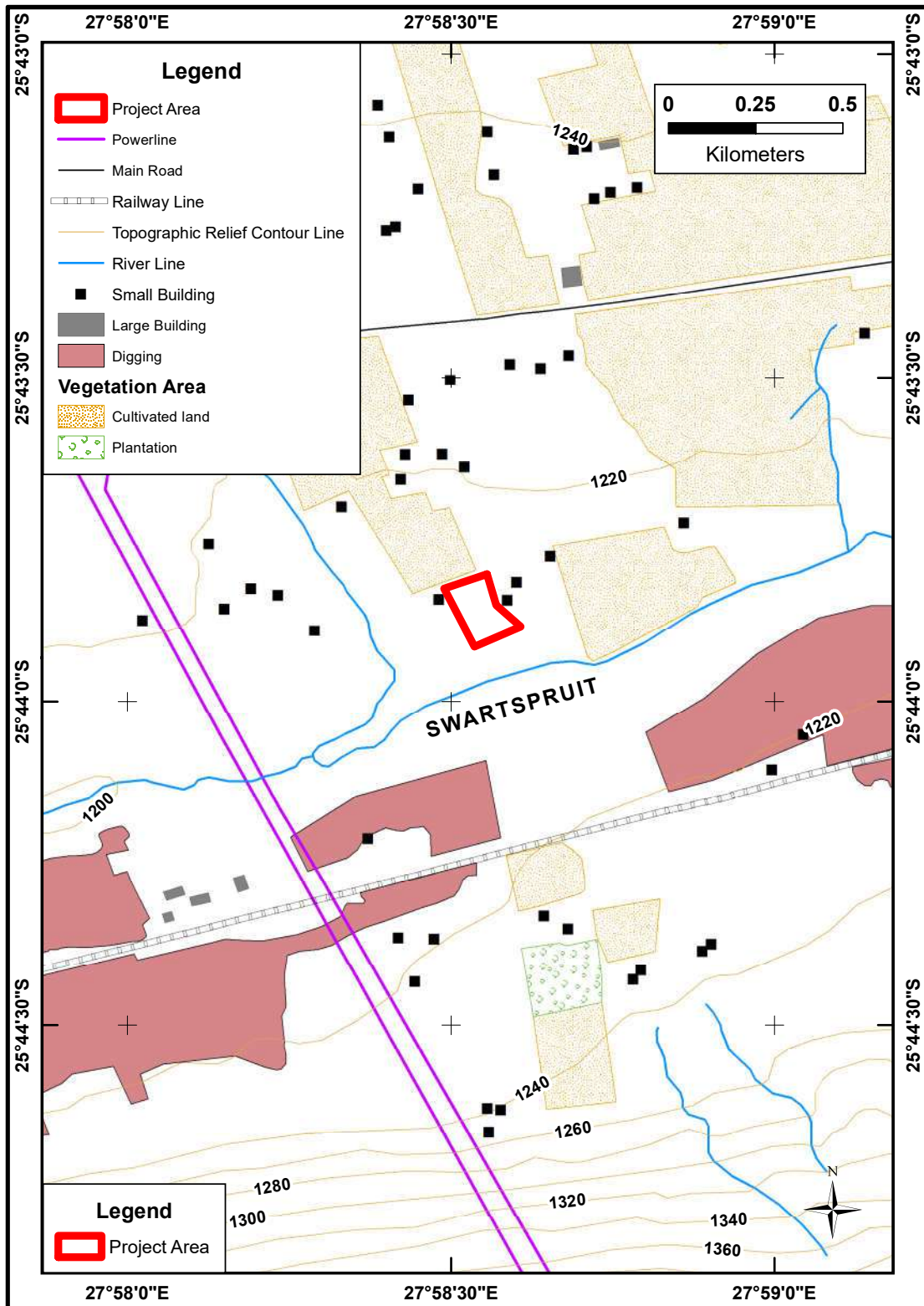


Figure 3: Map of the environment of the project area and its immediate environs. The topographic contour interval is 20 m.

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Figure 4: Google earth image of the project area (red polygon) and its immediate environs.

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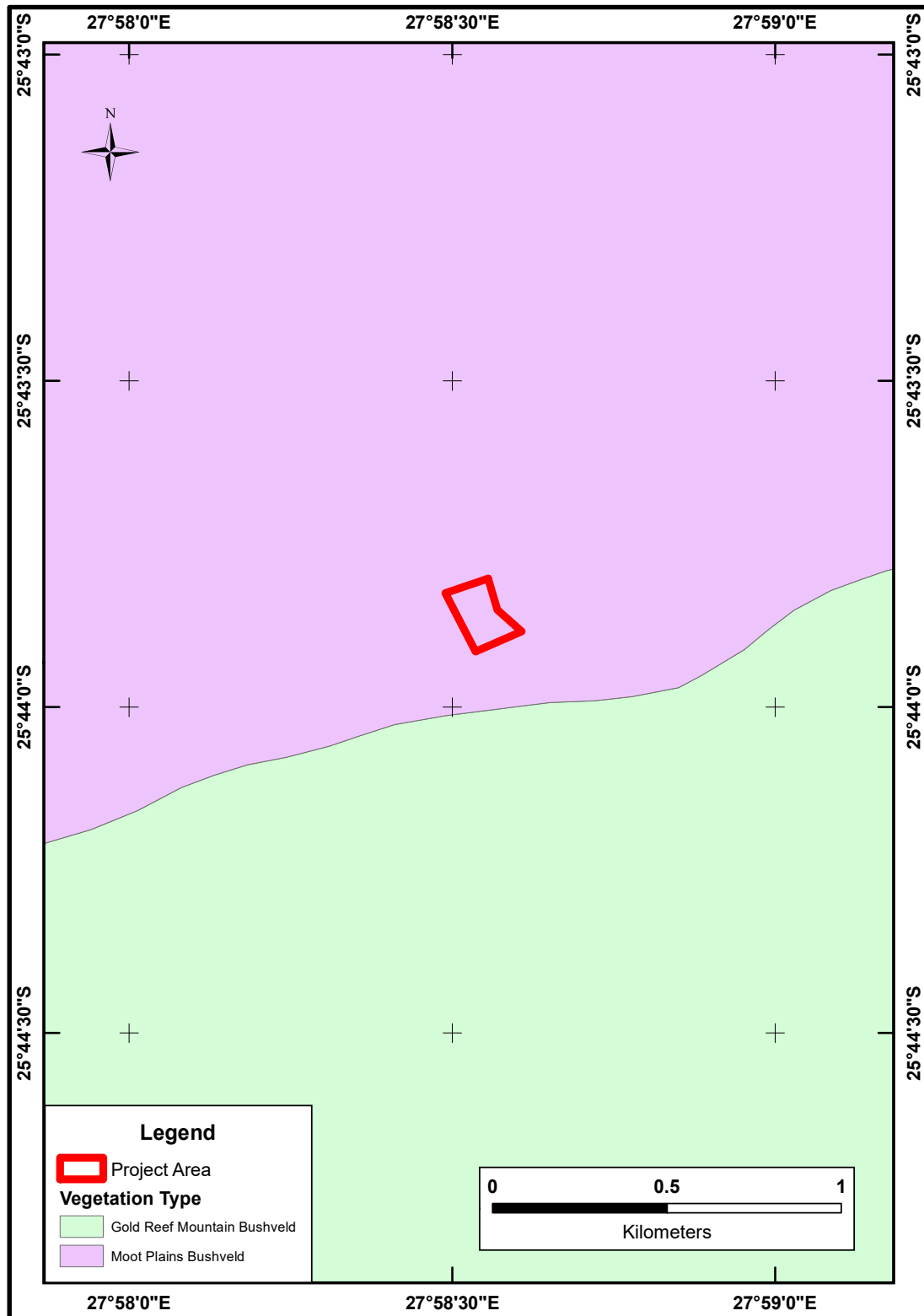


Figure 5: Map of the distribution of the vegetation veld types located beneath the project area and within its immediate environs (after Mucina and Rutherford, 2006).

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Figure 6: View from the project area towards the south. The grass covering of the area is evident.



Figure 7: View from the project area looking towards the existing farm structures located in the north-west corner of the area. The pervasive grass cover of the site is evident.

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7 OVERVIEW OF SCOPE OF THE PROJECT

IDCNKE is a small-scale poultry production and vegetable farm, located on 2 ha of land on Portion 348 of Kameeldrift Farm 313, Pretoria West, Gauteng. The business proposes to expand on the existing chicken layer facility, as well as develop a vegetable production facility and goat farm (Figure 8). The chicken layer facility expansion and proposed land for cultivation will encompass 1.06 ha of the 2 ha farm. The existing facility currently has 1000 layer chickens, and proposes to expand by erecting new structures with a capacity of 40 000 chicken layers, as well as utilise 0.2 ha of land within the farm for vegetable production.

7.1 Effect of project on the geology

The construction methods to be employed during the construction of the various planned infrastructure elements are unknown to the author. However, assuming a worst-case scenario it may be expected that any negative impacts associated with the development of the new infrastructure elements would be restricted to the upper few meters of the land surface (due to the construction of foundations for new buildings and the digging of trenches for the emplacement of underground water/sewage and power lines). Thus, any impacts caused by the proposed project will be restricted to the surficial soil horizon and the immediately adjacent portions of the underlying rocks of the Silverton Formation.

Portions of the upper-most portions of the project areas land surface will utilised for vegetable production. It is probable that the project area has a surface cover of regolith. Observations of the land surface elsewhere in the region by the author suggests that this regolith is most likely derived from weathering of the underlying rocks (i.e., it is soil rather or colluvium than being alluvium) in which case it will be unfossiliferous.

8 IMPACT ASSESSMENT

The potential impact of the proposed mining area is categorised below according to the following criteria:-

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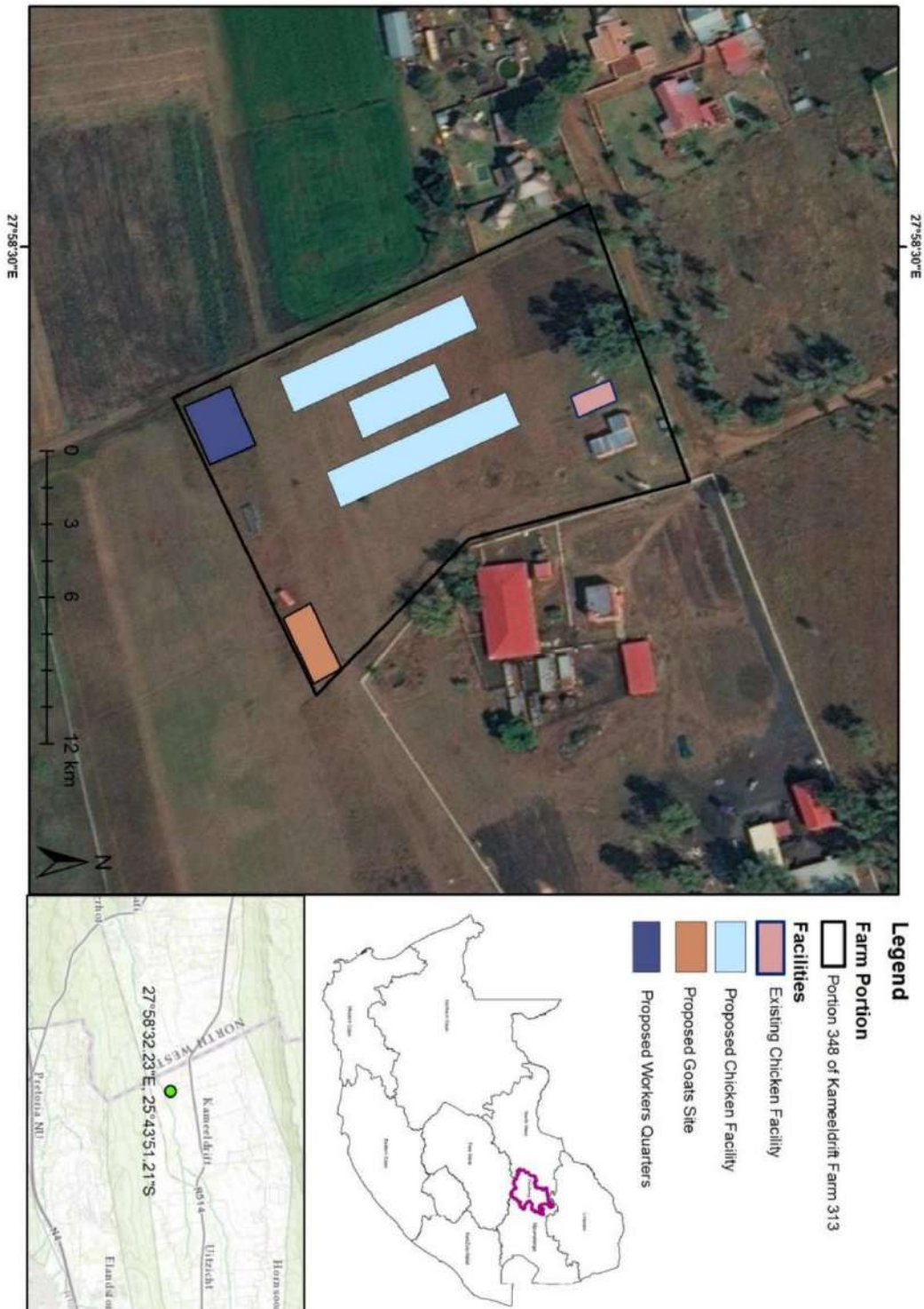


Figure 8: Map showing the proposed location of infrastructure elements that will constitute the expansion of the farming enterprise. Map supplied by CSIR.

