

Basic Assessment for the Zaforho Tracing's proposed development of a pig and vegetable production facility on Plot 78 of Jakkalsdans Farm 243 in Cullinan, Pretoria

FINAL BASIC ASSESSMENT REPORT

Report prepared for:
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December 2018



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Basic Assessment Process

FINAL BASIC ASSESSMENT REPORT -PROPOSED DEVELOPMENT OF A PIG PRODUCTION FACILITY FOR ZAFORHO TRACING

Plot 78 Jakkalsdans Farm 243, Cullinan, Pretoria

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Zaforho Tracing

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REPORT DETAILS

Title:	Basic Assessment for the Zaforho Tracing's proposed development of a pig and vegetable production facility on Plot 78 of Jakkalsdans Farm 243 in Cullinan, Pretoria.
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; • Provide an Environmental Management Programme (EMPr) for the proposed project. <p>This BA Report is the <u>Final Version</u> submitted to the Gauteng Department of Agriculture and Rural Development (GDARD) for decision making on the Application for Environmental Authorisation for Zaforho Tracing's proposed pig and vegetable production facility on Plot 78 of Jakkalsdans Farm 243 in Cullinan, Pretoria.</p>
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Authors:	Babalwa Mqokeli
Date:	December 2018
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ENVIRONMENTAL ASSESSMENT PRACTITIONER

Organisation	Council for Scientific and Industrial Research (CSIR)
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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) • 3 years' experience conducting Environmental Assessments
Minnelise Levendal	<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.

FINAL BASIC ASSESSMENT REPORT

Basic Assessment for the Zaforho Tracing's proposed development of a pig and vegetable production facility on Plot 78 of Jakkalsdans Farm 243 in Cullinan, Pretoria.

CONTENTS

SECTION A	ACTIVITY INFORMATION
SECTION B	DESCRIPTION OF RECEIVING ENVIRONMENT
SECTION C	PUBLIC PARTICIPATION
SECTION D	RESOURCE USE AND PROCESS DETAILS
SECTION E	IMPACT ASSESSMENT
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
Appendix E	Public participation information
Appendix F	Water use license(s) authorisation, SAHRA information, service letters from municipalities, water supply information
Appendix G	Specialist Reports
Appendix H	Environmental Management Programme
Appendix I	CVs of the EAPs (project team who prepared the report)



TABLES

Table 2-1: Impacts associated with the proposed development of a piggery and vegetable production facility for Zaforho Tracing

51

FIGURES

- Figure 1: Location of the proposed pig and vegetable production facility of Zaforho Tracing on Plot 78 of Jakkalsdans Farm 243, Cullinan, Pretoria. 19
- Figure 2. Photographs of Conservation Important plant species on Site. 33
- Figure 3: Guide to assessing risk/impact significance as a result of consequence and probability. 49
- Figure 4: The location of Region 5 in the City of Tshwane (Source: Region 5: Regional Integrated Development Plan 2014 - 2015) 68
- Figure 5: Regional Developmental Overview for Region 5 (Source: Region 5: Region 5 Spatial Development Framework (SDF) 2017) 69



GLOSSARY

BA	Basic Assessment
BAR	Basic Assessment Report
CI	Conservation Important
CSIR	Council for Scientific and Industrial Research
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
HIA	Heritage Impact Assessment
I&APs	Interested and Affected Parties
IDP	Integrated 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
SAPPO	South African Pork Producers' Organisation
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 –	Page 2
i. the EAP who prepared the report; and	
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;	Section A
(ii) where available, the physical address and farm name;	Appendix A
(iii) where the required information in items (i) and (ii) is not available, the coordinates of the boundary of the property or properties;	
(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-	Appendix A
(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;	
(d) a description of the scope of the proposed activity, including-	
(i) all listed and specified activities triggered and being applied for; and	Section A
(ii) a description of the activities to be undertaken including associated structures and infrastructure ;	
(e) a description of the policy and legislative context within which the development is proposed including-	Section A2
(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 E7

FINAL BASIC ASSESSMENT REPORT

Basic Assessment for the Zaforho Tracing's proposed development of a pig and vegetable production facility on Plot 78 of Jakkalsdams Farm 243 in Cullinan, Pretoria.

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;	
(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
(h) a full description of the process followed to reach the proposed preferred alternative within the site, including: <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; 	Section A3 Appendix E Section B Appendix G Section E Appendix F
(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- <ul style="list-style-type: none"> (i) a description of all environmental issues and risks that were identified during the environmental impact assessment process; and (ii) an assessment of the significance of each issue and risk and an indication of the extent to which the issue and risk could be avoided or addressed by the adoption of mitigation measures; 	Section E, Appendix G Appendix H

FINAL BASIC ASSESSMENT REPORT

Basic Assessment for the Zaforho Tracing's proposed development of a pig and vegetable production facility on Plot 78 of Jakkalsdams Farm 243 in Cullinan, Pretoria.

Scope of Assessment and Content of BAR	SECTION IN BAR
(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: (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	Appendix I Section C

FINAL BASIC ASSESSMENT REPORT

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<u>Scope of Assessment and Content of BAR</u>	<u>SECTION IN BAR</u>
(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	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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FINAL BASIC ASSESSMENT REPORT



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FINAL BASIC ASSESSMENT REPORT

Basic Assessment for the Zaforho Tracing's proposed development of a pig and vegetable production facility on Plot 78 of Jakkalsdans Farm 243 in Cullinan, Pretoria.

CONTENTS

SECTION A: ACTIVITY INFORMATION	16
SECTION B: DESCRIPTION OF RECEIVING ENVIRONMENT	29
SECTION C: PUBLIC PARTICIPATION	40
SECTION D: RESOURCE USE AND PROCESS DETAILS	42
SECTION E: IMPACT ASSESSMENT	46
SECTION F: APPENDICES	76



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.
-

FINAL BASIC ASSESSMENT REPORT

Basic Assessment for the Zaforho Tracing's proposed development of a pig and vegetable production facility on Plot 78 of Jakkalsdans Farm 243 in Cullinan, Pretoria.

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 is 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 applicant has no intended plans to close the piggery. Should the Applicant decide to close the facility, an application for closure and decommissioning will be submitted to the Competent 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?

Yes

If no, why?

--

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 development of a pig and vegetable production facility for Zaforho Tracing on Plot 78 of Jakkalsdans Farm 243 in Cullinan, Pretoria.

Project background

Zaforho is a small-scale vegetable production farm located on Plot 78 of Jakkalsdans Farm 243 in Cullinan, Pretoria (Figure 1). The business is proposing the development of a pig production facility and vegetable farming on the 21 hectare farm. The Applicant had initially planned to utilise an area of approximately 6 hectares for pig farming and the remainder of the 21 hectare farm for vegetable production. The site includes a National Freshwater Priority Area (NFEPA) wetland passing through the centre. The initial development proposal (based on desktop information) was to avoid and buffer this NFEPA wetland and consider development on the remaining extent of the property.

However, the field work for the ecology and wetland specialist studies found that the wetlands were of greater extent than captured in the national-scale mapping. The Ecological and Wetland Assessment Specialist study undertaken as part of the BA Process (included in Appendix G of this Final BAR), raised the concern that a large portion of the farm consists of wetland systems and that the development would fall within these systems and associated wetland buffers. The study noted that despite the degraded nature of the natural vegetation and the wetland systems, the presence of these wetlands deem the site to be highly sensitive. Based on the Ecological and Wetland Assessment undertaken by Afzelia Environmental Consultants (dated May 2018) the impacts associated with the loss of wetland and wetland vegetation are rated as of high significance with and without mitigation and thus no recommendation for mitigation was provided by the Specialist. The specialist study suggested that the proposed development should not go ahead due to the presence and potential impacts on wetlands on site.

Thereafter, a Wetland Delineation and Assessment study was undertaken by SAZI Environmental Consulting (dated August 2018) that mapped the sensitivity of the site in more detail. The wetlands and seeps are a major constraint to development on the property. Potential nutrient loading and seepage from a piggery presents a greater risk to groundwater quality and wetlands than vegetable farming, and therefore the extent of the piggery was greatly reduced and buffered from the wetlands. This led to the following revised development proposal (refer to Figure 55 of SAZI Report in Appendix G, and Map 1B of Appendix A):

- 1 hectare available for piggery on areas of least sensitivity in terms of wetlands and ecology;
- 3.6 hectares of vegetable farming on areas of least sensitivity in terms of wetlands and ecology; and
- 15.6 hectares to be a “no-go” area for development due to high and medium sensitivity of wetlands and ecology.

The environmental assessment should consider a holistic view of environmental management, that balances the imperatives of agriculture to sustain livelihoods and contribute to socio-economic development with the need to protect and minimise significant impacts on the natural environment and maintain ecosystem services. Furthermore, the applicant is being assisted on a pro bono basis under the Special Needs and Skills Development Programme which was commissioned by the DEA. This is the only land parcel that the applicant has and in an effort to achieve a balanced development future for the site, the option to identify potential areas of the site that are least sensitive in terms of wetlands and seeps, and that can potentially be used for vegetable farming and a piggery, is considered justifiable.

The proposed layout recommended by the supporting Wetland Delineation and Assessment study (SAZI, August 2018) and the resulting condition that the proposed layout should be located outside of areas of highest and moderate sensitivity (i.e. wetlands and seeps), assists in balancing these competing requirements of agriculture, livelihoods, wetlands and conservation.

This revised proposed development (Figure 55 of SAZI Report in Appendix G, and Map 1B in Appendix A) will have an impact of low to moderate significance, provided that the mitigation measures proposed in this report and the EMP are effectively implemented.

The current operations on the farm include vegetable production. The current vegetable production supplies SPAR with vegetables, and aims to support Dew Crisp with the proposed vegetable production expansion. The proposed piggery development targets to supply major supermarkets and butcheries such as Karan Beef. Zaforho's proposed piggery and vegetable production will add great socio-economic value to the agricultural 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.

The proposed infrastructure of the piggery upon completion will entail the following:

- 1 x Boar house (40m x 9m)
- 1 x Farrowing house (40m x 9m)
- 1 x Weaner house (40m x 9m)
- 1 x Grower house (40m x 9m)
- 1 x 50 m³ Waste dam
- 1 x 30 m³ Wastewater holding dam

Housing units will consist of a combination of slated and concrete floors. Floors will be cleaned by using a pressure cleaner and the waste together with the cleaning water will flow into a waste dam/lagoon. A Solid Waste Separator will separate the wastewater into a liquid and solid fraction. This will allow for improvement in the wastewater quality. The solid waste will be composted for two to three weeks and thereafter used as fertiliser. Composting is seen as an environmentally acceptable method of waste treatment. Treating the waste reduces its odour and vector attraction. A fraction of the wastewater will be disinfected and recycled for cleaning purposes of the pig housing units, and the remaining liquid will be temporarily held in a plastic lined holding dam from where it will be collected by a tanker for use on agricultural land.