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8.1 Nature of Impact

The potential negative impacts of the proposed project on the palaeontological heritage of the area are:

- Damage or destruction of fossil materials during the construction of project infrastructural elements to a maximum depth of those excavations. Many fossil taxa (particularly vertebrate taxa) are known from only a single fossil and, thus, any fossil material is potentially highly significant. Accordingly, the loss or damage to any single fossil can be potentially significant to the understanding of the fossil heritage of South Africa and to the understanding of the evolution of life on Earth in general. Where fossil material is present and will be directly affected by the building or construction of the project's infrastructural elements the result will potentially be the irreversible damage or destruction of the fossil(s).
- Movement of fossil materials during the construction phase, such that they are no longer *in situ* when discovered. The fact that the fossils are not *in situ* would either significantly reduce or completely destroy their scientific significance.
- The loss of access for scientific study to any fossil materials present beneath infrastructural elements for the life span of the existence of those constructions and facilities.

8.2 Extent of impact

The possible extent of the permanent impact of the proposed project on the palaeontological heritage of South Africa is restricted to the damage, destruction or accidental relocation of fossil material caused by the excavations and construction of the necessary infrastructure elements forming part of the project. The possible source of a less permanent negative impact on the palaeontological heritage is the loss of access for scientific research to any fossil materials that become covered by the various infrastructural elements that comprise the project. The **extent of the area of potential impact is, accordingly, categorised as local** (i.e., restricted to the project site).

8.3 Duration of impact

The anticipated duration of the identified potential impact is assessed as potentially **permanent to long term**. This assessment is based on the fact that, in the absence of mitigation procedures (should fossil material be present within the area to be affected) the damage or destruction of any palaeontological materials will be permanent. Similarly, any fossil materials that exist below the structures and infrastructural elements that will constitute the expanded farming enterprise will be unavailable for scientific study for the

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life of the existence of those features. The life of the facility is expected to be permanent herein.

8.4 Probability of impact

The bedrock underlying the project area is entirely comprise of the Silverton Formation. The rocks of the Silverton Formation are not known to be fossil-bearing anywhere in their extent and are considered to be unfossiliferous herein. Thus, the probability of the project negatively impacting upon the palaeontological heritage of strata occurring in the uppermost portions of the Silverton Formation is characterised as **nil**.

Regolith forming the land surface within the project area is probably derived from *in situ* weathering of the underlying unfossiliferous bedrock (i.e., it is soil) or it is colluvium (formed by erosion and subsequent downhill movement of unfossiliferous rock material eroded from adjacent elevated ground). Any colluvium would, therefore also be unfossiliferous and the probability of the project negatively impacting upon the palaeontological heritage of the regolith is characterised as **nil**.

8.5 Significance of the impact

Both the bedrock and regolith underlying the project area are considered to be unfossiliferous. Accordingly, any negative impacts upon the geology underlying the majority of the proposed project will have **nil significance** on the palaeontological heritage of the area.

The scientific and cultural significance of fossil materials is underscored by the fact that many fossil taxa (particularly vertebrate taxa) are known from only a single fossil and, thus, any fossil material is potentially highly significant. Accordingly, the loss or damage to any single fossil can be potentially significant to the understanding of the fossil heritage of South Africa and to the understanding of the evolution of life on Earth in general. Where fossil material is present and will be directly affected by the construction of project infrastructural elements the result will potentially be the irreversible damage or destruction of the fossil(s).

The certainty of the exact *in situ* location of fossils and their precise location within the stratigraphic sequence is essential to the scientific value of fossils. The movement of any fossil material during the construction of the facility that results in the exact original location of the fossil becoming unknown will either greatly diminish or destroy the scientific value of the fossil.

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9 DAMAGE MITIGATION, REVERSAL AND POTENTIAL IRREVERSABLE LOSS

The degree to which the possible negative effects of the proposed project can be mitigated, reversed or will result in irreversible loss of the palaeontological heritage can be determined as discussed below.

9.1 Mitigation

No damage mitigation protocols are required to preserve the palaeontological heritage of this area and none are suggested herein.

9.2 Reversal of damage

Any damage to, or the destruction of, palaeontological materials or reduction of scientific value due to a loss of the original location is **irreversible**. However, no negative impacts upon the palaeontological heritage of the project area are anticipated.

9.3 Degree of irreversible loss

Once a fossil is damaged, destroyed or moved from its original position without its geographical position and stratigraphic location being recorded the **damage is irreversible**.

Fossils are usually scarce and sporadic in their occurrence and the chances of negatively impacting on a fossil in any particular area are low. However, any fossil material is potentially of the greatest scientific and cultural importance. Thus, the potential always exists during construction and excavation within potentially fossiliferous rocks for the permanent and irreversible loss of extremely significant or irreplaceable fossil material. This said, many fossils are incomplete in their state of preservation or are examples of relatively common taxa. As such, just because a fossil is present it is not necessarily of great scientific value. Accordingly, not all fossils are necessary significant culturally or scientifically significant and the potential degree of irreversible loss will vary from case to case. The judgement on the significance of the fossil must be made by an experienced palaeontologist.

10 ASSUMPTIONS, UNCERTAINTIES AND GAPS IN KNOWLEDGE

The information provided within this report was derived from a desktop study of available maps and scientific literature; no direct observation was made of the area as result of a site visit.

Desktop Palaeontological Heritage Impact Assessment Report on the site of a proposed expansion of a chicken layer facility, on Portion 348 of Kameeldrift Farm 313, Kameeldrift West, Pretoria, Gauteng

11 ENVIRONMENTAL IMPACT STATEMENT

A desktop Palaeontological Impact Assessment Study has been conducted on the site of a proposed expansion of farming operations on 2 ha of land located on Portion 348 of Kameeldrift Farm 313, Pretoria West, Gauteng. The business proposes to expand on the existing chicken layer facility, as well as develop a vegetable production facility and goat farm. The chicken layer facility expansion and proposed land for cultivation will encompass 1.06 ha of the 2 ha farm. The existing facility currently has 1000 layer chickens, and proposes to expand by erecting new structures with a capacity of 40 000 chicken layers, as well as utilise 0.2 ha of land within the farm for vegetable production. Any negative impacts to the palaeontological heritage of the region will be limited to the footprint area of the required infrastructure and the extent of any impacts is accordingly characterised as being local.

The effects of the implementation of the proposed project upon the geological strata underlying the project area will be restricted to the early Proterozoic rocks of the Pretoria Group, Transvaal Supergroup and any associated regolith. The Silverton Formation rocks are known to be unfossiliferous. Thus, overwhelmingly the probability and significance of any negative impact upon the palaeontological heritage of these rocks is assessed as being nil. Similarly, the authors experience of the region containing the project area suggests that the regolith underlying the project area is probably either derived from *in situ* decomposition of the unfossiliferous Silverton Formation rocks (soil) or from erosion and down-hill transport of unfossiliferous bedrock of the prominent topographic ridge to the south (colluvium). The probability and significance of any negative impact upon the palaeontological heritage of the regolith is assessed as being nil.

This desktop study has not identified any palaeontological reason to prejudice the progression of the expanded agricultural enterprise. No damage mitigation protocols need to be implemented to minimise the potential negative impact of the project.

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Dr B.D. Millstead

25th April 2018

Basic Assessment for IDCNKE Holdings' proposed expansion of a chicken layer facility and vegetable production on Portion 348 of Kameeldrift Farm 313, Pretoria West, Gauteng.

APPENDIX H: ENVIRONMENTAL MANAGEMENT PROGRAMME



SECTION F: APPENDICES

Basic Assessment for IDCNKE Holdings' proposed expansion of a chicken layer facility and vegetable production on Portion 348 of Kameeldrift Farm 313, Pretoria West, Gauteng.

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SECTION F: APPENDICES

Basic Assessment for IDCNKE Holdings' proposed expansion of a chicken layer facility and vegetable production on Portion 348 of Kameeldrift Farm 313, Pretoria West, Gauteng.

1 INTRODUCTION

1.1 Purpose of the Environmental Management Programme

This Draft Environmental Management Programme (EMPr) is prepared as part of the requirements of the Environmental Impact Assessment (EIA) Regulations (7 April 2017, as amended) promulgated under the National Environmental Management Act (NEMA) (Act 107 of 1998, as amended). The purpose of this Environmental Management Programme (EMPr) is to ensure "good environmental practice" by taking a holistic approach to the management and mitigation of environmental impacts during the construction and operation phase of IDCNKE's proposed chicken layer facility expansion. This EMPr therefore sets out the methods by which proper environmental controls are to be implemented by the facility's management. The Draft EMPr is to be submitted to the Gauteng Department of Agriculture and Rural Development (GDARD) as part of the Application for Environmental Authorisation for IDCNKE's proposed chicken layer expansion on Portion 348 of Kameeldrift Farm 313 in Pretoria West, Gauteng.

This EMPr is considered as a document that can be updated as new information becomes available during the construction, operational and operational phases, if applicable, of the proposed development. Mitigations measure need to be implemented as addressed in this EMPr, except where they are not applicable, and additional measures should be considered when necessary. The EMPr identifies the following:

- Construction and Operation activities that will impact on the environment;
- Specifications with which the facility's management shall comply in order to protect the environment from the identified impacts; and
- Actions that shall be taken in the event of non-compliance.

This EMPr incorporates management plans for the design, construction, operation and decommissioning phases of the project, which consist of the following components:

- **Impact:** The potential positive or negative impact of the development that needs to be enhanced, mitigated or eliminated.
- **Objectives:** The objectives necessary in order to meet the goal; these take into account the findings of the specialist studies.
- **Mitigation/Management Actions:** The actions needed to achieve the objectives, taking into consideration factors such as responsibility, methods, frequency, resources required and prioritisation.
- **Monitoring:** The key monitoring actions required to check whether the objectives are being achieved, taking into consideration responsibility, frequency, methods and reporting.

1.2 Contents of the EMPr

This EMPr specifies the management actions necessary to ensure minimal environmental impacts, as well as procedures for monitoring these impacts associated with the proposed activity. In terms of legal compliance, this EMPr aims to satisfy appendix 4 of Government Notice Regulation 326 of 7 April 2017, presented in Table 1-1 below.

SECTION F: APPENDICES

Basic Assessment for IDCNKE Holdings' proposed expansion of a chicken layer facility and vegetable production on Portion 348 of Kameeldrift Farm 313, Pretoria West, Gauteng.

Table 1-1: Compliance with Appendix 4 of Government Notice Regulation 326 of 7 April 2017 and Section 24N of the National Environmental Management Act 107 of 1998.

Requirements according to Appendix 4 of GNR 326 of 7 April 2017	Section
(1) An EMPr must comply with section 24N of the Act and include-	
a) details of -	Section 1.3
(i) the EAP who prepared the EMPr; and	Appendix I
(ii) the expertise of that EAP to prepare an EMPr, including a curriculum vitae;	
b) a detailed description of the aspects of the activity that are covered by the EMPr as identified by the project description;	Section 2
c) a map at an appropriate scale which superimposes the proposed activity, its associated structures, and infrastructure on the environmental sensitivities of the preferred site, indicating any areas that any areas that should be avoided, including buffers;	Section 2, Figure 2-1, 2-2, 2-3
d) a description of the impact management objectives, including management statements, identifying the impacts and risks that need to be avoided, managed and mitigated as identified through the environmental impact assessment process for all phases of the development including-	Section 4
(i) planning and design;	Section 4
(ii) pre-construction activities;	Section 4
(iii) construction activities;	Section 4
(iv) rehabilitation of the environment after construction and where applicable post closure; and	Section 4
(v) where relevant, operation activities;	Section 4
e) a description and identification of impact management outcomes required for the aspects contemplated in paragraph (d);	Section 4
f) a description of proposed impact management actions, identifying the manner in which the impact management objectives and outcomes contemplated in paragraphs (d) and (e) will be achieved, and must, where applicable, include actions to –	Section 4
i. avoid, modify, remedy, control or stop any action, activity or process which causes pollution or environmental degradation;	
ii. comply with any prescribed environmental management standards or practices;	Section 4
iii. comply with any applicable provisions of the Act regarding closure, where applicable; and	N/A
iv. comply with any provisions of the Act regarding financial provisions for rehabilitation, where applicable;	N/A
g) the method of monitoring the implementation of the impact management actions contemplated in paragraph (f);	Section 4
h) frequency of monitoring the implementation of the impact management actions contemplated in paragraph (f);	Section 4
i) an indication of the persons who will be responsible for the implementation of the impact management actions;	Section 4
j) the time periods within which the impact management actions contemplated in paragraph (f) must be implemented;	Section 4
k) the mechanism for monitoring compliance with the impact management actions contemplated in paragraph (f);	Section 4

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Basic Assessment for IDCNKE Holdings' proposed expansion of a chicken layer facility and vegetable production on Portion 348 of Kameeldrift Farm 313, Pretoria West, Gauteng.

Requirements according to Appendix 4 of GNR 326 of 7 April 2017	Section
l) a program for reporting on compliance, taking into account the requirements as prescribed by the Regulations;	Section 4
m) an environmental awareness plan describing the manner in which- (i) the applicant intends to inform his or her employees of any environmental risk which may result from their work; and (ii) risks must be dealt with in order to avoid pollution or the degradation of the environment; and	Section 4
n) any specific information that may be required by the competent authority.	N/A

1.3 Environmental Assessment Practitioner

Organisation	Council for Scientific and Industrial Research (CSIR)
Postal Address	PO Box 320, Stellenbosch, 7599
Email	mlevendal@csir.co.za and bmqokeli@csir.co.za
Telephone No.	021 888 2432
Fax	021 888 2693
Project Team	
Name	Qualification & Expertise
Minnelise Levendal	<ul style="list-style-type: none"> MSc Biological Science (Botany) (Stellenbosch University) More than 16 years of experience in Environmental Management Inclusive of 10 years' experience in conducting Environmental Assessments
Babalwa Mqokeli	<ul style="list-style-type: none"> MSc Ecological Science (University of KwaZulu-Natal) 2 years' experience in the environmental management field (Terrestrial & Aquatic Ecology) More than 2 years of experience conducting Environmental Assessments

The Council for Scientific and Industrial Research has been one of the leading organisations in South Africa contributing to the development and implementation of environmental assessment and management methodologies. The CSIR's Environmental Management Services (EMS) unit has over 20 years of experience in environmental management practices, involving conducting environmental assessment and management studies in over 15 countries in Africa. Key sectors of CSIR's work include renewable energy, infrastructure, natural resource management, mining, industrial development and oil and gas. CSIR's environmental assessments are conducted with national legal requirements as well as those of international agencies such as the World Bank, International Finance Corporation and World Health Organisation.

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Basic Assessment for IDCNKE Holdings' proposed expansion of a chicken layer facility and vegetable production on Portion 348 of Kameeldrift Farm 313, Pretoria West, Gauteng.

2 PROJECT BACKGROUND

2.1 Project Activities

IDCNKE Holdings is a small-scale poultry production and vegetable farm, located on 2 hectares of land on Portion 348 of Kameeldrift Farm 313, Pretoria West, Gauteng. The business consists of 2 members and they propose to expand on the existing chicken layer facility, as well as develop a vegetable production facility. The chicken layer facility expansion and proposed land for cultivation will encompass 1.06 ha of the 2 ha farm. The existing facility currently has 1000 layer chickens, and proposes to expand by erecting two chicken housing structures, as well as utilise 0.2 ha of land within the farm for vegetable production. Each house will have a footprint size of approximately 2 500 m² and accommodate a maximum capacity of 40 000 chickens.

The business currently has chicken layers producing 14-17 trays of eggs a day. These eggs are supplied to butchers, offices, local households and/or individuals in the area. The aim of IDCNKE is to supply big retailers and ensure a well-known brand for the business. The proposed business will have an economic benefit from the viability of egg production, as well as vegetable production. It aims to provide a service to local communities in and around Kameeldrift, including employment opportunities for a number of local residents. The expansion foresees an even bigger contribution to the agro-industrial sector; including agricultural skills development, increase in egg production and employment.

The proposed infrastructure of the chicken layer facility upon completion will entail the following:

- 2 x Chicken house
- 1 x Storage house
- 1 x Workers quarter

Housing units will consist of concrete floors, to ensure adequate cleaning as they will be impermeable to water. Water for cleaning and drinking will be sourced from the existing onsite borehole. The application for use of the borehole water is in the process of being lodged with the Department of Water and Sanitation. The chicken feed will be stored in silos, and the proposed development will make use of manual and automated systems to provide feed and water.

Chicken waste (manure) will be collected and dried in an impervious container and thereafter used in vegetable garden on site and also sold for use in vegetable production facilities. The houses will be well ventilated to ensure air circulation and minimising odours. Housing will also include a storeroom for the sorting and packing of eggs.

2.2 Listed Activities

As part of the proposed chicken layer expansion, listed activities defined under the National Environmental Management Act, Act No. 107 of 1998 (NEMA, 1998), as amended, in terms of the amended Environmental Impact Assessment (EIA) Regulations, Government Notice (GNR) 326 of 7 April 2017, there under will take place. Relevant listed activities triggered by the proposed activities are described as follows:

- 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.*

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Basic Assessment for IDCNKE Holdings' proposed expansion of a chicken layer facility and vegetable production on Portion 348 of Kameeldrift Farm 313, Pretoria West, Gauteng.

GNR. 327 Activity 40: *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 5000 poultry per facility situated outside an urban area.

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Basic Assessment for IDCNKE Holdings' proposed expansion of a chicken layer facility and vegetable production on Portion 348 of Kameeldrift Farm 313, Pretoria West, Gauteng.

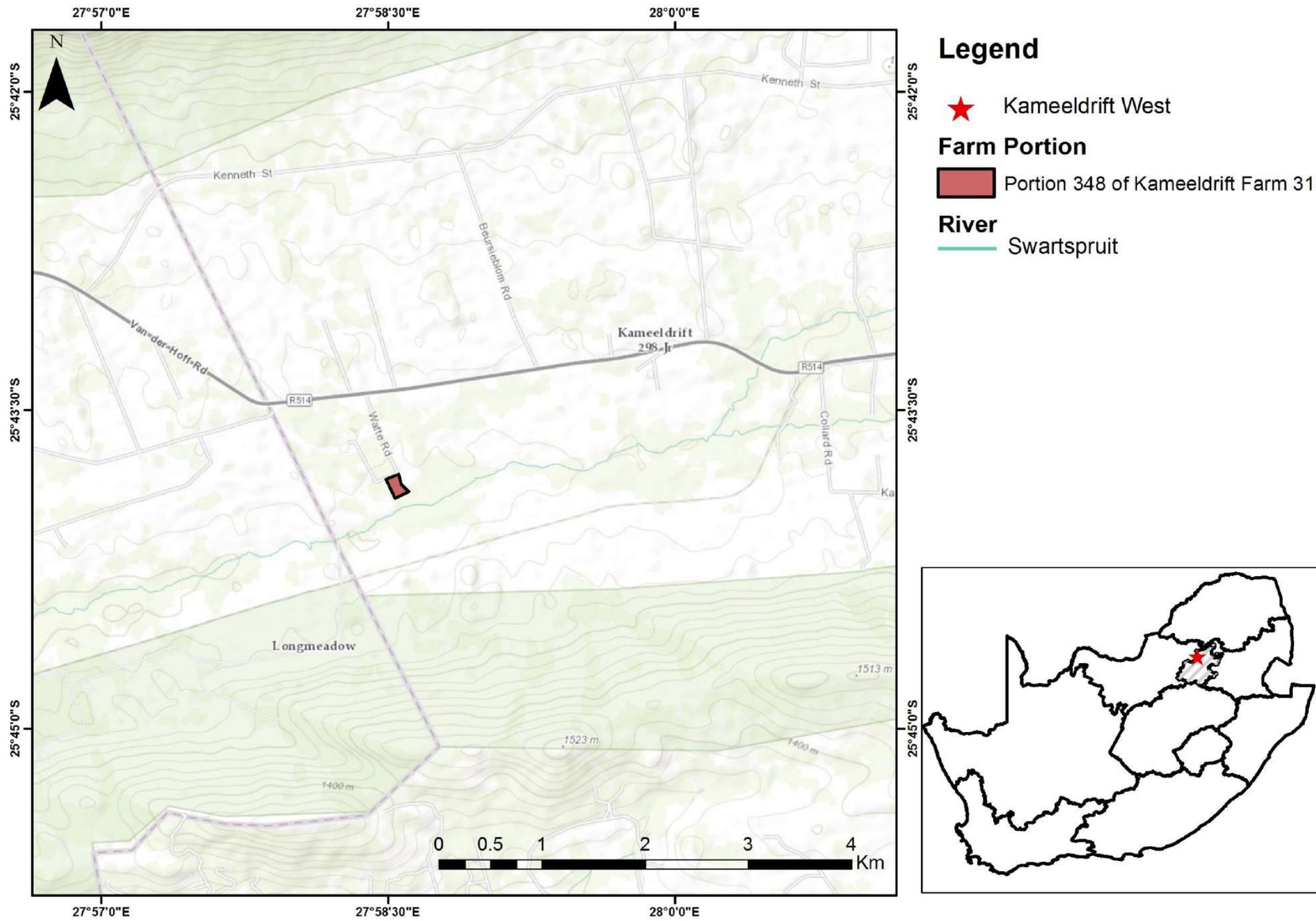


Figure 2-1: IDCNKE Holdings Site Location on Portion 348 of Kameeldrift Farm 313, Pretoria West, Gauteng.

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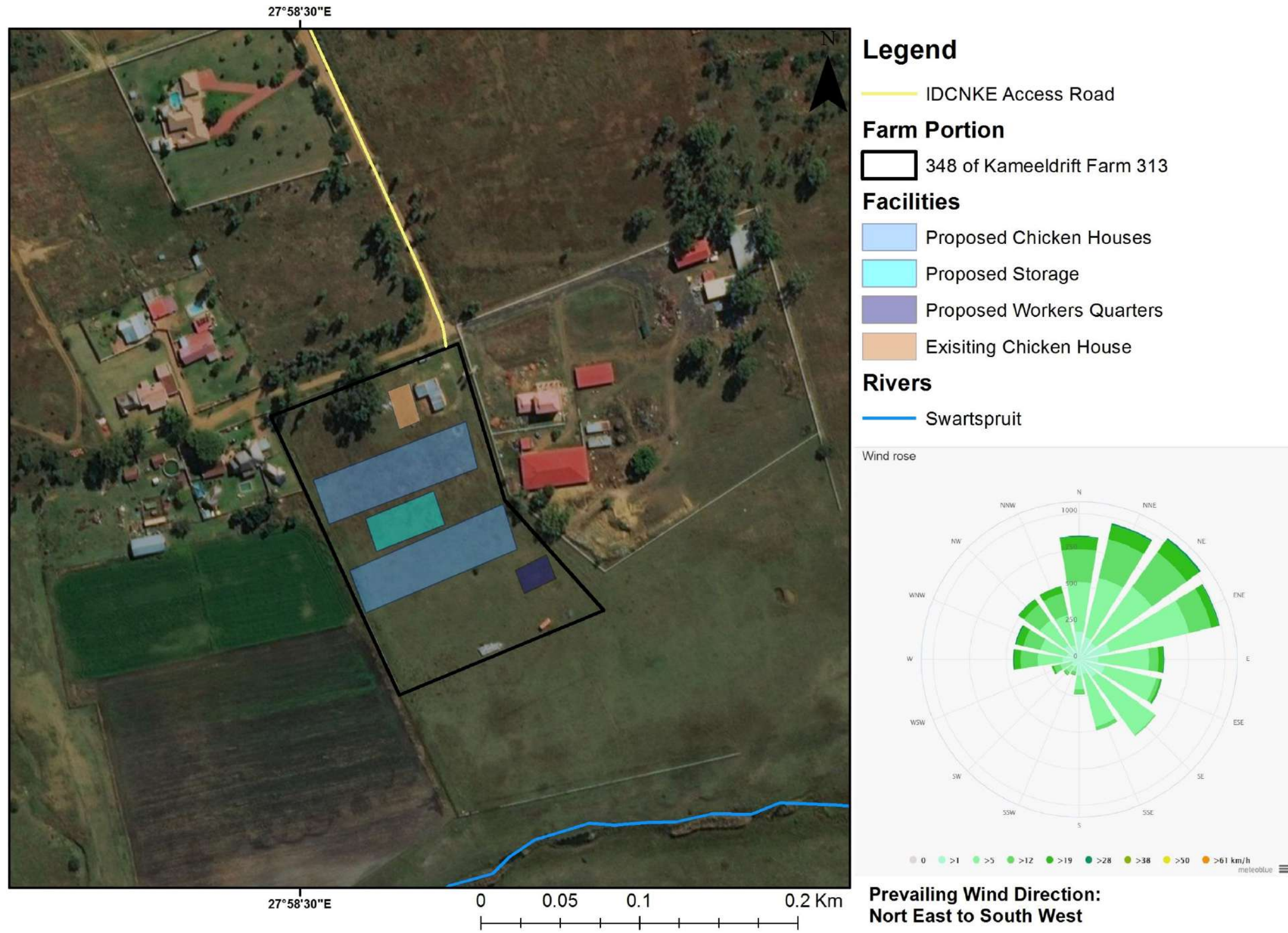


Figure 2-2: IDCNKE Holdings Site Layout of current and proposed chicken housing infrastructure.