Pig production will include the following operational process:

- Young sows will be purchased during the course of the year to allow for breeding to occur consecutively throughout the year. 30 week old sows will then be placed with the boars for breeding.
- Breeding sows will then be moved to the Farrowing house, and fed on a balanced feed.
- After delivery, piglets will be weaned at 28 days to be housed at the Weaner house, and the sow will go back to the boar house to re-start the cycle.
- 10 weeks old weaners will then be transferred to the Grower house, where they will be kept until they reach a marketable size. Once the pig reaches a live weight of approximately 100 kilograms, i.e. reached its marketable size, it is ready to be sold. These pigs will then be sold to abattoirs and/or butcheries in the local area.

Listed Activities

As part of the proposed piggery development and vegetable production 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, and in terms of the National Environmental Waste Act (NEM:WA) Regulations GNR 921 of 29 November 2013 there under will take place. Relevant listed activities triggered by the proposed activities are described as follows:

Table 1: Applicable Listed Activities

Listed Activity as described in GNR 326 of 7 April 2017	Description of Project Activity that triggers Listed Activity
GNR. 327 Activity 4 <i>The development and related operation of facilities for the concentration of animals in densities that exceed- (ii) 8 square meters per small stock unit and;</i>	The proposed project entails the construction of a piggery facility consisting of 4 housing units. When combined, the piggery will accommodate a maximum of 1000 pigs.

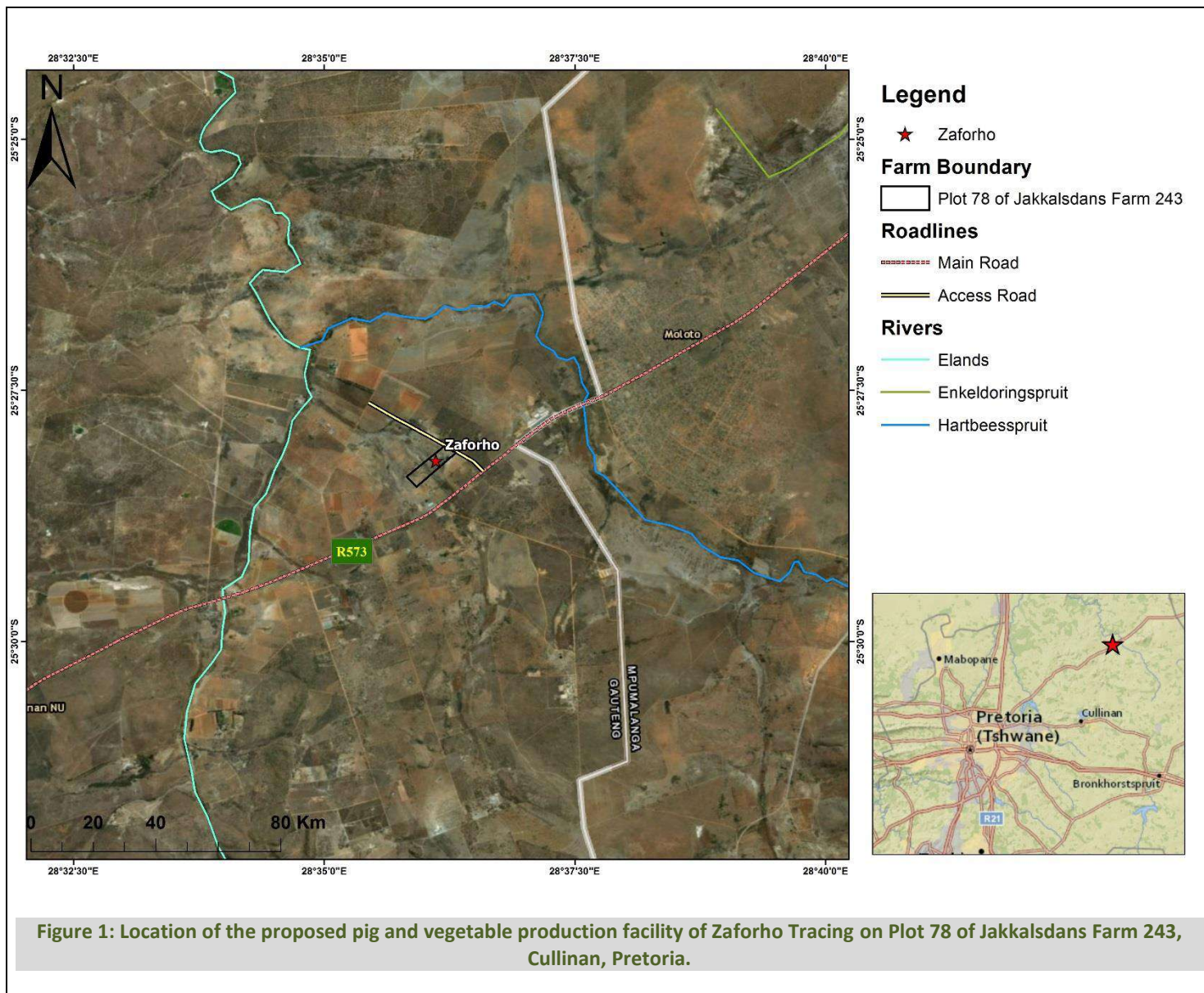
FINAL BASIC ASSESSMENT REPORT

Basic Assessment for the Zaforho Tracing's proposed development of a pig and vegetable production facility on Plot 78 of Jakkalsdams Farm 243 in Cullinan, Pretoria.

<p><i>b. more than 250 pigs per facility excluding piglets that are not yet weaned;</i></p>		
<p>GN R327: Activity 12</p> <p><i>The development of –</i> <i>(ii) infrastructure or structures with a physical footprint of 100 square metres or more;</i> <i>where such development occurs-</i> <i>(a) within a watercourse;</i> <i>(c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse;</i></p>	<p>The development footprint of the proposed piggery is approximately 1 hectare. Based on the findings of the Ecological and Wetland Assessment, as well as the Wetland Delineation and Assessment study, the project site includes a channeled valley bottom wetland that traverses the site, as well as two wetland seeps. Sections of the development footprint, including the areas recommended by the Wetland Delineation and Assessment Specialist, will infringe upon the recommended wetland seep buffers.</p>	
<p>GNR.327 Activity 27</p> <p><i>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> <i>(i) the undertaking of a linear activity; or</i> <i>(ii) maintenance purposes undertaken in accordance with a maintenance management plan.</i></p>	<p>The proposed development will include clearing of land of approximately 1 hectare for the construction of a piggery facility and approximately 3 hectares for vegetable production, resulting in a combined development footprint of 4 hectares.</p>	
<p>GNR. 324 Activity 12</p> <p><i>The clearance of an area of 300 square metres or more of indigenous vegetation except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan.</i> c. Gauteng <i>ii. Within Critical Biodiversity Areas or Ecological Support Areas identified in the Gauteng Conservation Plan or bioregional plans;</i></p>	<p>The proposed project site is not part of any Critical Biodiversity Areas (CBA). However the site includes an Ecological Support Area (ESA) which is formed by the stream running through the site.</p>	
<p>GNR. 324 Activity 14</p> <p><i>The development of:</i> <i>(ii) infrastructure or structures with a physical footprint of 10 square metres or more; where such development occurs-</i> <i>(a) within a watercourse;</i> <i>(c) if no development setback has been adopted, within 32 metres of a watercourse, measured from the edge of a watercourse;</i></p>	<p>The development footprint of the proposed piggery is approximately 1 hectare. Based on the findings of the Ecological and Wetland Assessment, as well as the Wetland Delineation and Assessment study, the project site includes a channeled valley bottom wetland that traverses the site, as well as two wetland seeps. Sections of the development footprint, including the areas recommended by the Wetland Delineation Assessment Specialist, will infringe upon the recommended 50 m wetland seep buffers and may thus occur within 32 m of the watercourse.</p>	
<p>GNR. 921 Category A (1)</p> <p><i>The storage of general waste in lagoons.</i></p>	<p>The proposed development will entail the construction of 2 x waste dams for the containment of piggery waste.</p>	
<p>GNR. 921 Category A (12)</p> <p><i>The construction of a facility for a waste management activity listed in Category A of this Schedule (not in isolation to associated waste management activity).</i></p>	<p>The proposed development will entail the construction of 2 x waste dams for the containment of piggery waste.</p>	

FINAL BASIC ASSESSMENT REPORT

Basic Assessment for the Zaforho Tracing's proposed development of a pig and vegetable production facility on Plot 78 of Jakkalsdams Farm 243 in Cullinan, Pretoria.



Select the appropriate box

The application is for an upgrade
of an existing development

☐

The application is for a new
development

☒

Other,
specify

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

YES

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

National Environmental Management Waste Act GNR. 921 of 29 November 2013, and the Competent Authority is the Gauteng Department of Agriculture and Rural Development (GDARD).

National Water Act, 1998 (Act 36 of 1998), and the Competent Authority is the Department of Water and Sanitation.

FINAL BASIC ASSESSMENT REPORT

Basic Assessment for the Zaforho Tracing's proposed development of a pig and vegetable production facility on Plot 78 of Jakkalsdams Farm 243 in Cullinan, Pretoria.

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

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

YES	
	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 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
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 326 of NEMA EIA Regulations, 7 April 2017	To promote integrated environmental management, contents of this BAR adhere to the requirements of the EIA Regulations. Appendix H includes the Environmental Management Programme that the project will adhere to if authorisation is received.
National Environmental Management: Waste Act (NEM:WA) GNR 921, 29 November 2013	An application for a Waste Management Licence will be submitted in terms of NEM:WA as the proposed activity pertains to the following activities included in the Act: Category A (1): The storage of general waste in lagoons. Category A (12):

FINAL BASIC ASSESSMENT REPORT

Basic Assessment for the Zaforho Tracing's proposed development of a pig and vegetable production facility on Plot 78 of Jakkalsdams Farm 243 in Cullinan, Pretoria.

Description of compliance with the relevant legislation, policy or guideline:	
Legislation, policy or guideline	Description of compliance
	The construction of a facility for a waste management activity listed in Category A of this Schedule (not in isolation to associated waste management activity).
National Water Act, 1998 (Act 36 of 1998)	An application for the determination of the need for a Water Use Licence Application (WULA) is being lodged.
National Development Plan	<p>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:</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: 12276) in terms of the National Heritage Resources Act, 1999 (Act No. 25 of 1999) as amended. The status on the application is that the project is closed (approved).
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 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.

FINAL BASIC ASSESSMENT REPORT

Basic Assessment for the Zaforho Tracing's proposed development of a pig and vegetable production facility on Plot 78 of Jakkalsdans Farm 243 in Cullinan, Pretoria.

Description of compliance with the relevant legislation, policy or guideline:	
Legislation, policy or guideline	Description of compliance
National Health Act, 2003 (Act No.61 of 2003)	The pigs 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 to prevent the spread of diseases resulting from the piggery. 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 activity alternative was considered based on a site already occupied by Zaforho Tracing (the Applicant). The Applicant identified the site and activity based on previous piggery farming that was undertaken on the property as well as current vegetable production on previously cultivated land. The Applicant initially intended to utilise 6 hectares of the farm for a piggery facility and the remainder of the 21 hectare farm for vegetable farming. The proposed activity was however re-aligned to avoid the sensitivities on site as determined by the Ecological Specialist study and Wetland Delineation and Assessment undertaken as part of the Basic Assessment process. No other additional location alternatives have been proposed for the project as this is the only site available for the applicant. 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. This proposed project is therefore aligned with the planning scheme of the area.</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 development of a pig and vegetable production farm on Plot 78 of Jakkalsdans Farm 243. The entire farm comprises 21 hectares. The proposed area of development has been informed by the Wetland Delineation and Assessment study conducted as part of this Basic Assessment. The initial proposed footprint for the piggery was reduced from 6 ha to 1 ha, and the layout was revised as a measure to avoid areas of wetland sensitivity. Following the input and recommendation from the Wetland Delineation and Assessment, the proposed piggery facility will occupy approximately 4 % of the entire farm

FINAL BASIC ASSESSMENT REPORT

Basic Assessment for the Zaforho Tracing's proposed development of a pig and vegetable production facility on Plot 78 of Jakkalsdans Farm 243 in Cullinan, Pretoria.

No.	Alternative type, either alternative: site on property, properties, activity, design, technology, energy, operational or other(provide details of "other")	Description
		<p>(i.e. 1 ha), and the vegetable production will utilise 14 % of remainder of the land (excluding areas of sensitivity). The current land-use of Jakkalsdans Farm is agriculture, with current production consisting of vegetables on previously cultivated land.</p> <p>The proposed development will enable the business to sustainably extend its agricultural footprint and ultimately sustain the business. The proposed project aims to provide sustainable produce and exercise best practices that are in line with new legislation and standards on pig welfare.</p> <p>The proposed piggery will, upon completion, include the following pig houses:</p> <p>1 x Boar house 1 x Farrowing house 1 x Weaner house 1 x Grower house</p> <p>The application is for the construction of pig housing units with a maximum capacity of 1 000 pigs at the farm, during full operation. These units will be constructed adjacent to each other. The housing units will consist of a combination of slated and concrete floors.</p> <p>A cemented waste dam is proposed for the piggery, where a solid waste separator will separate the wastewater into a liquid and solid fraction. This will allow for improvement in the wastewater quality. The solid waste will be composted for two to three weeks and thereafter used as fertiliser. Composting is seen as an environmentally acceptable method of waste treatment. Treating the waste reduces its odour and vector attraction. A fraction of the wastewater will be disinfected and recycled for cleaning purposes of the pig housing units, and the remaining liquid will be temporarily held in a plastic lined holding dam from where it will be collected by a tanker for use on agricultural land. The wastewater will comply with the definition of "biodegradable industrial wastewater" as defined in GN 665 of 6 September 2013 and can therefore be re-used in accordance with the recommendations for the application of wastewater to agricultural land. The use of the wastewater on agricultural land triggers Section 21(e) of GN 665 of 6 September 2013 under the National Water Act, 1998 (Act No. 36 of 1998). Therefore, these practices will be in accordance with the recommendations of Section 21 (e) of the National Water Act. The use of waste water for agricultural purposes is in accordance with the Department of Water Affairs' recognition of waste water as a valuable resource for use as a fertilizer.</p> <p>Natural ventilation will also be used in the proposed units. The houses will designed with pitched roofs and curtains on both of</p>

FINAL BASIC ASSESSMENT REPORT

Basic Assessment for the Zaforho Tracing's proposed development of a pig and vegetable production facility on Plot 78 of Jakkalsdams Farm 243 in Cullinan, Pretoria.

No.	Alternative type, either alternative: site on property, properties, activity, design, technology, energy, operational or other(provide details of "other")	Description
		<p>the long sides. The side curtains are used to control the amount of airflow through the units and manually opened and closed when required.</p> <p>Feed storage silos will be used to store the dry bulk feed and the feed will be manually collected from the storage silos and used to fill up self-feeders installed in each of the pens. Fresh water will be constantly supplied to the housing units through nipples installed in each of the pens. Buffer tanks are used to temporarily store fresh water for this purpose.</p>
2	Property Alternative	Alternative properties or locations for the proposed activity have not been identified, due to the fact it is a site of a pre-existing piggery (although dilapidated), as well as current vegetable production activities by the applicant. The owner was only able to acquire this land parcel, and it would not be economically feasible for the business to find and or purchase new property. Therefore, no alternate properties have been investigated in the Basic Assessment.
3	Activity Alternative	The vegetable production 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 have been informed by the Wetland studies undertaken as part of the BA process to minimise impacts on the sensitive wetland areas. The preferred proposed layout is on part of the property which has the least potential impact on the sensitive areas on site. Therefore no alternative layouts have been proposed as the current and preferred layouts are on modified land recommended as available to be used for small-scale sustainable agriculture.
5	Technology to be used	The proposed technology to be used complies with pig farming standards, and will advocate pig welfare and best practices in pig production. No alternate technologies have been investigated as the proposed technologies will follow SAPPOs guidelines in terms of best practices associated with pig farming.

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

<p style="text-align: center;">MOTIVATION:</p> <p>Site location and layout alternatives</p> <p>Zaforho has been identified as a client under the "Special Needs and Skills Development Programme", which is a <i>pro bono</i> 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</p>

Programme to assist these clients with undertaking Basic Assessments to obtain Environmental Authorisation for their proposed small-scale developments.

Alternative properties or locations for the proposed activity have not been identified, due to the fact it is a site of a pre-existing piggery (although dilapidated), as well as current vegetable production activities by the applicant. The owner was only able to acquire this land parcel, and it would not be economically feasible for the business to find and or purchase new property. Therefore, no alternate properties have been investigated in the Basic Assessment. The proposed design and layout have been informed by the Ecological and Wetland Assessment and the Wetland Delineation and Assessment Specialist studies (Appendix G) undertaken as part of the BA process to minimise impacts on the sensitive wetland areas. The preferred proposed layout is on part of the property which has the least potential impact on the sensitive areas on site, as identified in the Wetland Delineation and Assessment study. Therefore no alternative layouts have been proposed as the current and preferred layout are on modified land recommended as available to be used for small-scale sustainable agriculture, in order to avoid impacts on areas of high conservation potential.

Activity Alternative

The vegetable production is an existing operation on site and therefore an alternative activity has not been assessed or identified. When conducting due diligence for a suitable enterprise, Zaforho considered an enterprise that would be suitable for the size of the farm as well as one that would maximize on the quality of the product and display good potential for growth along the value chain. Pork production was considered as the industry is growing, with the potential for opportunities in this industry such as pork production increasing by an annual average of 4.5%, second to broiler production which grew by 6%, production turnaround for pork is quicker and demand fundamentals for this product are unlikely to change. This industry also presents opportunities as there is a huge potential in the rural markets and exports to the SADEC region. The development of a piggery facility is the type of development that the applicant wishes to establish.

Design & Technology Alternatives

The design and operating plan for the proposed piggery is guided by extensive market research and an assessment of the need of the products that will be produced adding great economic value to the area. The proposed design and technology include the following:

Housing

Housing units will consist of a combination of slated and concrete floors. Floors will be cleaned by using a pressure cleaner and the waste together with the cleaning water will flow into a waste dam/lagoon. A Solid Waste Separator will separate the wastewater into a liquid and solid fraction. This will allow for improvement in the wastewater quality. The solid waste will be composted for two to three weeks and thereafter used as fertiliser. Composting is seen as an environmentally acceptable method of waste treatment. Treating the waste reduces its odour and vector attraction. A fraction of the wastewater will be disinfected and recycled for cleaning purposes of the pig housing units, and the remaining liquid will be temporarily held in a plastic lined holding dam from where it will be collected by a tanker for use on agricultural land.

Ventilation

Natural ventilation is used and proposed on all the housing units, the housing design includes pitched roofs and 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.

The proposed technology to be used complies with pig farming standards, and will advocate pig welfare and best practices in pig production. No alternate technologies have been investigated as the proposed technologies will follow SAPPOs guidelines in terms of best practices associated with pig farming. Considering the abovementioned

FINAL BASIC ASSESSMENT REPORT

Basic Assessment for the Zaforho Tracing's proposed development of a pig and vegetable production facility on Plot 78 of Jakkalsdams Farm 243 in Cullinan, Pretoria.

factors of the industry and the proposed technological techniques and farming methods, Zaforho 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 4 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)

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:

21 ha

Alternatives:

Alternative 1 (if any)

Alternative 2 (if any)

Ha/m²

5. SITE ACCESS

Proposal

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

YES

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

FINAL BASIC ASSESSMENT REPORT

Basic Assessment for the Zaforho Tracing's proposed development of a pig and vegetable production facility on Plot 78 of Jakkalsdans Farm 243 in Cullinan, Pretoria.

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

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 proposed development site has been included as Appendix A. Photographs indicating sensitive features on site can also be found in the Ecological and Wetland Assessment Report and the Wetland Delineation and Assessment Report attached as 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 features on site can also be found in the Ecological and Wetland Assessment Report and the Wetland Delineation and Assessment 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 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 chronological 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.)

Plot 78 of Jakkalsdans Farm 243 in Cullinan, Pretoria

2. ACTIVITY POSITION

FINAL BASIC ASSESSMENT REPORT

Basic Assessment for the Zaforho Tracing's proposed development of a pig and vegetable production facility on Plot 78 of Jakkalsdans Farm 243 in Cullinan, Pretoria.