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Basic Assessment for IDCNKE Holdings' proposed expansion of a chicken layer facility and vegetable production on Portion 348 of Kameeldrift Farm 313, Pretoria West, Gauteng.

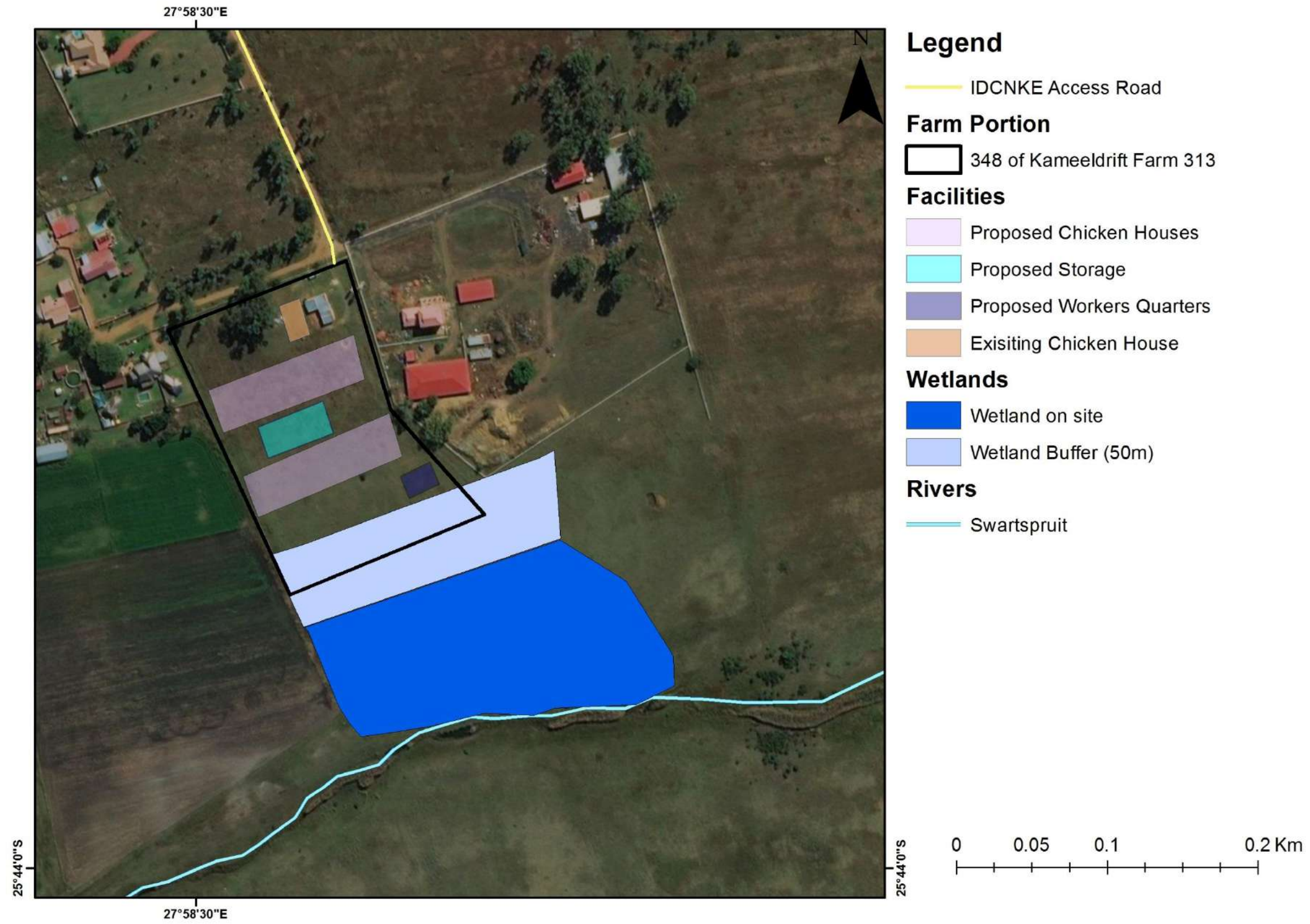


Figure 2-3: IDCNKE Holdings Site Layout of current and proposed chicken housing infrastructure, including sensitivities on site

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3 DESCRIPTION OF APPLICABLE LEGISLATION, POLICIES AND GUIDELINES.

Legislation, policy of guideline	Description of compliance
National Environmental Management Act (NEMA), 1998 (Act No. 107 of 1998 as amended).	An application for Environmental Authorisation for the proposed development is submitted in terms of GNR 326 of NEMA EIA Regulations, 7 April 2017, promulgated under NEMA.
GNR 982 of NEMA EIA Regulations, 4 December 2014	To promote integrated environmental management, contents of this EMPr adhere to the requirements of Appendix 4 of the EIA Regulations. This EMPr outlines the conditions that the project will adhere to if authorisation is received. Appendix E of the BAR refers to the Public participation followed thus far in undertaking this assessment.
National Water Act, 1998 (Act 36 of 1998)	An application for the determination of the need for a Water Use Licence Application (WULA) has been lodged.
National Environmental Management: Waste Act (NEM:WA) GNR 921, 29 November 2013	Waste listed activities will not be triggered for the proposed Chicken Layer facility, however during the construction and operational phase of the facility, the Norms and Standards of the Waste Act will be adhered to, as well as the implementation of best practice waste management measures.
National Development Plan	The South African Government through the Presidency has published a National Development Plan. The Plan aims to eliminate poverty and reduce inequality by 2030. The Plan has the target of developing people's capabilities to improve their lives through education and skills development, health care, better access to public transport, jobs, social protection, rising income, housing and basic services, and safety. It proposes to implement the following strategies to address the above goals: <ol style="list-style-type: none"> 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.
National Heritage Resources Act, 1999 (Act 25 of 1999)	An application for Heritage Resources review was submitted to SAHRA (Case ID: 12092) in terms of the National Heritage Resources Act, 1999 (Act No. 25 of 1999) as amended.
National Environmental Management: Biodiversity Act 10 of 2004	The National Environmental Management Biodiversity Act, 2004 (Act No. 10 of 2004) as amended (NEMBA) including all the pertinent legislation published in terms of this act was considered in compiling this EMPr. This included the determination and assessment of the fauna and flora prevailing in the proposed project and the handling thereof in terms of NEMBA.
City of Tshwane Metropolitan Municipality IDP and SDF	The Spatial Development Framework (SDF) is the legislated component of the municipality's Integrated Development

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Legislation, policy of guideline	Description of compliance
	Plan (IDP) that prescribes development strategies and policy guidelines to restructure and reengineer the urban and rural form. The SDF is the municipality's long-term vision of what it wishes to achieve spatially, and within the IDP programmes and projects. The SDF should not be interpreted as a blueprint or master plan aimed at controlling physical development, but rather the framework giving structure to an area while allowing it to grow and adapt to changing circumstances. The proposed project has considered and is guided by the Regions' SDF and IDP priorities of the area.
Gauteng Provincial Environmental Management Framework Revised in 2014	The Gauteng Provincial Environmental Management Framework has been used to assist in the determination of land use zones and to guide sustainable land use management.
National Health Act, 2003 (Act No.61 of 2003)	The chickens will be housed in a secure facility and kept in a healthy state.
Animal Health Act No. 7 of 2002	The proposed project aims to at all times prevent the spread of diseases resulting from the chicken facility. Mitigation measures have been included in the EMPr that the project will adhere to in an effort to prevent the spread of diseases.

4 ENVIRONMENTAL MANAGEMENT STRUCTURE

IDCNKE's management will develop an Environmental Management Structure, in line with this EMPr, that is appropriate to the size and scale of the project to develop and implement roles and responsibilities with regards to environmental management.

4.1 Roles and Responsibilities

Key roles and responsibilities in order to meet the overall goal for environmental management of the proposed chicken facility expansion are as follows:

IDCNKE Management (hereafter referred to as "Management")

Management is responsible for the overall environmental monitoring and implementation of the EMPr, and ensuring compliance thereof with the specifications of the Environmental Authorisation (EA) issued in terms of NEMA. Management should also ensure that any other permits or licences required as part of this project are obtained and complied with. IDCNKE may however, at their own costs, render the services of an external environmental consultant to oversee the implementation of the documented mitigation measures of this EMPr. It is also expected that management will appoint an Environmental Control Officer, Environmental Health and Safety Officer, and Construction Manager.

Environmental Control Officer

The Environmental Control Officer (ECO) will be the responsible person for ensuring that the provisions of the EMPr as well as the EA are complied with at all times. The ECO must fully communicate the environmental management processes associated with the project, particularly the EMPr, as well as review and ensure compliance with the conditions of the EMPr. The ECO will be responsible for issuing instructions to contractors and employees in terms of actions required with regards to environmental considerations. The ECO shall, on a

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regular basis, prepare and submit written reports to Management and the Competent Environmental Authority (GDARD) as required.

Environmental Health & Safety (EHS) Officer

It is important to note that the EHS Manager will be appointed to fulfil the roles of the Environmental Officer during the construction phase and that of the Environmental Manager during the operational phase. A generic term has therefore been assigned to this sector of roles and responsibilities. The responsibility of the EHS Manager includes overseeing the implementation of the EMPr during the construction and operational phases, monitoring environmental impacts, record-keeping and updating of the EMPr as and when necessary. The EHS Manager is also responsible for monitoring compliance with the conditions of the Environmental Authorisation that may be issued to IDCNKE.

The lead contractor and sub-contractors may have their own Environmental Officers, or designate Environmental Officer functions to certain personnel.

During construction, the EHS Manager will be responsible for the following:

- Meeting on site with the Construction Manager prior to the commencement of construction activities to confirm the construction procedure and designated activity zones.
- Daily or weekly monitoring of site activities during construction to ensure adherence to the specifications contained in the EMPr and Environmental Authorisation (should such authorisation be granted by GDARD), using a monitoring checklist that is to be prepared at the start of the construction phase.
- Preparation of the monitoring report based on the daily or weekly site visit.
- Reporting of any non-conformances within 48 hours of identification of such non-conformance to the relevant agents.
- Conducting an environmental inspection on completion of the construction period and 'signing off' the construction process with the Construction Manager.

During operation, the EHS Manager will be responsible for:

- Overseeing the implementation of the EMPr and monitoring programmes for the operation phase.
- Reviewing the findings of the monitoring and highlight concerns to management where necessary.
- Ensuring compliance with the Environmental Authorisation conditions.
- Ensuring that the necessary environmental monitoring takes place as specified in the EMPr.
- Updating the EMPr and ensuring that records are kept of all monitoring activities and results.

During decommissioning, the EHS Manager will be responsible for:

- Overseeing the implementation of the EMPr for the decommissioning phase; and
- Conducting an environmental inspection on completion of decommissioning and 'signing off' the site rehabilitation process.

At the time of preparing this EMPr, the EHS Manager appointment is still to be made by the applicant. The appointment of the EHS Officer is dependent upon the project proceeding to the construction phase.

Construction Manager

The construction manager will be responsible for the following:

- Overall construction programme, project delivery and quality control for the construction of the facility.
- Overseeing compliance with the Health, Safety and Environmental Responsibilities specific to the project construction.

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- Promoting total job safety and environmental awareness by employees, contractors and sub-contractors and stress to all employees and contractors and sub-contractors the importance that the project proponent attaches to safety and the environment.
- Ensuring that each subcontractor employs an Environmental Officer (or have a designated Environmental Officer function) to monitor and report on the daily activities on-site during the construction period.
- Ensuring that safe, environmentally acceptable working methods and practices are implemented and that sufficient plant and equipment is made available, is properly operated and maintained in order to facilitate proper access and enable any operation to be carried out safely.
- Meeting on site with the EHS Manager prior to the commencement of construction activities to confirm the construction procedure and designated activity zones.
- Ensuring that all appointed contractors and sub-contractors are aware of this EMPr and their responsibilities in relation to the programme.
- Ensuring that all appointed contractors and sub-contractors repair, at their own cost, any environmental damage as a result of a contravention of the specifications contained in the EMPr, to the satisfaction of the EHS Manager.