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):
-25.468117 °	28.603069 °

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

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	2	4	3	0	0	0	7	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)
- Unstable rocky slopes or steep slopes with loose soil
- Dispersive soils (soils that dissolve in water)

YES	
	NO
YES	
	NO
YES	

FINAL BASIC ASSESSMENT REPORT

Basic Assessment for the Zaforho Tracing's proposed development of a pig and vegetable production facility on Plot 78 of Jakkalsdams Farm 243 in Cullinan, Pretoria.

Soils with high clay content (clay fraction more than 40%)
Any other unstable soil or geological feature
An area sensitive to erosion

	NO
	NO
YES	

(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).

Note from CSIR: All Conservation Important species on Site have been included in the Ecological and Wetland Assessment Report attached as Appendix G.

FINAL BASIC ASSESSMENT REPORT

Basic Assessment for the Zaforho Tracing's proposed development of a pig and vegetable production facility on Plot 78 of Jakkalsdams Farm 243 in Cullinan, Pretoria.

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

Natural veld - good condition % = 5	Natural veld with scattered aliens % = 60		Veld dominated by alien species % = 23	
	Cultivated land % = 10		Building or other structure % = 2	

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

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

YES

If YES, specify and explain:

Inputs from the Ecological and Wetland Assessment Report – Appendix G:

A few Species of Conservation Concern were recorded on the Zaforho site. Many of these were not flowering at the time of the site visit conducted by the Specialist. At least two *Aloe* (A) species were found on site, as well as several geophytes that were not flowering and thus could not be fully identified including *Bulbine* (B), *Hypoxis* (C) and likely a *Brunsvigia*.

In terms of the Biodiversity Act, the “developer” has a responsibility for:

- The conservation of endangered ecosystems and restriction of activities according to the categorisation of the area (not solely by listed activities as specified in the EIA regulations).
- Promote the application of appropriate environmental management tools in order to ensure integrated environmental management of activities; thereby ensuring that all development within the area are in line with ecological sustainable development and protection of biodiversity.
- Limit further loss of biodiversity and conserve endangered ecosystems.
- A person may not carry out a restricted activity involving a specimen of a listed threatened or protected species without a permit issued in terms of Chapter 7.
- Such activities include any that are “of a nature that may negatively impact on the survival of a listed threatened or protected species”.

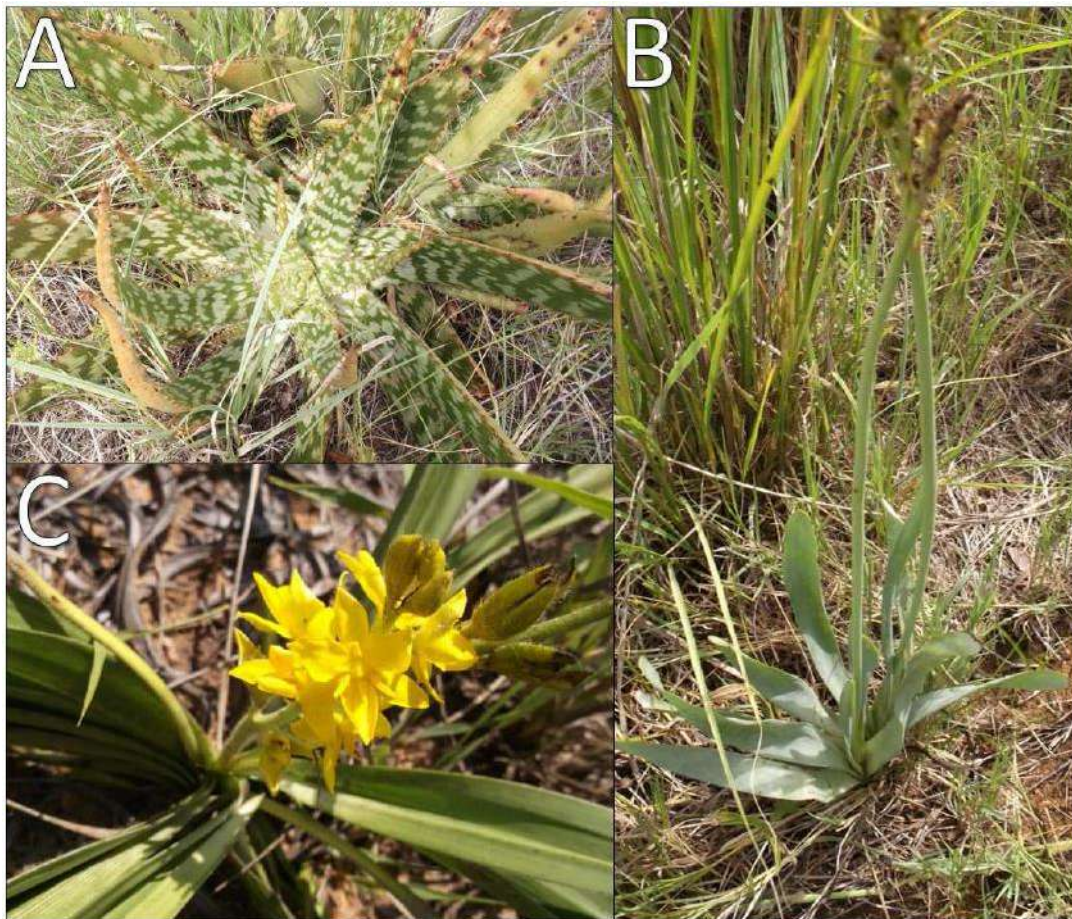


Figure 2. Photographs of Conservation Important plant species on Site.

FINAL BASIC ASSESSMENT REPORT

Basic Assessment for the Zaforho Tracing's proposed development of a pig and vegetable production facility on Plot 78 of Jakkalsdams Farm 243 in Cullinan, Pretoria.

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:

At least two *Aloe* species were found on site during the Ecological and wetland Assessment survey, as well as several geophytes that were not flowering and thus could not be fully identified including *Bulbine*, *Hypoxis* and likely a *Brunsvigia*

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

YES

If YES, specify and explain:

Change in vegetation and standing water, as well as terrain unit indicator and soil wetness allowed for the determination of three wetland types. These are described in depth in Section 5 of the Ecological and Wetland Assessment Report, as well as Section 3 and 4 of the Wetland Delineation and Assessment Report included in Appendix G. They comprise dams, seeps and a stream (channelled valley bottom). There are two dams on site, both of which are seasonally inundated. Areas of the site are seeps, most likely where the ground water is forced to the surface in wetter months and typically defined by dense stands of *Imperata cylindrica*. There is a stream running through the centre of the site which is disturbed, most likely due to cattle crossing, with *Gomphocarpus* sp. as a diagnostic species.

Was a specialist consulted to assist with completing this section

YES

If yes complete specialist details

Name of the specialist:

Afzelia Environmental Consultants

Authors:

Leigh-Ann de Wet

Qualification(s) of the specialist:

MSc Botany

Postal address:

76 Valley View Road
Durban, 4001

Postal code:

4001

Telephone:

(031) 303 2835

Cell:

E-mail:

Leighann@afzelia.co.za

Fax:

Are any further specialist studies recommended by the specialist?

NO

If YES, specify:

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

If YES list the specialist reports attached below

FINAL BASIC ASSESSMENT REPORT

Basic Assessment for the Zaforho Tracing's proposed development of a pig and vegetable production facility on Plot 78 of Jakkalsdans Farm 243 in Cullinan, Pretoria.

Name of the specialist:	SAZI Environmental Consulting		
	Authors:		
	Minenhle Ndlovu and Jason Le Roux		
Qualification(s) of the specialist:	MSoc Sc Geography and Environmental Management		
Postal address:	2 Morris Street West Woodmead, Sandton,		
Postal code:	2191		
Telephone:	010 442 4795	Cell:	084 800 0187
E-mail:	nzungu@sazienviromental.co.za	Fax:	
Are any further specialist studies recommended by the specialist?			NO
If YES, specify:			
If YES, is such a report(s) attached?			
If YES list the specialist reports attached below			

Signature of specialist: See Note Below Date:

Note from CSIR: Please see the Specialist Declarations as per Appendix 6 of the NEMA EIA Regulations 2014 on the Ecological and Wetland Assessment Report, and the Wetland Delineation and Assessment Report attached in Appendix G.

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

8. LAND USE CHARACTER OF SURROUNDING AREA

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

1. Vacant land	2. River, stream, wetland	
	7. Agriculture	
		34. Small Holdings

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

Basic Assessment for the Zavorho Tracing's proposed development of a pig and vegetable production facility on Plot 78 of Jakkalsdams Farm 243 in Cullinan, Pretoria.

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

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

- 1: Ecological and Wetland Assessment for the proposed Zaforho Pig Production Facility site, Cullinan, Pretoria, Gauteng.
- 2: Wetland Delineation and Assessment Report for the proposed Pig Production Facility on Plot 78 of Jakkalsdans Farm 243 in Cullinan, Pretoria, located in the City of Tshwane Metropolitan Municipality.

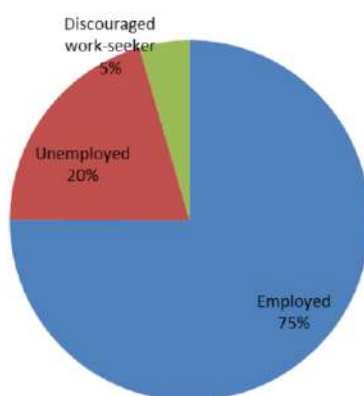
Appendix G

9. SOCIO-ECONOMIC CONTEXT

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

The Zavorho site falls within Region 5 of the City of Tshwane's (CoT) Metropolitan. Region 5 consists of the bulk of the former Nokeng Tsa Taemane Local Municipality. The site is located within Ward 99 of Tshwane's Region 5. This ward has the highest population density amongst the wards of this region. As stated in the CoT's Region 5: Regional Integrated Development Plan 2014-2015, approximately 20% of economically active persons are permanently unemployed in this region. The region is mostly rural and consists of the smallest populations in the CoT, with unemployment relatively high in this region.

Employment Status 2011: Region 5



(Source: StatSA Census 2011)

The majority of people in this region are of economically active age group, that is, they should be able to access the job market, depending on the number of job opportunities and access to economic active areas. 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 include the aim to support smallholding agricultural producers with industry-specific business skills. Zavorho has thus identified an opportunity as the proposed piggery and vegetable production will add great socio-economic value to the agricultural 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 in meat as a result of high protein consumption to satisfy certain dietary requirements. The current operations of the business supply vegetables to local stores and supermarkets, and with the proposed expansion, the company aims to supply major supermarkets and butcheries within the Cullinan and/or the Tshwane Market. Local butcheries have been approached as they have shown great interest in developing agriculture in South Africa. The business therefore aims to assist in addressing the unemployment challenges in the area, as well as demonstrate the significant role that the youth could contribute in agriculture.