At the time of preparing this Draft EMPr, a construction manager has not been appointed and appointment will depend on the project receiving authorisation and proceeding to the construction phase.

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5 ENVIRONMENTAL MANAGEMENT PLAN

As part of environmental management and enhancement, an identification and description of impact management objectives must be developed, inclusive of the proposed methods and effective management and mitigation measures required during the design, construction and operational phases of the proposed chicken layer facility. The table below lists potential impacts and mitigation measures recommended for the proposed IDCNKE facility development at the different phases.

Table 5-1: Impact management plan for the proposed IDCNKE chicken layer facility expansion

Impact Description	Environmental Objective	Management/Mitigation Measures	Monitoring Compliance & Reporting	Monitoring Frequency	Responsibility
Design and Planning Phase					
1. Loss of vegetation and faunal habitat as a result of poor planning and design.	To prevent loss of vegetation on site, specifically in high sensitive areas.	<ul style="list-style-type: none"> • Development planning must ensure loss of vegetation and disturbance is restricted to the recommended expansion site layout. Activities should be restricted to the modified <i>Themeda eragrostis</i> grassland on the site. • Clearly demarcate or fence in the construction site. • Development must be planned for areas that are already transformed. • Identify and mark indigenous trees on the ground. Those that are small and cannot be avoided should be transplanted elsewhere on site. • No development or related activities should be planned for within the moist grassland south of the site without authorization from the Department of Water and Sanitation. • No access routes must be planned for in the moist grassland. • Flora or fauna shall not be removed, damaged or disturbed, except to the extent required for the construction works. 	<ul style="list-style-type: none"> • IDCNKE Management to ensure development layout adheres to the proposed mitigation measures of this EMPr 	During the design phase	Management

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Impact Description	Environmental Objective	Management/Mitigation Measures	Monitoring Compliance & Reporting	Monitoring Frequency	Responsibility
Design and Planning Phase					
2. The introduction and spread of alien invasive species.	To manage and prevent the spread of alien invasive vegetation.	<ul style="list-style-type: none"> • Regulate / limit access by potential vectors of alien plants. • Alien invasive species identified on site should be removed prior to construction. • Manual or mechanical removal should be done as opposed to chemical removal. • Carefully regulate / limit access by vehicles and materials to the construction site. Demarcate or fence in the construction area. • By law, remove and dispose of Category 1b alien species on site. All Category 2 species that remain on site will require a permit. • Prohibit the introduction of domestic animals such as dogs and cats. 	<ul style="list-style-type: none"> • IDCNKE management to implement the mitigation measures proposed in this EMPr. 	Ongoing	Management ECO/ Construction manager
3. Loss of wetlands.	To avoid impacts on the wetland area.	<ul style="list-style-type: none"> • Development planning to re-align area set aside for the expansion to avoid the wetland and associated wetland buffer, as per the specialists' recommendation. • Re-align the proposed expansion in a north-easterly direction as opposed to the southerly direction proposed. • No construction should be planned within the sensitive environment (wetlands). • A storm water management plan must be developed prior to construction. 	<ul style="list-style-type: none"> • IDCNKE Management to ensure development layout verifies the proposed mitigation measures of this EMPr. 	During the design phase	Management
4. Impact on water quality (surface and ground water) and downstream aquatic ecology from ineffective containment of the chicken facility's wastewater and other waste and hazardous material.	To prevent deterioration of water quality and downstream aquatic ecology, and ensure	<ul style="list-style-type: none"> • It is essential to ensure that the chicken houses and associated drains and waste storage facilities are designed and lined with impermeable substances (e.g. concrete) in accordance with advice from suitably qualified agricultural experts and international best practice norms. The 	<ul style="list-style-type: none"> • IDCNKE Management to ensure development layout and plan verifies the proposed mitigation 	During design and planning	Management ECO

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Impact Description	Environmental Objective	Management/Mitigation Measures	Monitoring Compliance & Reporting	Monitoring Frequency	Responsibility
Design and Planning Phase					
	effective design of waste and wastewater management system.	<p>primary aim should be to avoid contamination of the drainage feature.</p> <ul style="list-style-type: none"> • Incorporate effective storm water management design aspects into the infrastructure plan so as to prevent impacts of flooding. • Incorporate effective storm water management design aspects into the infrastructure plan so as to prevent impacts of flooding. • 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, signposted room for the storage of potentially hazardous substances such as herbicides, pesticides dips and medications. All hazardous waste should be disposed of at an appropriate licensed facility for this. 	measures of this EMPr.		
5. Impact of the development if a detailed stormwater management plan is not compiled and effectively implemented.	To prevent the impact of uncontrolled stormwater run-off as a result of developed areas.	<ul style="list-style-type: none"> • Planning should include a detailed stormwater management plan outlining appropriate measures to address runoff from the developed area during the construction and operation of the chicken facility. 	<ul style="list-style-type: none"> • IDCNKE to ensure that this is taken into consideration during the planning and design of the facility. 	During design and planning	Management Designing engineer

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Impact Description	Environmental Objective	Management/Mitigation Measures	Monitoring Compliance & Reporting	Monitoring Frequency	Responsibility
Construction Phase					
6. Potential of soil erosion due to exposed soil.	To prevent soil erosion and consequential sedimentation of watercourses in close proximity.	<ul style="list-style-type: none"> • Limit vehicles, people and materials to the construction site. • Construction to preferably be undertaken in winter, when there is minimal risk of erosion • Revegetate denuded area with indigenous flora as soon as possible. • Implement erosion protection measures on site to reduce erosion and sedimentation of downstream Swartspruit River. Measures could include bunding around soil stockpiles, and vegetation of areas not to be developed. • Take action before erosion develops to a large scale. • Limit vegetation removal to only the construction area, avoid disturbance to other areas. 	<ul style="list-style-type: none"> • Ensure that regular site inspections are carried out throughout the construction phase. • ECO to verify that mitigation measure proposed in this EMPr are implemented and submit a report thereof on a monthly basis. 	Daily throughout construction phase.	Management / Contractor ECO
7. Loss of vegetation.	To protect indigenous vegetation.	<ul style="list-style-type: none"> • Vegetation should not be removed, damaged or disturbed, except to the extent required for the construction works. . • Clearly demarcate or fence in the construction site. Relocate specimens that are situated in the construction footprint, according to the advice of an appropriate specialist. • Development must be planned for areas that are already transformed. 	<ul style="list-style-type: none"> • To be monitored during regular schedule site inspections. 	Ongoing throughout construction phase.	Management/Contractor

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Impact Description	Environmental Objective	Management/Mitigation Measures	Monitoring Compliance & Reporting	Monitoring Frequency	Responsibility
Construction Phase					
8. Loss and displacement of fauna on site, destruction of burrowing/fossorial fauna (Giant Bullfrog), and hindrance/trapping/killing of fauna	To protect fauna.	<ul style="list-style-type: none"> • All contractors on site must undergo environmental awareness training which must include the prohibition of any harm or hindrance to any fauna species. • After construction consider planting local indigenous bushes and trees around the site to improve habitat for fauna and attract indigenous fauna to the site. Consider establishing bat or bird boxes around the fence perimeter to provide roosting/nesting habitats. • Excavations left open during construction should be checked daily for animals that may have fallen in. • Should any fauna be accidentally trapped within the development area, activities must cease to provide the animal opportunity to escape or specialists contracted to safely remove the animals from site. • Trapping, poisoning and/or shooting of animals is strictly forbidden. • Contracts with contractors must specify actions that will be taken against contractors who do not conduct activities in line with the EMPr. 	<ul style="list-style-type: none"> • ECO to verify that mitigation measure proposed in this EMPr are implemented and submit a report thereof on a monthly basis. • To be monitored during regular schedule site inspections. 	Prior to construction. Ongoing throughout construction phase.	ECO Management Contractor / EHS Officer
9. Degradation of ambient air quality as a result of dust and other emissions generated.	To minimise the impact on the ambient air quality as a result of construction activities and	<ul style="list-style-type: none"> • The contractor shall take all reasonable measures to minimise the generation of dust as a result of the construction activities. • Where possible, soil stockpiles shall be located in sheltered areas where they are not exposed to the erosive effects of the wind. 	<ul style="list-style-type: none"> • Air emissions to be monitored throughout the construction phase. • Ensure regular maintenance of construction 	Daily during the construction phase.	Contractor Management

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Impact Description	Environmental Objective	Management/Mitigation Measures	Monitoring Compliance & Reporting	Monitoring Frequency	Responsibility
Construction Phase					
	increased traffic to and from the site.	<ul style="list-style-type: none"> Exposed areas should be re-vegetated with locally indigenous flora. If the soil is compacted, it should be ripped, and fertilised. Implement effective and environmentally-friendly dust control measures, such as mulching or periodic wetting of the entrance road. A complaints register should be kept on site, with records of complaints received and manner in which the complaint was addressed. 	vehicles to allow for 'cleaner' emissions from these vehicles, including equipment maintenance.		
10. Noise disturbances as a result of construction activities.	To minimise noise generation on site.	<ul style="list-style-type: none"> Construction activities should be confined to the hours 08:00 to 17:00 Mondays to Fridays, and between 08:00 and 13:00 on Saturdays. No construction activities should be permitted on Sundays or public holidays. The SANS standards should be adhered to. No sound amplification equipment to be used on site, except in emergency situations Limit vehicles travelling to and from the site to minimise traffic noise to the surrounding environment. A complaints register should be kept on site, with records of complaints received and manner in which the complaint was addressed. 	<ul style="list-style-type: none"> ECO to ensure compliance and reporting thereof. 	Ongoing throughout construction phase.	Contractor Management ECO
11. Impacts on wetlands.	Protection of wetland area.	<ul style="list-style-type: none"> Construction to take place in the re-aligned area set aside for the expansion to avoid the wetland and associated wetland buffer, as per the specialists' recommendation. No 	<ul style="list-style-type: none"> IDCNKE Management to ensure development occurs as per the 	Ongoing throughout construction phase.	Management Contractor ECO

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Impact Description	Environmental Objective	Management/Mitigation Measures	Monitoring Compliance & Reporting	Monitoring Frequency	Responsibility
Construction Phase					
		construction should be planned within the sensitive environment (wetlands).	recommended layout plan.		
12. The introduction and spread of alien invasive species.	To prevent the spreading and increase of alien invasive species.	<ul style="list-style-type: none"> • Ensure that alien invasive species are identified on site. • Regulate / limit access by potential vectors of alien plants. • Alien invasive species identified on site should be removed prior to construction. • Manual or mechanical removal should be done as opposed to chemical removal. • Carefully regulate / limit access by vehicles and materials to the construction site. Demarcate or fence in the construction area. • By law, remove and dispose of Category 1b alien species on site. All Category 2 species that remain on site require a permit. • Prohibit the introduction of domestic animals such as dogs and cats. 	<ul style="list-style-type: none"> • IDCNKE Management to verify implementation of the mitigation measures proposed in this EMPr. 	All phases.	Management Contractor /Construction crew ECO
13. Soil and surface water pollution as a result of spillage, improper handling, storage, mixing or disposal of cement and concrete.	To prevent deterioration of water quality and downstream aquatic ecology.	<ul style="list-style-type: none"> • Cement mixing and batching are to be undertaken on a lined, impermeable surface. No cement mixing is to occur on bare soil. The batching area should be bunded to avoid contamination of surface water runoff. No mixing of cement should be allowed outside the designated areas. • The cement / concrete batching works must be kept neat and clean at all times. • All runoff from the batching area must be strictly controlled and cement-contaminated water must be collected, stored and disposed of at an approved site. 	<ul style="list-style-type: none"> • IDCNKE Management to ensure development layout and plan verifies the proposed mitigation measures of this EMPr. 	During design and planning. Ongoing throughout construction phase.	Management Contractor/construction crew

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Basic Assessment for IDCNKE Holdings' proposed expansion of a chicken layer facility and vegetable production on Portion 348 of Kameeldrift Farm 313, Pretoria West, Gauteng.