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

Anticipated CAPEX value of the project on completion	5,070,318
What is the expected annual income to be generated by or as a result of the project?	R1,656,000

FINAL BASIC ASSESSMENT REPORT

Basic Assessment for the Zaforho Tracing's proposed development of a pig and vegetable production facility on Plot 78 of Jakkalsdams Farm 243 in Cullinan, Pretoria.

New skilled employment opportunities created in the construction phase of the project	4 Partition specialists, 4 Concrete specialists and 4 steel structure fabricators
New skilled employment opportunities created in the operational phase of the project	1 First Aider , 1 Health safety officer, 1 Farm manager 1 piggery supervisor + 1 crops supervisor
New un-skilled employment opportunities created in the construction phase of the project	8 General labourers
New un-skilled employment opportunities created in the operational phase of the project	4 General Labourers 10 Seasonal workers for vegetables.
What is the expected value of the employment opportunities during the operational and construction phase?	R365 000 per annum for operational phase (Current Value) R240 000 for construction phase
What percentage of this value that will accrue to previously disadvantaged individuals?	98% of construction phase 100 % of operational phase
What percentage of this value that will accrue to previously disadvantaged individuals?	98% of construction phase 100 % of operational phase
The expected current value of the employment opportunities during the first 10 years	R6,050 million
What percentage of this value that will accrue to previously disadvantaged individuals?	100%

10. CULTURAL/HISTORICAL FEATURES

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

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

(a) the construction of a road, wall, powerline, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length;

(b) the construction of a bridge or similar structure exceeding 50m in length;

(c) any development or other activity which will change the character of a site-

(i) exceeding 5 000 m2 in extent; or

(ii) involving three or more existing erven or subdivisions thereof; or

(iii) involving three or more erven or divisions thereof which have been consolidated within the past five years;

or

(iv) the costs of which will exceed a sum set in terms of regulations by SAHRA or a provincial heritage resources authority;

(d) the re-zoning of a site exceeding 10 000 m2 in extent; or

(e) any other category of development provided for in regulations by SAHRA or a provincial heritage resources authority, must at the very earliest stages of initiating such a development, notify the responsible heritage resources authority and furnish it with details regarding the location, nature and extent of the proposed development.

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

If YES, explain:

NO

N/A

FINAL BASIC ASSESSMENT REPORT

Basic Assessment for the Zaforho Tracing's proposed development of a pig and vegetable production facility on Plot 78 of Jakkalsdans Farm 243 in Cullinan, Pretoria.

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:

N/A

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

Note from CSIR: A heritage screening was submitted to South African Heritage Resources Agency (SAHRA) via the SAHRIS portal (Case ID 12276) and the project was exempted from undertaking an archaeological and paleontological study, for which they are the competent authority.

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?

YES

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

YES

Note from CSIR: Comments received from the local authority have been included in Appendix E of this Final BA Report

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

Comments received from the local authority have been included in Appendix E of this Final BA Report

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

N/A

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?

No

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

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

Notification of the proposed project and the release of the Draft BA Report was sent to all the identified I&APs. Comments were received from the Competent Authority (GDARD) and the local Municipality (City of Tshwane).

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?

10 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.

Will the activity produce solid waste during its operational phase?

YES ☒

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

Pig waste = 32 m³
Other waste = 1.4 m³

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. Medical waste such as needles will be disposed of through existing medical waste streams in the area. The pig waste will be collected and stored on a concrete surface and composted. It will then be subjected to the aerobic process for two weeks to reduce its odour and moisture. The solid waste will thereafter be recycled and used as fertiliser.

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 pig waste, will always be disposed of at a registered disposal site.

FINAL BASIC ASSESSMENT REPORT

Basic Assessment for the Zaforho Tracing's proposed development of a pig and vegetable production facility on Plot 78 of Jakkalsdans Farm 243 in Cullinan, Pretoria.

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 pig waste will be collected and stored on a concrete surface and composted. It will then be subjected to the aerobic process for two weeks to reduce its odour and moisture. The solid waste will thereafter be recycled and used 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? ☐ Yes
If yes, what estimated quantity will be produced per month?

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

The pig waste will fall through the slatted floor, and will be temporarily stored under the slatted floor in a waste holding pit until it is flushed through an enclosed gutter conveying it to a concrete waste dam. The waste will be separated. The solids will be composted and available as fertiliser and a fraction of the waste water which will not be used for cleaning purposes will be temporarily held in a plastic lined holding dam from where it will be collected by a tanker for use on agricultural land. These practices will be in accordance with the recommendations of Section 21 (e) of the National Water Act. The use of waste water for agricultural purposes is in accordance with the Department of Water Affairs' recognition of waste water as a valuable resource for use as a fertilizer.

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:

A fraction of the wastewater will be disinfected and recycled for cleaning purposes of the pig housing units, and the remaining liquid will be temporarily held in a plastic lined holding dam from where it will be collected by a tanker for use on agricultural land.

FINAL BASIC ASSESSMENT REPORT

Basic Assessment for the Zavorho Tracing's proposed development of a pig and vegetable production facility on Plot 78 of Jakkalsdams Farm 243 in Cullinan, Pretoria.

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?

N/A

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

	NO
--	----

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

	NO
--	----

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

--

Emissions into the atmosphere

Will the activity release emissions into the atmosphere?

YES	
-----	--

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

	NO
--	----

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

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

Emissions from the proposed development 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 piggery waste and may cause a nuisance to the receptors. Piggery odours occur as a result of anaerobic metabolic processes that occur in slurry dams. A Solid Waste Separator will separate the wastewater into a liquid and solid fraction. This will allow for improvement in the wastewater quality. The solid waste will be composted for two to three weeks and thereafter used as fertiliser. Composting is seen as an environmentally acceptable method of waste treatment. Treating the waste reduces its odour and vector attraction. Considering the proposed measure to minimise pig waste odour and that the piggery is proposed in a rural area with very few and sparsely distributed dwellers, significant odour concerns are not anticipated for this project. Management actions as stipulated in the EMPR will help minimise this impact. It should also be noted that the odour from piggeries 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:

3 000 kilolitres

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

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

YES	
-----	--

If yes, list the permits required

The proposed activity will require the use of approximately 100 kilolitres of water per day to be obtained from ground water sources and an existing tank from rain water harvesting. Water requirements will incorporate domestic water use, water to be used by pigs and possibly water to wash the pig 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). The proposed activity will also require a water use licence in terms of Section 21(e) of the NWA. The Schedule provides: "general authorisation which replaces the need for a water user to apply for a licence in terms of the Act, provided that the water use is within the limits and conditions as set out in this general authorization." The use of biodegradable wastewater, such as that proposed for Zavorho on agricultural land, is part of a general authorization regarded as a Controlled Water Use Activity, provided that the activity complies with the conditions specified in Government Notice No. 665 of 6 September 2013 under the National Water Act, Act 36 of 1998.

FINAL BASIC ASSESSMENT REPORT

Basic Assessment for the Zaforho Tracing's proposed development of a pig and vegetable production facility on Plot 78 of Jakkalsdams Farm 243 in Cullinan, Pretoria.

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

NO

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

NO

Note from CSIR: The application for a water use by the applicant is in process.

3. POWER SUPPLY

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

Renewable energy source (Solar panels)

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:

The applicant plans to install solar panels for lighting and other activities associated with the proposed development. This could assist the piggery to be self-sustainable in terms of electricity, to reduce the need to rely on Eskom or in the case that Eskom does not supply power to the plot. 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.

A response on issues raised by interested and affected parties will be provided following the 30-day review period of the Draft BAR. These comments and Responses will be included in the Final BAR to be submitted to GDARD for decision-making.

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):

A response from the EAP on issues raised by interested and affected parties will be provided following the 30-day review period of the Draft BAR.

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

The identification of potential impacts includes impacts that may occur during the construction, operational and decommissioning phases of the proposed development. The assessment of impacts includes direct, indirect as well as cumulative impacts. In order to identify potential impacts (both positive and negative) it is important that the nature of the proposed projects is well understood so that the impacts associated with the projects can be assessed. The process of identification and assessment of impacts includes:

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

The impact assessment methodology has been aligned with the requirements for BA Reports as stipulated in Appendix 1 (3) (1) (j) of the 2014 NEMA EIA Regulations (as amended), which states the following:

“A BA Report must contain the information that is necessary for the Competent Authority to consider and come to a decision on the application, and must include 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 mitigated”.

As per the DEAT Guideline 5: Assessment of Alternatives and Impacts, the following methodology is applied to the prediction and assessment of impacts and risks. Potential impacts and risks have been rated in terms of the direct and indirect:

- **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.

In addition to the above, the impact assessment methodology includes the following aspects:

Nature of Impact/Risk - The type of effect that a proposed activity will have on the environment.

Spatial Extent - The size of the area that will be affected by the impact/risk:

- Site specific;
- Local (<10 km from site);
- Regional (<100 km of site); or
- National.

Duration - The timeframe during which (lifetime of) the impact/risk will be experienced:

- Very short term (instantaneous);
- Short term (less than 1 year);
- Medium term (1 to 10 years);
- Long term (the impact will cease after the operational life of the activity (i.e. the impact or risk will occur for the project duration)); or
- Permanent (mitigation will not occur in such a way or in such a time span that the impact can be considered transient (i.e. the impact will occur beyond the project decommissioning)).

Consequence – The anticipated consequence of the risk/impact:

- Extreme (extreme alteration of natural systems, patterns or processes, i.e. where environmental functions and processes are altered such that they permanently cease);
- Severe (severe alteration of natural systems, patterns or processes, i.e. where environmental functions and processes are altered such that they temporarily or permanently cease);
- Substantial (substantial alteration of natural systems, patterns or processes, i.e. where environmental functions and processes are altered such that they temporarily or permanently cease);
- Moderate (notable alteration of natural systems, patterns or processes, i.e. where the environment continues to function but in a modified manner); or
- Slight (negligible alteration of natural systems, patterns or processes, i.e. where no natural systems/environmental functions, patterns, or processes are affected).

Reversibility - the extent to which the impacts/risks are reversible assuming that the project has reached the end of its life cycle (decommissioning phase):

- High reversibility of impacts (impact is highly reversible at end of project life i.e. this is the most favourable assessment for the environment);
- Moderate reversibility of impacts;
- Low reversibility of impacts; or
- Impacts are non-reversible (impact is permanent, i.e. this is the least favourable assessment for the environment).