Impact Description	Environmental Objective	Management/Mitigation Measures	Monitoring Compliance & Reporting	Monitoring Frequency	Responsibility
Construction Phase					
		<ul style="list-style-type: none"> Establish appropriate emergency procedures for accidental contamination of the surroundings. 			
14. Diversion and impendance of surface water flows and increased potential for erosion.	To prevent diversion of surface water flows and erosion.	<ul style="list-style-type: none"> Stormwater Management Measures should be implemented. Stormwater and any run-off generated by the hard surfaces should be discharged into retention swales or berms. Perform periodic inspections and maintenance of soil erosion measures and stormwater control structures. 	<ul style="list-style-type: none"> Check compliance with specified conditions of the Stormwater Management Plan and Method Statement. 	Weekly	Management ECO
15. Contamination of stormwater as result of chemicals, cement, waste etc.	To prevent stormwater contamination which could subsequently impact natural areas and freshwater ecosystems.	<ul style="list-style-type: none"> Stormwater must be diverted around areas of cement mixing, chemical/fuel handling and storage and waste containment areas. Provide secure storage for fuel, oil, chemicals and other waste materials to prevent contamination of stormwater runoff. Fuels and chemicals (i.e. any hazardous materials and dangerous goods) used during the construction phase must be clearly marked and stored safely on site and in bunded areas. Littering and contamination of water resources during construction must be prevented by effective construction camp management. 	<ul style="list-style-type: none"> Check compliance with specified conditions of the Stormwater Management Plan and Method Statement. 	Weekly	ECO
16. Impacts associated with ablution facilities	Maintain hygienic ablution facilities.	<ul style="list-style-type: none"> Temporary sanitation facilities (e.g. chemical toilets) are to be provided for use by employees on the site for the duration of the construction activities. These facilities shall be maintained in a hygienic state and serviced regularly. 	<ul style="list-style-type: none"> IDCNKE Management to ensure development layout and plan verifies the proposed mitigation 	Ongoing throughout construction phase.	Management Contractor

SECTION H: APPENDICES

Basic Assessment for IDCNKE Holdings' proposed expansion of a chicken layer facility and vegetable production on Portion 348 of Kameeldrift Farm 313, Pretoria West, Gauteng.

Impact Description	Environmental Objective	Management/Mitigation Measures	Monitoring Compliance & Reporting	Monitoring Frequency	Responsibility
Construction Phase					
		<ul style="list-style-type: none"> All temporary/ portable toilets shall be secured to the ground to prevent them from falling over due to wind. Discharge of waste from toilets into the environment and burial of waste is strictly prohibited. 	measures of this EMPr.		
17. Increased use of groundwater during construction activities.	To prevent the over abstraction of groundwater.	<ul style="list-style-type: none"> Practice water saving strategies such as re-use and raise awareness on water awareness. Regular inspection of use should be conducted, including regular inspection of the borehole, water tanks, for any leaks. 	<ul style="list-style-type: none"> To be monitored during scheduled site inspections. 	Ongoing throughout construction phase.	ECO Contractor
18. Generation of construction waste.	Promotive effective waste management.	<ul style="list-style-type: none"> All solid waste generated during construction shall be disposed of off-site at a licenced landfill site. The site shall be kept neat and clean at all times. Littering is prohibited. No on-site burying or dumping of any waste materials, vegetation, litter or refuse shall occur. Bins should be emptied regularly, at least once a week. 	<ul style="list-style-type: none"> ECO to develop a waste management plan and ensure implementation and adherence thereof.. 	Ongoing throughout construction phase.	Management Contractor ECO
19. Potential injuries to employees and visitors to the site.	Promote safety and security of the site, employees and the surrounding public.	<ul style="list-style-type: none"> Personal Protective Equipment (PPE) must be provided to all employees to prevent personal injury during construction activities. Clear sign boards should be erected at the entrance to the site to indicate that a construction site is being entered and that certain safety precautions should be followed. Notification signs must be posted around the site warning residents and visitors about the hazards in and around the construction site. 	<ul style="list-style-type: none"> To be monitored daily. 	Ongoing throughout the construction activities.	Contractor

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Basic Assessment for IDCNKE Holdings' proposed expansion of a chicken layer facility and vegetable production on Portion 348 of Kameeldrift Farm 313, Pretoria West, Gauteng.

Impact Description	Environmental Objective	Management/Mitigation Measures	Monitoring Compliance & Reporting	Monitoring Frequency	Responsibility
Construction Phase					
		<ul style="list-style-type: none"> Strict site access control must be maintained at the construction site. 			
20. Construction activities may disturb or destroy sites or features of heritage importance.	To protect heritage resources.	<ul style="list-style-type: none"> The site does not have any heritage resources, however should any archaeological features be discovered on site then a qualified Heritage specialist and SAHRA will be notified. 	<ul style="list-style-type: none"> Report any features of heritage significance. 	During construction phase	Management ECO
21. Local employment and skills development.	Increase employment opportunities.	<ul style="list-style-type: none"> Contractors employed for the proposed Chicken layer facility development should be sourced locally. Ensure the use of local companies for the purchasing of infrastructure components and construction. 	<ul style="list-style-type: none"> IDCNKE Management to ensure employment plan verifies the proposed mitigation measures of this EMPr. 	Once-off during planning.	Management Contractor

Impact Description	Environmental Objective	Management/Mitigation Measures	Monitoring Compliance & Reporting	Monitoring Frequency	Responsibility
Operational Phase					
22. Impact on water quality (surface and ground water) and downstream aquatic ecology from ineffective containment of the facility's wastewater.	To minimise potential contamination of water resources.	<ul style="list-style-type: none"> Potential pollutants of any kind and in any form must be kept, stored and used in such a manner that any escape can be contained and the water table not endangered. Chicken waste must be stored in an enclosed or impermeable waste storage facility. Divert dirty water (water used to clean the facility and from the disinfection area) to a septic tank on site and nowhere else. This water must not be allowed to seep into the soil or run towards the watercourse south of the site. 	<ul style="list-style-type: none"> ECO to ensure compliance to proposed mitigation measures and conduct regular inspection and provide reports thereof. 	Weekly during operation.	ECO Management EHS Officer

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Basic Assessment for IDCNKE Holdings' proposed expansion of a chicken layer facility and vegetable production on Portion 348 of Kameeldrift Farm 313, Pretoria West, Gauteng.

Impact Description	Environmental Objective	Management/Mitigation Measures	Monitoring Compliance & Reporting	Monitoring Frequency	Responsibility
Operational Phase					
		<ul style="list-style-type: none"> Medical waste must be stored in suitable containers and disposed of accordingly. The site manager must notify the ECO immediately of any pollution incidents on site. 			
23. Impact of waste generated on site during the operational phase of the facility.	To prevent pollution and to maintain the aesthetic of the site and surrounding area.	<ul style="list-style-type: none"> The site must be kept neat and clean at all times. Littering is prohibited. No on-site burying or dumping of any waste materials, litter or refuse shall occur. Waste must be stored in designated areas for storage. Clearly demarcate appropriate storage for the different types of waste. Ensure regular removal of waste on site, at least once a week, to prevent attraction of pests and disposal of waste in a permitted disposal site 	<ul style="list-style-type: none"> ECO to develop a waste management plan and ensure implementation and adherence thereof. Regular site inspection to ensure that the proposed mitigation measures are being implemented. Produce monthly reports to show compliance. 	Ongoing during operation.	ECO Management
24. Impact on ambient air quality from the facility odours.	To minimise potential odours from chicken facility that may cause a nuisance to the surrounding area.	<ul style="list-style-type: none"> Ensure that the housing units and cages are cleaned regularly to avoid foul smell that can impact on neighbours. Implement best practices in terms of waste storage and practice good housekeeping of the housing units. Avoiding unnecessary build-up of waste in the housing units and waste storage facilities. Keep chicken carcasses in a lined and sealed container and these containers must be removed from site daily. 	<ul style="list-style-type: none"> A complaints register must be kept on the farm to record any odour complaints that may arise. Ensure that regular site inspections are conducted as well as daily inspection and recovery of chicken mortalities. 	Daily site inspections during the operational life of the facility.	Management EHS Officer

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Basic Assessment for IDCNKE Holdings' proposed expansion of a chicken layer facility and vegetable production on Portion 348 of Kameeldrift Farm 313, Pretoria West, Gauteng.

Impact Description	Environmental Objective	Management/Mitigation Measures	Monitoring Compliance & Reporting	Monitoring Frequency	Responsibility
Operational Phase					
		<ul style="list-style-type: none"> • Ensure sufficient ventilation of the housing units. • Subject the chicken solid waste to the aerobic process to reduce its odour. 			
25. Impact of dust and vehicle emissions generated during use of the gravel road when transporting chickens or eggs during operation.	To minimise the impact of transport activities on the air quality and surrounds.	<ul style="list-style-type: none"> • Vehicles transporting to and from the farm must keep at minimum speed to reduce dust generation. • Vehicles that are used must be roadworthy and regularly inspected in order to prevent unwanted emissions. • Traffic dust will be minimal considering that the facility will make use of one vehicle thus no significant increase in traffic. 	<ul style="list-style-type: none"> • Monitor traffic control measures and report non-compliance. • A complaints register must be kept on the farm, in which any dust complaints from the public must be logged. 	During the operation phase.	EHS Officer Management
26. Noise disturbances due to operational activities and chickens.	To minimise potential noise disturbance.	<ul style="list-style-type: none"> • Activities that will generate the most noise should be limited to during the day in order to minimise disturbance to the neighbours. • The SANS standards must be adhered to. • No sound amplification equipment to be used on site, except in emergency situations • Limit vehicles travelling to and from the site to minimise traffic noise to the surrounding environment. • A complaints register should be kept on site, with records of complaints received and manner in which the complaint was addressed. 	<ul style="list-style-type: none"> • ECO to ensure implementation of the mitigation measures, compliance and reporting thereof. • A complaints register must be kept on the farm, in which any noise complaints from the public must be logged. 	Daily during the operation phase.	Construction Crew, Management ECO

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Basic Assessment for IDCNKE Holdings' proposed expansion of a chicken layer facility and vegetable production on Portion 348 of Kameeldrift Farm 313, Pretoria West, Gauteng.

Impact Description	Environmental Objective	Management/Mitigation Measures	Monitoring Compliance & Reporting	Monitoring Frequency	Responsibility
Operational Phase					
		<ul style="list-style-type: none"> Excessive noise from the chickens can be caused when the chickens are disturbed, and as such unnecessary disturbance of the chickens should be avoided. 			
27. Impact on terrestrial and aquatic systems due to accidental spills of hazardous substances.	To prevent ground and water pollution from hazardous chemicals.	<ul style="list-style-type: none"> Appropriate storage of hazardous material such as diesel must be implemented. The ground where refuelling takes place must be protected and refuelling to be handled in a cautious manner. Spills of diesel and other hazardous material must be cleaned immediately using bioremediation products. Ensure that any accidental spills do not move beyond the designated storage area. Ensure appropriate and safe disposal of hazardous chemicals. Ensure training of staff to handle hazardous chemicals. 	<ul style="list-style-type: none"> EHS to create safety awareness. ECO to verify that mitigation measure proposed in this EMPr are implemented and submit a report thereof on a monthly basis. 	Once prior to operation. Daily during the operation phase.	EHS Officer Management
28. Impacts associated with ablution facilities	Maintain hygienic ablution facilities.	<ul style="list-style-type: none"> Sanitation facilities are to be provided for use by employees on the site for the duration of the operational activities. These facilities shall be maintained in a hygienic state and serviced regularly. Discharge of waste from toilets into the environment and burial of waste is strictly prohibited. 	<ul style="list-style-type: none"> IDCNKE Management to ensure development layout and plan verifies the proposed mitigation measures of this EMPr. 	Ongoing throughout operational phase.	Management Contractor

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Impact Description	Environmental Objective	Management/Mitigation Measures	Monitoring Compliance & Reporting	Monitoring Frequency	Responsibility
Operational Phase					
29. Impact on Biosecurity and transmission of diseases.	To prevent the attraction of pests and animals carrying infectious diseases.	<ul style="list-style-type: none"> • Monitor and control diseases on a daily basis. • Regularly clean the facility to minimise influx of pests. • Apply a dynamic biosecurity measure that includes a vaccination programme. • Chicken mortalities must be identified and removed immediately from the facility. • Training of workers to effectively handle sick and dead animals. • Restrict access to the facility and use disinfectant sprays on vehicles and personnel entering the site. • Feeding areas must be regularly cleaned to prevent the attraction of flies. • Facility must have security fencing around it to prevent access of other animals such as dogs. • Inform neighbours when serious problems arise at the proposed development and the mitigation measures thereof. 	<ul style="list-style-type: none"> • Regular site inspections must be conducted and monitoring of adherence to EMPr measures must be conducted. 	Daily during the operation phase.	Management ECO
30. Impact on sensitive areas such as the wetland and sensitive flora.	To minimise the impact on sensitive sites.	<ul style="list-style-type: none"> • Limit human activity on areas that are close to sensitive sites. • The facility's activities must be undertaken away from these areas and associated buffers. 	<ul style="list-style-type: none"> • Regular monitoring and site inspections to be conducted and ensure adherence to this EMPr. 	Daily during the operation phase.	Management ECO

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Basic Assessment for IDCNKE Holdings' proposed expansion of a chicken layer facility and vegetable production on Portion 348 of Kameeldrift Farm 313, Pretoria West, Gauteng.