Irreplaceability of Receiving Environment/Resource Loss caused by impacts/risks – the degree to which the impact causes irreplaceable loss of resources assuming that the project has reached the end of its life cycle (decommissioning phase):

- High irreplaceability of resources (project will destroy unique resources that cannot be replaced, i.e. this is the least favourable assessment for the environment);
- Moderate irreplaceability of resources;
- Low irreplaceability of resources; or
- Resources are replaceable (the affected resource is easy to replace/rehabilitate, i.e. this is the most favourable assessment for the environment).

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

Probability – The probability of the impact/risk occurring:

- Extremely unlikely (little to no chance of occurring);
- Very unlikely (<30% chance of occurring);
- Unlikely (30-50% chance of occurring)
- Likely (51 – 90% chance of occurring); or
- Very Likely (>90% chance of occurring regardless of prevention measures).

To determine the significance of the identified impact/risk, the consequence is multiplied by probability (qualitatively as shown in Figure 3). This approach incorporates internationally recognised methods from the Intergovernmental Panel on Climate Change (IPCC) (2014) assessment of the effects of climate change and is based on an interpretation of existing information in relation to the proposed activity, to generate an integrated picture of the risks related to a specified activity in a given location, with and without mitigation. Risk is assessed for each significant stressor (e.g. physical disturbance), on each different type of receiving entity (e.g. the municipal capacity, a sensitive wetland), qualitatively (very low, low, moderate, high, and very high) against a predefined set of criteria (i.e. probability and consequence) as indicated in Figure 3:

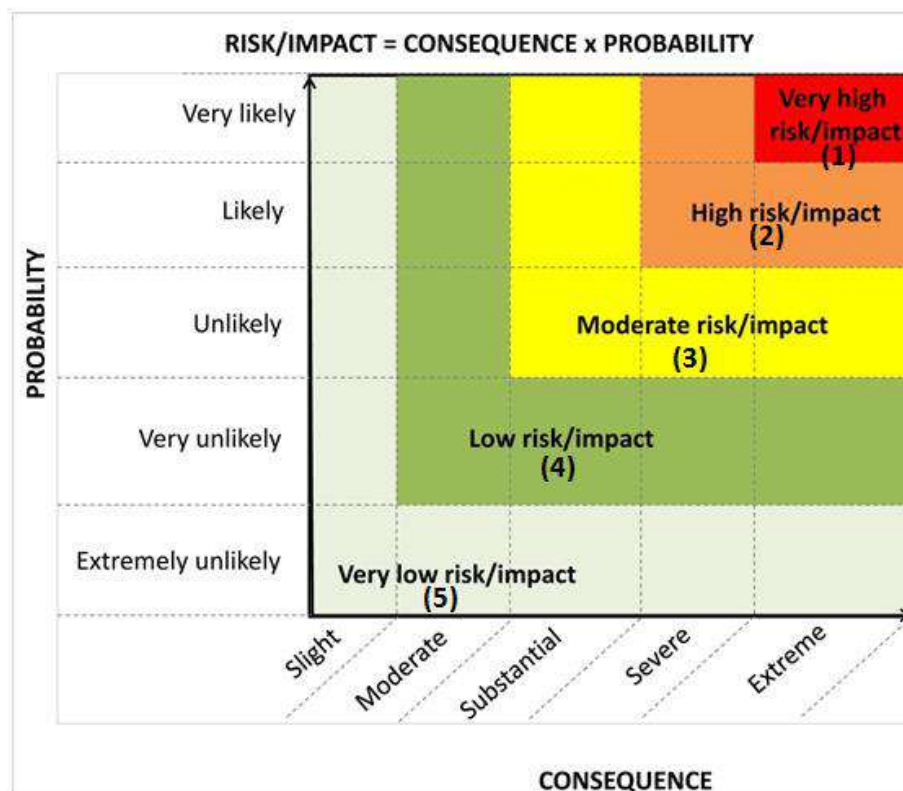


Figure 3: Guide to assessing risk/impact significance as a result of consequence and probability.

Significance – Will the impact cause a notable alteration of the environment?

- Very low (the risk/impact may result in very minor alterations of the environment and can be easily avoided by implementing appropriate mitigation measures, and will not have an influence on decision-making);
- Low (the risk/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);
- Moderate (the risk/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);
- High (the risk/impact 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); and
- Very high (the risk/impact will result in very major alteration to the environment even with the implementation on the appropriate mitigation measures and will have an influence on decision-making (i.e. the project cannot be authorised unless major changes to the engineering design are carried out to reduce the significance rating)).

With the implementation of mitigation measures, the residual impacts/risks will be ranked as follows in terms of significance (based on Figure 2-1):

- Very low = 5;
- Low = 4;
- Moderate = 3;
- High = 2; and
- Very high = 1.

Confidence – The degree of confidence in predictions based on available information and specialist knowledge:

- Low;
- Medium; or
- High.

Impacts have been collated into the EMPr (Appendix H of the BA Report) and these include the following:

- Quantifiable standards for measuring and monitoring mitigatory measures and enhancements (as applicable). This includes a programme for monitoring and reviewing the recommendations to ensure their ongoing effectiveness.
- Identifying negative impacts and prescribing mitigation measures to avoid or reduce negative impacts. Where no mitigatory measures are possible this is stated.
- Positive impacts and augmentation measures have been identified to potentially enhance positive impacts where possible.

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

- Impacts are evaluated for the construction and operational phases of the development. The assessment of impacts for the decommissioning phase is brief, as there is limited understanding at this stage of what this might entail. The relevant rehabilitation guidelines and legal requirements applicable at the time will need to be applied;
- Impacts have been evaluated with and without mitigation in order to determine the effectiveness of mitigation measures on reducing the significance of a particular impact; and
- The impact assessment attempts to quantify the magnitude of potential impacts and outline the rationale used. Where appropriate, national standards are used as a measure of the level of impact.

FINAL BASIC ASSESSMENT REPORT

Basic Assessment for the Zaforho Tracing's proposed development of a pig and vegetable production facility on Plot 78 of Jakkalsdans Farm 243 in Cullinan, Pretoria.

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 applicant was able to acquire, and it would not be economically feasible for the business to find and or purchase new property. The proposed area of development has been informed and recommended by the Wetland Delineation and Assessment study conducted as part of this Basic Assessment. The initial proposed footprint was reduced, and the layout was revised as a measure to avoid areas of high sensitivity. 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 development of a piggery and vegetable production facility for Zaforho Tracing

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 communities and faunal habitat. 	Site specific	Long term	Substantial	Very likely	Moderate	Moderate	Moderate (Negative)	Moderate	No	Yes	<ul style="list-style-type: none"> Development planning must ensure loss of vegetation and disturbance is restricted to within the recommended development layout footprint. 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. Highlight all prohibited activities to workers through training and notices. 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 landscaping should be performed around the facilities. Natural vegetation must be allowed to recover in areas of disturbance. If recovery is slow, then a seed mix for the area (using indigenous grass species) should be sourced and planted 	Low
<ul style="list-style-type: none"> Loss of Conservation Important (CI) or medicinally important flora. 	Site specific	Long term	Substantial	Likely	Moderate	Moderate	Moderate (Negative)	High	Yes	Yes	<ul style="list-style-type: none"> Development planning to be restricted to already disturbed or transformed areas as far as possible, as per the recommended site layout. If removing CI species, such as the two <i>Aloe</i> species occurring on site and the <i>Bulbine</i>, <i>Hypoxis</i> and likely <i>Brunsvigia</i> species that could potentially occur on site, permits for their removal must be submitted. Prior to construction any CI and medicinally important floral specimens that may occur within the site layout footprint (areas zoned for the piggery, effluent dam, or vegetable production) should be collected and replanted in the surrounding 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
<ul style="list-style-type: none"> Introduction and increase in alien vegetation. 	Local	Long term	Substantial	Very likely	Low	Low	Moderate (Negative)	High	No	Yes	<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 (prioritising category 1 species) 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. 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 site. By law, remove and dispose of Category 1b alien species on site. All Category 2 species that remain on site must require a permit. Prohibit the introduction of domestic animals such as dogs and cats. 	Low
<ul style="list-style-type: none"> Loss and displacement of fauna on site and resulting influx of fauna to neighbouring areas. 	Site specific	Short term	Moderate	Very likely	Moderate	Moderate	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"> Loss and disturbance of wetland habitat 	Site specific	Medium term	Substantial	Likely	Moderate	Low	Moderate (Negative)	Medium	Yes	Yes	<p><i>The impacts rating relating to wetlands and the following mitigation measures are determined following the reduced development footprint, as rated and suggested, respectively, in the Wetland Delineation and Assessment study.</i></p> <ul style="list-style-type: none"> Development planning to re-align area set aside for piggery development and vegetable production to avoid the wetland areas as per the specialists' recommendation. Re-align the proposed piggery development to the area behind the eastern seep and re-align the proposed vegetable production footprint to the land upslope of the western seep. The recommended layout footprint is included in Appendix A of this BA Report, as well as in the Wetland and Assessment Report included in Appendix G of this BA Report. 	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"> - Ensure that no construction is planned within the sensitive environment (wetlands). The wetland areas will be demarcated as no-go areas. - Avoid additional wetland loss by limiting construction/excavation activities to as small an area as possible. - Clearly demarcate the required servitudes in the field and limit all activities to the demarcated areas. - Include environmental awareness aspects into the site induction program to ensure all staff are aware of the location and importance of wetland habitats on site. - Establish emergency response measures and a clearly defined chain of communication to rapidly deal with any unforeseen impacts to wetlands, e.g. spills. - Development should be undertaken outside of the 30m buffer zone of the wetland edge. - No stockpiling of material may take place within the wetland areas and buffer zones. - Temporary construction camps and infrastructure should be located away from the wetland edge and its buffer zone. - Regular cleaning up of the wetland areas should be undertaken to remove litter. 	
<ul style="list-style-type: none"> • Potential soil and water contamination as a result of construction activities. 	Site specific	Medium term	Substantial	Very likely	Moderate	Moderate	Moderate (Negative)	Medium	Yes	Yes	<ul style="list-style-type: none"> - Phase vegetation clearing activities as far as possible to limit the area exposed at any one time. - Where practically possible, the major earthworks should be undertaken during the dry season (roughly from April to August) to limit erosion due to rainfall runoff. - Hazardous chemicals and materials to be stored in a designated area. - Ensure that any spilled fuel is effectively cleaned using the appropriate products. - The contractor must ensure that drip trays are available to collect any fluid that may result from accidental spillage, overflow and/or servicing. - Immediately repair and/or remove leaking equipment from the site. 	Low
<ul style="list-style-type: none"> • Potential 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. 	Very 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"> - Contracts with contractors must specify actions that will be taken against contractors 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"> • Increased use of electricity and groundwater during construction activities. 	Local	Long term	Substantial	Likely	Non-reversible	Moderate	Moderate (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. - 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"> • Sensory disturbance of fauna due to noise. 	Local	Long term	Moderate	Likely	Low	Low	Low (Negative)	High	No	Yes	<ul style="list-style-type: none"> - Limit construction activities to day time hours. - Minimize or eliminate security and construction lighting, to reduce the disturbance of nocturnal fauna. - All outside lighting should be directed away from sensitive areas. - Commence (and preferably complete) construction during winter, when the risk of disturbing active (including breeding and migratory) animals, should be least. 	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	Moderate (Negative)	Low	Yes	Yes	<ul style="list-style-type: none"> - Mixing of cement or concrete must not take place on the soil surface, to be undertaken on designated areas. - Establish appropriate emergency procedures for accidental contamination of the surroundings. 	Low
<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> - 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
<ul style="list-style-type: none"> • Potential deterioration of the existing gravel road due to use by heavy construction vehicles. 	Local	Short term	Substantial	Likely	Moderate	Low	Moderate (Negative)	Medium	No	Yes	<ul style="list-style-type: none"> - Limit vehicles coming to the site and limit to a temporary minimal duration. - Maintain and/or upgrade the gravel road. 	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
• Potential impact of traffic.	Local	Short term	Substantial	Likely	Moderate	Low	Moderate (Negative)	Medium	No	Yes	<ul style="list-style-type: none"> - 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	Moderate (Negative)	High	No	Yes	<ul style="list-style-type: none"> - 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	Severe	Likely	Moderate	Low	High (Negative)	Medium	No	Yes	<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 denude area with indigenous flora as soon as possible - Implement erosion protection measures on site to reduce erosion and sedimentation of nearby wetlands and streams. Measures could include bunding around soil stockpiles, and vegetation of areas not to be developed. - 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). - 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. - Limit vegetation removal to only the construction area, avoid disturbance to other areas. 	Moderate
• Degradation of ambient air quality as a result of dust and other emissions generated.	Local	Long term	Substantial	Likely	Moderate	Low	Moderate (Negative)	Medium	No	Yes	<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. 	Low
• Noise disturbances as a result of construction activities.	Local	Long term	Substantial	Likely	Moderate	Low	Moderate (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. 	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"> - 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. 	
Indirect Impacts												
<ul style="list-style-type: none"> Increased storm water runoff/soil erosion. 	Local	Medium term	Substantial	Likely	Moderate	Moderate	Moderate (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. - Design and implement a storm water management plan that aims to minimise the concentration of flow and increase in flow velocity, as well as minimising sediment transport off site. 	Low
<ul style="list-style-type: none"> Degradation of adjacent nearby natural vegetation and wetlands. 	Local	Medium term	Substantial	Likely	Low	Moderate	Moderate (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 Wetland Seeps and Channelled Valley within 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. - Store and handle potentially polluting substances and waste in designated, banded facilities. - Waste should be regularly removed from the construction site by suitably equipped and qualified operators and disposed of in approved facilities. 	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"> - Locate temporary waste and hazardous substance storage facilities a minimum of 30m from any wetland edge. - Keep sufficient quantities of spill clean-up materials on site. 	
<ul style="list-style-type: none"> • The creation of new employment opportunities and skills development. 	Municipal Area	Short term	Substantial	Very likely	High	High	Moderate (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. - No creation of unskilled, semi-skilled or skilled jobs. <p>INDIRECT IMPACTS:</p> <ul style="list-style-type: none"> - There are no indirect impacts during the construction phase for the No-go Option. - No increase in revenue for construction companies. - No new employment opportunities will be created. - If the proposed project does not proceed, the potential increase in revenue for local suppliers of construction material will not be realised. 												