Impact Description	Environmental Objective	Management/Mitigation Measures	Monitoring Compliance & Reporting	Monitoring Frequency	Responsibility
Operational Phase					
31. Stormwater discharge into the surrounding environment during operations.	<p>To minimise the contamination of stormwater which could subsequently impact the surrounding ecosystems.</p> <p>To protect soil resources and prevent soil erosion.</p>	<ul style="list-style-type: none"> Stormwater measures should be inspected regularly to ensure proper functioning of stormwater structures. An operational phase Stormwater Management Plan should be designed and implemented, with a view to prevent the passage of concentrated flows from hardened surfaces and onto natural areas. 	<ul style="list-style-type: none"> Ensure the compilation of a Stormwater Management Plan for the operational phase. Inspect and verify if a Stormwater Management Plan has been compiled prior to the commencement of the operational phase. Undertake regular monitoring and inspections, and record non-compliance. 	<p>Once-off prior to the commencement of the operational phase.</p> <p>Weekly or Monthly.</p>	Management
32. Impact on natural vegetation during operational activities.	To minimise the disturbance and destruction of natural vegetation.	<ul style="list-style-type: none"> Activities should be restricted to already transformed areas. Existing site entrance should be used to reduce impact on natural vegetation. 	<ul style="list-style-type: none"> Site monitoring should be conducted daily and report any non-compliance. 	Daily during the operation phase.	Management ECO
33. The introduction and spread of alien invasive species as a result of increased activity on site and vehicles being vectors.	To prevent the spreading and increase of alien invasive species.	<ul style="list-style-type: none"> Ensure that alien invasive species are identified on site. Regulate / limit access by potential vectors of alien plants. 	<ul style="list-style-type: none"> IDCNKE Management to verify implementation of the mitigation measures proposed in this EMPr. 	Daily	Management

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Basic Assessment for IDCNKE Holdings' proposed expansion of a chicken layer facility and vegetable production on Portion 348 of Kameeldrift Farm 313, Pretoria West, Gauteng.

Impact Description	Environmental Objective	Management/Mitigation Measures	Monitoring Compliance & Reporting	Monitoring Frequency	Responsibility
Operational Phase					
		<ul style="list-style-type: none"> Manual or mechanical removal of alien invasives should be done as opposed to chemical removal. Carefully regulate / limit access by vehicles and materials to the site. By law, remove and dispose of Category 1b alien species on site. All Category 2 species that remain on site require a permit. Prohibit the introduction of domestic animals such as dogs and cats. 			
34. Potential for workers' safety being compromised due to handling hazardous material and biomedical substances.	To enforce and ensure safety.	<ul style="list-style-type: none"> Worker to wear Personal Protective Equipment (PPE) during the undertaking of activities. Hazardous material must be correctly labelled and handled in a safe manner. 	<ul style="list-style-type: none"> To be monitored regularly during scheduled site inspections. 	Ongoing	EHS Management
35. Potential impact on heritage resources.	To protect heritage resources.	<ul style="list-style-type: none"> The site does not have any heritage resources, however should any archaeological features be discovered on site then a qualified Heritage specialist and SAHRA will be notified. 	<ul style="list-style-type: none"> Report any features of heritage significance. 	N/A	Management ECO
36. Impact on electricity and groundwater due to increased use during operation.	To prevent overuse of resources.	<ul style="list-style-type: none"> Create awareness on the importance of these resources and implement energy and water saving mechanisms. Prevent wasting of water such as leaving running taps. Regular inspection of use should be conducted, including regular inspection of the borehole, water tanks, for any leaks. Use energy efficient lights, such as compact fluorescent lights, for all lighting other than security purposes. 	<ul style="list-style-type: none"> IDCNKE Management to verify implementation of the mitigation measures proposed in this EMPr. Leaking water storage structures must be reported immediately. 	Daily during operation.	Management

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Impact Description	Environmental Objective	Management/Mitigation Measures	Monitoring Compliance & Reporting	Monitoring Frequency	Responsibility
Operational Phase					
37. Potential for fires to occur.	To prevent fires occurring on site.	<ul style="list-style-type: none"> • Create safe storage on the premises for flammable materials. If artificial burning is considered necessary, establish and implement a fire management plan with emergency fire procedures. • Maintain an effective fire break between the development area and the surrounding natural environment. • Educate workers about the plan and emergency procedures with regular training and notices. • Any cooking on site must be done within the designated eating area on well-maintained gas cookers with fire extinguishers present. • IDCNKE must take all reasonable and active steps to avoid increasing the risk of fire as a result of activities on site. 	<ul style="list-style-type: none"> • Ensure effective fire management plans and equipment to deal with fire incidence is readily available at all times on site. 	Daily during operation.	Management ECO EHS Officer
38. Potential impact of traffic.		<ul style="list-style-type: none"> • Limit the amount of vehicles using this route. • Traffic impact will be minimal considering that the facility will make use of one vehicle thus no significant increase in traffic. 	<ul style="list-style-type: none"> • Ensure adherence to speed limit and other traffic regulations. 	Daily during operation.	Management ECO
39. Security and safety impacts.		<ul style="list-style-type: none"> • IDCNKE must take precautionary measures to minimise crime incidents in the area that are associated with the proposed development. • The applicant will also hire the services of a security guard to monitor the proposed facility. • Security should be vigilant as to who gains access to the site. • Chickens to be housed in an enclosed safe area to prevent incidents of theft. 	<ul style="list-style-type: none"> • IDCNKE Management to verify implementation of the mitigation measures proposed in this EMPr. 	Ongoing	Management/ Officer EHS

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Basic Assessment for IDCNKE Holdings' proposed expansion of a chicken layer facility and vegetable production on Portion 348 of Kameeldrift Farm 313, Pretoria West, Gauteng.

Note from the CSIR: Decommissioning and/or closure phase is not expected to occur for the proposed chicken layer facility. Should there be plans to close down the facility; a closure plan will be submitted to the competent authority for approval.

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Basic Assessment for IDCNKE Holdings' proposed expansion of a chicken layer facility and vegetable production on Portion 348 of Kameeldrift Farm 313, Pretoria West, Gauteng.

6 ENVIRONMENTAL AWARENESS AND TRAINING PLAN

IDCNKE Management has to appoint an independent ECO whose duty is to also implement an effective environmental awareness plan aimed to educate workers and contractors in terms of the biodiversity on site, environmental risks associated with the proposed development and land management of the site. Training and/or awareness should be raised and effectively communicated prior to the commencement of the construction phase. Training sessions should incorporate the management plans addressed in this EMPr as well as any new information and documentation provided by the ECO, as well as that of the Environmental Health & Safety Officer. The ECO would be the most suitable person to conduct these training sessions, identifying sensitive environments as well as all the risks and impacts associated with the chicken facility, and the methods in which to deal with the impacts in order to avoid environmental degradation. Training sessions can be monitored by providing an attendance register indicating the workers that received training as well as evidence of the training and/or awareness received. These sessions would also need to be carried out throughout the operational phase of the facility, at least once a year, or as new information becomes available.

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Basic Assessment for IDCNKE Holdings' proposed expansion of a chicken layer facility and vegetable production on Portion 348 of Kameeldrift Farm 313, Pretoria West, Gauteng.

BASIC ASSESSMENT REPORT

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Basic Assessment for the Legae La Tlhago (Pty) Ltd's proposed expansion of a pig production enterprise on Plot 684 Winterveldt Agricultural Holdings in Winterveldt, Pretoria.

Annexure I.1: Minnelise Levendal (Project Reviewer)



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Fax: +27 21 888 2693
Email: mlevendal@csir.co.za

CURRICULUM VITAE OF MINNELISE LEVENDAL – PROJECT LEADER

Name of firm	CSIR
Name of staff	Minnelise Levendal
Profession	Environmental Assessment and Management
Position in firm	Project Manager
Years' experience	9 years
Nationality	South African
Languages	Afrikaans and English

CONTACT DETAILS:

Postal Address: P O Box 320, Stellenbosch, 7599
Telephone Number: 021-888 2495/2661
Cell: 0833098159
Fax: 0865051341
e-mail: mlevendal@csir.co.za

BIOSKETCH:

Minnelise joined the CSIR Environmental Management Services group (EMS) in 2008. She is focussing primarily on managing Environmental Impact Assessments (EIAs), Basic Assessments (BAs) and Environmental Screening studies for renewable energy projects including wind and solar projects. These include an EIA for a wind energy facility near Swellendam, Western Cape South Africa for BioTherm (Authorisation granted in September 2011) and a similar EIA for BioTherm in Laingsburg, Western Cape (in progress). She is also managing two wind farm EIAs and a solar Photovoltaic BA for WKN-Windcurrent SA in the Eastern Cape. Minnelise was the project manager for the Basic Assessment for the erection of ten wind monitoring masts at different sites in South Africa as part of the national wind atlas project of the Department of Energy in 2009 and 2010..She was also a member of the Project Implementation Team who managed the drafting of South Africa's Second National Communication under the United Nations Framework Convention on Climate Change. The national Department of Environmental Affairs appointed the South African Botanical Institute (SANBI) to undertake this project. SANBI subsequently appointed the CSIR to manage this project.

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Basic Assessment for the Legae La Tlhago (Pty) Ltd's proposed expansion of a pig production enterprise on Plot 684 Winterveldt Agricultural Holdings in Winterveldt, Pretoria.

EDUCATION:

- | | | |
|--------------------------|--------------------------------|------|
| ▪ M.Sc. (Botany) | Stellenbosch University | 1998 |
| ▪ B.Sc. (Hons.) (Botany) | University of the Western Cape | 1994 |
| ▪ B.Sc. (Education) | University of the Western Cape | 1993 |

MEMBERSHIPS:

- Professional Natural Scientist (Pr.Sci.Nat)
- International Association for Impact Assessment (IAIA), Western Cape (member of their steering committee from 2001-2003)
- IUCN Commission on Education and Communication (CEC); World Conservation Learning Network (WCLN)
- American Association for the Advancement of Science (AAAS)
- Society of Conservation Biology (SCB)

EMPLOYMENT RECORD:

- **1995:** Peninsula Technicon. Lecturer in the Horticulture Department.
- **1996:** University of the Western Cape. Lecturer in the Botany Department.
- **1999:** University of Stellenbosch. Research assistant in the Botany Department (3 months)
- **1999:** Bengurion University (Israel). Research assistant (Working in the Arava valley, Negev – Israel; 2 months). Research undertaken was published (see first publication in publication list)
- **1999-2004:** Assistant Director at the Department of Environmental Affairs and Development Planning (DEA&DP). Work involved assessing Environmental Impact Assessments and Environmental Management Plans; promoting environmental management and sustainable development.
- **2004 to present:** Employed by the CSIR in Stellenbosch:
 - September 2004 – May 2008: Biodiversity and Ecosystems Services Group (NRE)
 - May 2008 to present: Environmental Management Services Group (EMS)

PROJECT EXPERIENCE RECORD:

The following table presents a list of projects undertaken at the CSIR as well as the role played in each project:

Completion Date	Project description	Role	Client
2016-present	EIA for the proposed Platberg Wind Energy Facility near Victoria West in the Northern Cape	Project Manager and EAP	South Africa Mainstream Renewable Power Developments (Pty) Ltd
2016-present	EIA for the proposed Teekloof Wind Energy Facility near Victoria West in the Northern Cape	Project Manager and EAP	South Africa Mainstream Renewable Power Developments (Pty) Ltd
2015-2016	EIA for the Gemsbok Solar Photovoltaic, PV 3 near Kenhardt in the Northern Cape	Project Manager and EAP	Mulilo Renewable Project Developments
2015-2016	EIA for the Gemsbok Solar PV 4 near Kenhardt in the Northern Cape	Project Manager and EAP	Mulilo Renewable Project Developments
2015-2016	EIA for the Gemsbok Solar PV 5 near Kenhardt in the Northern Cape	Project Manager and EAP	Mulilo Renewable Project Developments
2015-2016	EIA for the Gemsbok Solar PV 6 near Kenhardt in the Northern Cape	Project Manager and EAP	Mulilo Renewable Project Developments

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Basic Assessment for the Legae La Tlhago (Pty) Ltd's proposed expansion of a pig production enterprise on Plot 684 Winterveldt Agricultural Holdings in Winterveldt, Pretoria.

Completion Date	Project description	Role	Client
2015-2016	EIA for the Boven Solar PV 2 near Kenhardt in the Northern Cape	Project Manager and EAP	Mulilo Renewable Project Developments
2015-2016	EIA for the Boven Solar PV 3 near Kenhardt in the Northern Cape	Project Manager and EAP	Mulilo Renewable Project Developments
2015-2016	EIA for the Boven Solar PV 4 near Kenhardt in the Northern Cape	Project Manager and EAP	Mulilo Renewable Project Developments
2014-2016	Special Needs and Skills Development Programme	Project Manager	DEA
2010-2011 (EA Granted)	EIA for the proposed Ubuntu wind energy project, Eastern Cape	Project Manager	WKN Windkraft SA
2010-2011 (EA granted)	EIA for the proposed Banna Ba Pifhu wind energy project, Eastern Cape	Project Manager	WKN Windkraft SA
2010-2011 (EA granted)	BA for a powerline for a WEF near Swellendam in the Western Cape	Project Manager	BioTherm Energy (Pty Ltd)
2010-2011 (EA Granted)	EIA for a proposed wind farm near Swellendam in the Western Cape	Project Manager	BioTherm Energy (Pty Ltd)
2010 (EAs granted)	Basic Assessment for the erection of two wind monitoring masts near Swellendam and Bredasdorp in the Western Cape	Project Manager	BioTherm Energy (Pty Ltd)
2010 (complete)	Basic Assessment for the erection of two wind monitoring masts near Jeffrey's Bay in the Eastern Cape	Project Manager	Windcurrent (Pty Ltd)
2009-2010 (EAs granted)	Basic Assessment Process for the proposed erection of 10 wind monitoring masts in SA as part of the national wind atlas project	Project Manager	Department of Energy through SANERI; GEF
2009 (EAs granted)	Basic Assessment Report for a proposed boundary wall at the Port of Port Elizabeth, Eastern Cape	Project Manager	Transnet Ltd
Other Environmental Assessments, Strategies, Biodiversity Management Plans, Frameworks and Reporting tools:			
2013-2014	Development of a National Management Plan and Strategy for Invasive Alien species	Project Manager	DEA
2012-2014	Development of a Biodiversity Management Plan for the African Lion (<i>Panthera leo</i>)	Project Manager	DEA
2010	South Africa's Second National Communication under the United Nations Framework Convention on Climate Change	Project Manager	SANBI
2006-2008	Monitoring and Evaluation of aspects of Biodiversity	Project Leader	Internal project awarded through the Young Researchers Fund
2006	Integrated veldfire management in South Africa. An assessment of current conditions and future approaches.	Co- author	Working on Fire
2004-2005	Biodiversity Strategy and Action Plan Wild Coast, Eastern Cape, SA	Co-author	Wilderness Foundation

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Basic Assessment for the Legae La Tlhago (Pty) Ltd's proposed expansion of a pig production enterprise on Plot 684 Winterveldt Agricultural Holdings in Winterveldt, Pretoria.

Completion Date	Project description	Role	Client
2005	Western Cape State of the Environment Report: Biodiversity section. (Year One).	Co- author and Project Manager	Department of Environmental Affairs and Development Planning

PUBLICATIONS:

Bowie, M. (née Levendal) and Ward, D. (2004). Water status of the mistletoe *Plicosepalus acaciae* parasitic on isolated Negev Desert populations of *Acacia raddiana* differing in level of mortality. *Journal of Arid Environments* 56: 487-508.

Wand, S.J.E., Esler, K.J. and **Bowie, M.R.** (2001). Seasonal photosynthetic temperature responses and changes in ^{13}C under varying temperature regimes in leaf-succulent and drought-deciduous shrubs from the Succulent Karoo, South Africa. *South African Journal of Botany* 67:235-243.

Bowie, M.R., Wand, S.J.E. and Esler, K.J. (2000). Seasonal gas exchange responses under three different temperature treatments in a leaf-succulent and a drought-deciduous shrub from the Succulent Karoo. *South African Journal of Botany* 66:118-123.

LANGUAGES

<i>Language</i>	<i>Speaking</i>	<i>Reading</i>	<i>Writing</i>
<i>English</i>	<i>Excellent</i>	<i>Excellent</i>	<i>Excellent</i>
<i>Afrikaans</i>	<i>Excellent</i>	<i>Excellent</i>	<i>Excellent</i>

Minnelise Levendal



11 May 2018

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Basic Assessment for the Legae La Tlhago (Pty) Ltd's proposed expansion of a pig production enterprise on Plot 684 Winterveldt Agricultural Holdings in Winterveldt, Pretoria.

Annexure I.2: Babalwa Mqokeli (Project Manager)



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South Africa

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CURRICULUM VITAE OF BABALWA MQOKELI – PROJECT MANAGER

Current Profession Environmental Assessment Practitioner
Organisation Council for Scientific and Industrial Research
Years' experience 2 years

Biographical Sketch Babalwa holds a Masters degree in Ecological Science from the University of KwaZulu-Natal. She has 2 years of experience as an ecological scientist intern, where she got exposure in freshwater and estuarine ecological monitoring. She is currently working as an environmental assessment practitioner at the Council for Scientific and Industrial Research (CSIR). Babalwa has been a Project Manager for a variety of Basic Assessment projects in the mining and agricultural sector, under the Department of Environmental Affairs (DEA)-CSIR Special Needs and Skills Development Programme (SNSD). She is currently also involved in undertaking an Environmental Impact Assessment (EIA) for a solar energy project. Babalwa is passionate about incorporating environmental planning and legislation, and socio-economic development to effectively contribute to the growth of South Africa.

EMPLOYMENT EXPERIENCE

The following table presents a sample of the projects that Babalwa Mqokeli has been involved in to this date:

Completion Date	Project description	Role	Client
In progress	EIA's in the South African energy sector	Project member and Mapping	Private energy companies and organs of state
In progress	Strategic Environmental Assessment (SEA) for Renewable Energy Development Zones	Project member-stakeholder engagement and project support.	National Department of Environmental Affairs

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In progress	Permit Application Process for <i>Boscia albitrunca</i> (Shepherd's Tree)	Project member	North West Department of Economic and Enterprise Development
In progress	Basic Assessment for the proposed development of a chicken layer facility, on Holding 75 Endicott Agricultural Holdings, Springs, Gauteng.	Project Manager and Mapping	New Age Chicken Supply assisted <i>pro bono</i> under the DEA-CSIR SNSD programme.
In progress	Basic Assessment for the proposed expansion of a chicken layer facility, on Portion 348 of Kameeldrift Farm 313, Kameeldrift West, Pretoria, Gauteng.	Project Manager and Mapping	IDCNKE assisted <i>pro bono</i> under the DEA-CSIR SNSD programme.
In progress	Basic Assessment for the proposed development of a Pig production enterprise on Plot 78 Jakkalsdans, near Cullinan, Gauteng.	Project Manager and Mapping	Zaforho assisted <i>pro bono</i> under the DEA-CSIR SNSD programme.
2017	Basic Assessment for the proposed Sand Mining Project, Umzimkhulu River, Port Shepstone area in KwaZulu-Natal	Project Manager and Mapping	Ms Singh assisted <i>pro bono</i> under the DEA-CSIR SNSD programme.
2017	Basic Assessment for the proposed Alluvial Diamond and Manganese Mining Operation on Farm 361 JP outside Welverdiend Village, near Lichtenburg, North West Province	Project Manager and Mapping	Kwa-Nozici Minerals (Pty) Ltd assisted <i>pro bono</i> under the DEA-CSIR SNSD programme.
2017	Basic Assessment for the proposed cultivation of 18.4 ha of fallow land for sugarcane production on sub 2 & 3 of Farm No. 850 Maybole in Baynesfield near Richmond, KwaZulu-Natal.	Project Manager and Mapping	The She Creative House cc assisted <i>pro bono</i> under the DEA-CSIR SNSD programme.
2017	Basic Assessment and Waste Management Licence Application for Legae La Tlhago's proposed expansion of a Pig production enterprise on Plot 684 Winterveldt Agricultural Holdings in Winterveldt, Pretoria.	Project Manager and Mapping	Legae La Tlhago Pty Ltd assisted <i>pro bono</i> under the DEA-CSIR SNSD programme.
2015	Biology 101 Teacher Assistant for 1st year laboratory practicals.	Leading a 1st year laboratory in conducting and guiding biology practicals.	N/A
2014	Groot River Macroinvertebrates monitoring research project.	Project Coordinator	N/A
2014	Invasive Alien Mosquito fish research project.	Project Coordinator	N/A
2014	Groot Estuary fish monitoring research project.	Project Coordinator	N/A

EMPLOYMENT RECORD

- **2017 to present** Environmental Assessment Practitioner. Council for Scientific and Industrial Research – Environmental Management Services (EMS) Unit - Stellenbosch
- **2015** Environmental Assessment Practitioner (Intern). Council for Scientific and Industrial Research – Environmental Management Services (EMS) Unit - Stellenbosch

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Basic Assessment for the Legae La Tlhago (Pty) Ltd's proposed expansion of a pig production enterprise on Plot 684 Winterveldt Agricultural Holdings in Winterveldt, Pretoria.

- 2015 Biology 101 Teacher Assistant. University of KwaZulu-Natal - Pietermaritzburg
- 2013 Conservation Research Intern. Nature's Valley Trust (WWF-SA Environmental Leaders Programme) - Plettenberg Bay.

QUALIFICATIONS/EDUCATION

- MSc Ecological Science (University of KwaZulu-Natal, Pietermaritzburg, South Africa)
- BSc Hons. Ecological Science (University of KwaZulu-Natal, Pietermaritzburg, South Africa)
- BSc Biological Science (University of Zululand, Empangeni, South Africa)
 - Undergraduate courses including Integrated Environmental Management, Aquatic Conservation & Management, Animal Ecology (Terrestrial, Freshwater & Marine), Risk Assessment & Ecotoxicology, Environmental Law & Waste Management, Introduction to Surface Water Hydrology, Botany.
- Matric Certificate (Durban Girls' Secondary School, Durban)

RESEARCH PUBLICATIONS

1. DOWNS, C.T., MQOKELI, B.R. & SINGH, P. 2012. Sugar assimilation and digestive efficiency in Wahlberg's epauletted fruit bat (*Epomophorus wahlbergi*). *Comparative Biochemistry and Physiology A* 161: 344-348.
 2. MQOKELI, B.R. & DOWNS, C.T. 2012. Blood plasma glucose regulation in Wahlberg's epauletted fruit bat. *African Zoology* 47:348-352.
 3. MQOKELI, B.R. & DOWNS, C.T. 2013. Palatal and lingual adaptations for frugivory and nectarivory in the Wahlberg's epauletted fruit bat (*Epomophorus wahlbergi*). *Zoomorphology* 132: 111-119.
 4. MQOKELI, B.R. & DOWNS, C.T. 2014. Is protein content in the diet of Wahlberg's epauletted fruit bats, *Epomophorus wahlbergi*, important? *African Zoology* 49: 161-166.
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TRAINING, CONFERENCES AND PROFESSIONAL REGISTRATIONS

- Training in Health and Safety Representation, Medical Education Center (2017)
- Understanding Watercourses and Managing impacts to their characteristics, IAIAsa (2017)
- Technical Workshop on the Roles and Responsibilities of Environmental Control Officer, IAIAsa (2016)
- CILLA Presentation Skills Course, CSIR (2016)

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Basic Assessment for the Legae La Tlhago (Pty) Ltd's proposed expansion of a pig production enterprise on Plot 684 Winterveldt Agricultural Holdings in Winterveldt, Pretoria.

- Presented on the Overlap between biodiversity conservation & economic development: a case study of a proposed piggery, a project under the DEA-CSIR “Special Needs and Skills Development Programme” Annual IAIAAsa Conference (2016)
- CILLA Project Management 1 Course, CSIR (2015)
- Environmental Law Course, Shepstone & Wylie Attorneys (2015)
- Media Training Course, B Style Media (2015)
- Practical Adaptation for Vulnerable Communities Training Workshop, South African Adaptation Network (2015)
- African Marine Debris Summit, South African Network (2013)
- Presented on the Palatal and lingual adaptations for frugivory and nectarivory in the Wahlberg's epauletted fruit bat, Microscopy Society of Southern African Annual Conference (2011)
- Registered as a Candidate Natural Scientist with the South African Council for Natural Scientific Professions (SACNASP) (Reg #: 100215/15)
- Member of the South African Affiliate of the International Association for Impact Assessment (Membership no: 5321)

KEY SKILLS & COMPETENCE

- Project management
- Computer literacy: Microsoft Office, ArcGIS
- Research skills
- Communication skills
- Interpersonal skills
- Proposal writing
- Report writing
- Problem-solving skills

Babalwa Mqokeli



11 May 2018