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 wetlands. 	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 wetland vegetation area by e.g. vehicles. - Place and maintain erosion control barriers as appropriate to prevent sedimentation. 	Moderate
<ul style="list-style-type: none"> • Deterioration of water quality and impact on 	Regional	Long term	Severe	Likely	Low	Moderate	High (Negative)	Medium	Yes	Yes	<ul style="list-style-type: none"> - Pig housing must have slatted floors which collect waste and conduct it through enclosed concrete canals. 	Moderate

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
downstream aquatic ecology.											<ul style="list-style-type: none"> - Pig waste must be stored in an enclosed concrete waste storage. - The application of the liquid waste onto the agricultural field must adhere to the Water Act legislation and Water Use Licence permit. - The use of solid waste as compost on the agricultural field must adhere to Waste Act and Waste Management Licence terms. - Hazardous waste must be stored in suitable containers and disposed of accordingly. 	
<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	High (Negative)	Medium	Yes	Yes	<ul style="list-style-type: none"> - Limit human activity on areas that are close to sensitive sites. - Piggery activities must be undertaken away from these areas. 	Moderate
<ul style="list-style-type: none"> • Impact on ambient air quality from piggery emissions and odour. 	Local	Long term	Severe	Very likely	Low	High	High (Negative)	Medium	No	Yes	<ul style="list-style-type: none"> - Cover the waste dams to reduce the odour. - Piggery must be kept clean as far as possible to minimise odour emissions, regularly flush housing units. - Implement best practices in terms of waste regulation of the dam and practice good housekeeping of the pig housing units. Avoiding unnecessary build-up of waste in the housing units and dams. - Ensure sufficient ventilation of the housing units. - Subject the pig solid waste to the aerobic process to reduce its odour. No waterlogging of compost to avoid creating anearobic conditions leading to odours. - Ensure that excrement, carcasses, feed, and other operational waste and hazardous materials are appropriately and effectively contained and disposed of without detriment to the air quality of the receiving environment. 	Low
<ul style="list-style-type: none"> • Impact of dust and vehicle emissions generated during use of the gravel road when transporting pigs and vegetables 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 piggery 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 piggery to minimise influx of pests. 	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
											<ul style="list-style-type: none"> - Dead pigs must be removed from the facility as soon as possible, at all times. - Restrict piggery access and use disinfectant sprays on vehicles and personnel entering the site. - Feeding areas must be regularly cleaned to prevent the attraction of flies. - Piggery must have security fencing around it to prevent access of other animals such as dogs. 	
<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	Moderate (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	Moderate (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 the borehole for water requirements of the facility. 	Local	Long term	Substantial	Likely	Non-reversible	High	Moderate (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. - Create awareness on the importance of these resources and implement water saving mechanisms. - Also make use of rain water from the existing tank to minimise abstraction demands. - 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. 	Low
<ul style="list-style-type: none"> • Impact on natural vegetation during operational activities. 	Site	Long term	Substantial	Likely	Non-reversible	High	Moderate (Negative)	Medium	Yes	Yes	<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. 	Low
<ul style="list-style-type: none"> • Reduction in Conservation Important species (Harvesting of CI or medicinal flora). 	Local	Long term	Moderate	Likely	Non-reversible	High	Low (Negative)	Medium	Yes	Yes	<ul style="list-style-type: none"> - Prohibit harvesting of CI, medicinal species and other indigenous flora. Environmental awareness training must be provided to workers on species of Conservation Importance. 	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
• 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 must require a permit. - Prohibit the introduction of domestic animals such as dogs and cats. 	Low
• Impact of operational activities on fauna.	Local	Long term	Substantial	Likely	Low	Moderate	Moderate (Negative)	High	No	Yes	<ul style="list-style-type: none"> - Minimise 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
• Potential for fires to occur.	Local	Long term	Substantial	Likely	Moderate	Low	Moderate (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 and the surrounding natural environment. - Educate workers about the plan and emergency procedures with regular training and notices. 	Low
• Noise from operational activities and pig sounds (squealing) throughout the farming process.	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 pigs, to prevent excessive noise from the pigs. 	Low
• Generation of operational waste.	Regional	Long term	Substantial	Very likely	Low	Moderate	Moderate (Negative)	Low	No	Yes	<ul style="list-style-type: none"> - All waste produced to be disposed of in permitted designated waste disposal site. 	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
											<ul style="list-style-type: none"> - 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. 	
<ul style="list-style-type: none"> • Potential impact of traffic. 	Local	Long term	Substantial	Likely	Low	Moderate	Moderate (Negative)	Medium	Yes	Yes	<ul style="list-style-type: none"> - Limit the amount of vehicles using this route. - Traffic impact will be minimal considering that the piggery will make use of one vehicle thus no significant increase in traffic. 	Low
<ul style="list-style-type: none"> • 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												
<ul style="list-style-type: none"> • Increased storm water runoff. 	Site specific	Long term	Substantial	Likely	Non-reversible	Moderate	Moderate (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
<ul style="list-style-type: none"> • Security and safety impacts. 	Local	Long term	Substantial	Likely	Non-reversible	Low	Moderate (Negative)	Medium	Yes	Yes	<ul style="list-style-type: none"> - The applicant 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. - Pigs to be housed in an enclosed safe area to prevent incidents of theft. 	Low
<ul style="list-style-type: none"> • The proposed development has the potential to create local employment and skills development. 	Local	Long term	Substantial	Very likely	High	High	Moderate (Positive)	Medium	Yes	Yes	<ul style="list-style-type: none"> - Maximise job creation and promote local employment and skills training. 	High (Positive)
<ul style="list-style-type: none"> • The proposed project will contribute to the local economic market through the supply of pork to local butcheries and vegetables to supermarkets. 	Local	Long term	Substantial	Likely	High	High	Moderate (Positive)	Medium	Yes	Yes	<ul style="list-style-type: none"> - Ensure that local butcheries supermarkets are utilised as consumers. 	High (Positive)

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
NO-GO ALTERNATIVE												
Potential Impact Description						Significance Rating (Positive or Negative)						
Direct Impacts												
<ul style="list-style-type: none">The no-go option would mean that the status quo would remain, the property will retain its current structures and none of the impacts mentioned above will occur.The no-go option will not contribute towards food security, increased vegetable production and job creation within the local community.												
Impact												
Indirect Impacts												
<ul style="list-style-type: none">If the proposed project does not proceed, increased income and economic benefits associated with the expansion of vegetable production 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 pork could experience hindered economic growth potential.												

FINAL BASIC ASSESSMENT REPORT

Basic Assessment for the Zavorho Tracing's proposed development of a pig and vegetable production facility on Plot 78 of Jakkalsdans Farm 243 in Cullinan, Pretoria.

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

- 1: Ecological and Wetland Assessment for the proposed Zavorho Pig Production Facility site, Cullinan, Pretoria, Gauteng (Afzelia, May 2018).
- 2: Wetland Delineation and Assessment Report for the proposed Pig Production Facility on Plot 78 of Jakkalsdans Farm 243 in Cullinan, Pretoria, located in the City of Tshwane Metropolitan Municipality (SAZI, August 2018).

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.

The following assumptions and limitations are applicable to the Wetland Delineation and Assessment Report:

- Although the wetland assessment study follows the Gauteng Department of Agriculture and Rural Department Requirements for Biodiversity Assessments (Version 3, 2014), only the wetland delineation component of the guidelines formed the scope of this wetland assessment.
- 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.
- 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.
- Fauna and flora assessments undertaken were mainly for the purposes of determining the biodiversity status of the wetland area. Extensive fauna and flora assessment outside of the wetland system did not form part of this report.

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 piggery. Should there be plans to close down the piggery; a closure plan will be submitted to the competent authority for approval and it will comply with the relevant legislation at the time of closure.

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

- 1: Ecological and Wetland Assessment for the proposed Zavorho Pig Production Facility site, Cullinan, Pretoria, Gauteng.
- 2: Wetland Delineation and Assessment Report for the proposed Pig Production Facility on Plot 78 of Jakkalsdans Farm 243 in Cullinan, Pretoria, located in the City of Tshwane Metropolitan Municipality.

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 village and 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 pigs and vegetables, and this will not occur daily. One truck will be used for the safe transportation of pigs.

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 development, 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.

Waste management (including wastewater) and biosecurity impacts as a result of the proposed development and other similar or different activities in the area. Wastewater management should be properly planned, designed and installed to ensure that the piggery waste is effectively removed from the housing units. Waste management methods must be in accordance with the relevant legislation and stipulated guidelines, including the compliance guidelines stipulated in GN 665 under the National Water Act. The implementation of a waste management plan as suggested in the EMP, could reduce factors that lead to disease outbreaks. Zavorho should make use of veterinarians to ensure the health of the pigs, and to obtain advice on measures that will reduce the risk of diseases

The proposed development has the potential to impact the socio economic status of the local area through job creation, skills development and increased pork and vegetable 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 development area is mostly transformed as a result of past agricultural practices and current vegetable farming. Three sensitive areas were identified within the farm, that is the Channelled Valley Bottom (CVB) wetland and the two seep wetlands. The Present Ecological State assessment, undertaken as part of the Wetland Delineation and Assessment defines the seeps as having Moderately modified Wetland Health Condition and Largely modified for the CVB. The main environmental impacts associated with the proposed project include:

Soil erosion

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 moderate probability of occurrence with implemented mitigation measures and ultimately moderate impact.

Vegetation and habitat loss

Vegetation loss is unavoidable during the construction phase. The majority of the site proposed for the piggery, however, has been transformed and very little natural vegetation remains. Development planning must ensure loss of vegetation and disturbance is restricted to within the recommended development site layout. It is not expected that activities associated with the development will impact the natural faunal and flora to any significant level. No Species of Conservation Concern will be affected. Areas of natural vegetation or high sensitivity areas will be demarcated as no-go areas to be avoided during the construction phase activities.

Impact on wetland, surface and groundwater

Without mitigation, the proposed development poses a risk to the wetland systems including surface and groundwater. The pollution of wetlands, surface and groundwater is likely to occur through effluent runoff. These impacts can be mitigated by effectively channelling runoff and impermeable design of waste containment structures. It is essential to ensure that the pig houses and associated drains and dams are designed and aligned with impermeable substances (e.g. concrete) in accordance with advice from suitably qualified agricultural experts. Adherence to best practice pig farming and waste disposal guidelines is critical for this project to reduce the significance of this risk. The recommended area for the proposed development includes the land upslope of the western seep for vegetable production use and area behind the eastern seep for the piggery. The reason for this recommendation is included in the Wetland Delineation and Assessment Report included in Appendix G.

Waste

Waste will be generated during the construction and operational phase; this 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 piggery development vegetable production expansion will contribute to the local economy during both the construction and operational phases as local labourers will be employed and the pork and vegetables produced 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 report, 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 piggery and pig farming as a whole. As a result of the environmental sensitivities identified on site, it was recommended by the Wetland Delineation and Assessment specialist that the proposed development and expansion be moved outside of the identified sensitive features. The small-scale agriculture on the western area upslope of the seep will have less impact on the wetland due to this area not being as connected to the wetland as what the eastern part is. Therefore recommended by the Specialist that the buffer extent can likely be reduced in this area. It is Sazi's (Specialist) opinion and findings that the wetland's conditions range from being moderately modified to largely modified. In addition, the eco-services that the wetlands provide are respectively low, except the natural resources provided in the form of grazing ground. The wetlands also remove nitrates and toxins whilst also trapping sediments and phosphorous. The assessment concluded the site suitable for grazing based on seasonal accessibility with small-scale agriculture on the western terrestrial land and the piggery on the eastern terrestrial land. The concluding remark in this regard was that the relevant departments (GDARD, DWS and DAFF) should be consulted. The Environmental Management Programme (Appendix H) 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 development of the pig farming and vegetable production facility and associated infrastructure.

FINAL BASIC ASSESSMENT REPORT

Basic Assessment for the Zaforho Tracing's proposed development of a pig and vegetable production facility on Plot 78 of Jakkalsdans Farm 243 in Cullinan, Pretoria.

Alternative 1

N/A

Alternative 2

N/A

No-go (compulsory)

The no-go option would mean that the status quo would remain. Environmental impacts would not be impacted on any further than the current situation. The vegetation on site would retain its current status and no further development would occur on the site. Vegetable production on the farm will not be increased and the opportunity for the business to sustainably extend its agricultural footprint and ultimately sustain the business will not be realised. The no-go option will not promote a positive impact in terms of economic benefits for the applicant and a contribution to South Africa's food security will not be realised. The environmental impacts associated with the proposed development can be mitigated and can be effectively managed with the implementation of effective measures as discussed in the EMPr. The opportunity to improve the local socio-economic situation and to use best practice pig farming methods, including improved pig welfare, will not be realised.

6. IMPACT SUMMARY OF THE PROPOSAL OR PREFERRED ALTERNATIVE

For proposal:

- Impact on soil (erosion and dust)
- Loss of vegetation and faunal habitat
- Impact on Conservation Important species
- Introduction and increase in alien vegetation
- Impact on wetland habitat
- Potential for pollution of water sources
- Waste generation
- Impact of pests and disease transmission
- Impact of traffic
- 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.

According to the Ecological and Wetland Assessment undertaken as part of this BA, the site is relatively species poor and largely transformed. However a large area of the site consists of wetlands; two seep wetlands and a channelled valley bottom wetland, regarded as medium to highly sensitive in terms of the Wetland Delineation and Assessment. The proposed development is for the construction of a piggery and the expansion of vegetable production. The initial footprint was revised following the specialist assessments, due to environmental sensitivities identified on site. The preferred layout has been recommended by the Wetland Delineation and Assessment Specialist to ensure that the proposed development and expansion are outside of the identified sensitive features. The proposed small-scale vegetable production on the western area upslope of the seep will have less impact on the wetland due to this area not being as connected to the wetland as what the eastern part is. Consequently, recommended by the Specialist that the buffer extent can likely be reduced in this area. The proposed structures associated with the development will be designed to follow SAPPOS guidelines in terms of best practices associated with pig farming, and to adhere to environmental legislation advocating minimal environmental impacts. The proposed location of the piggery will ensure that development occurs in already transformed land, minimising impact on sensitive areas within the remainder of the farm. The aim is to utilise a relatively small area of the 21 hectare farm for a piggery and vegetable farming, with the implementation and adherence to mitigation measures to prevent impacts on the sensitive environments, in an effort to achieve a balanced development option for the site.



7. SPATIAL DEVELOPMENT TOOLS

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

The Spatial Development Framework (SDF) is the legislated component of the municipality's Integrated Development Plan (IDP) that prescribes development strategies and policy guidelines to restructure and reengineer the urban and rural form. The 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 5 in the City of Tshwane, (Figure below).

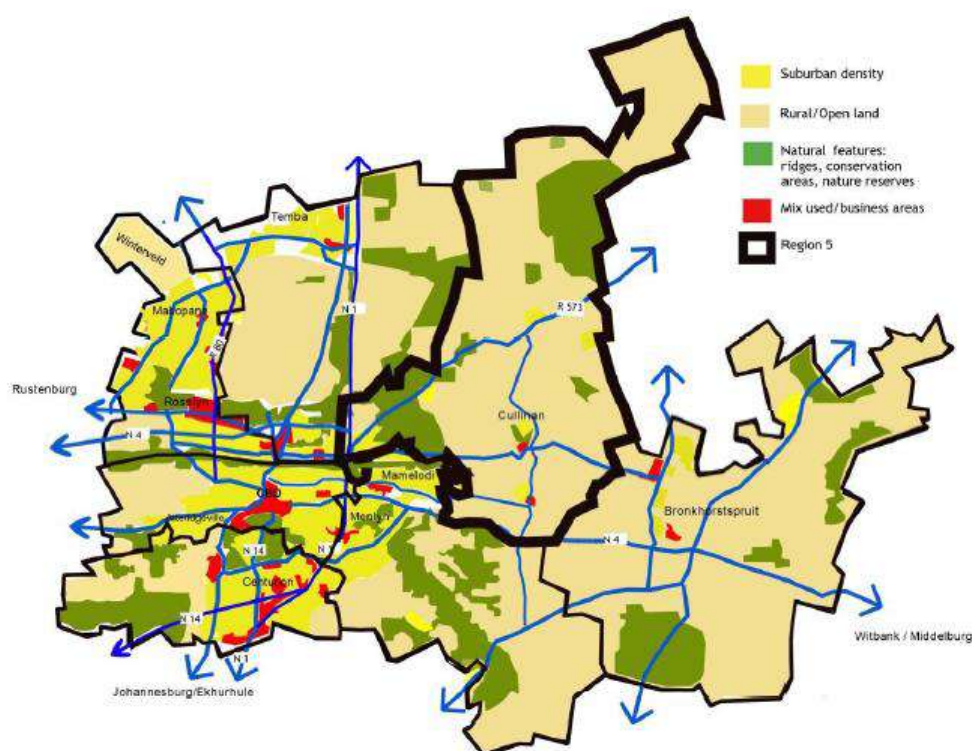


Figure 4: The location of Region 5 in the City of Tshwane (Source: Region 5: Regional Integrated Development Plan 2014 - 2015)

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. The figure below indicates the key developmental features of Region 5.

REGION 5: DEVELOPMENT OVERVIEW

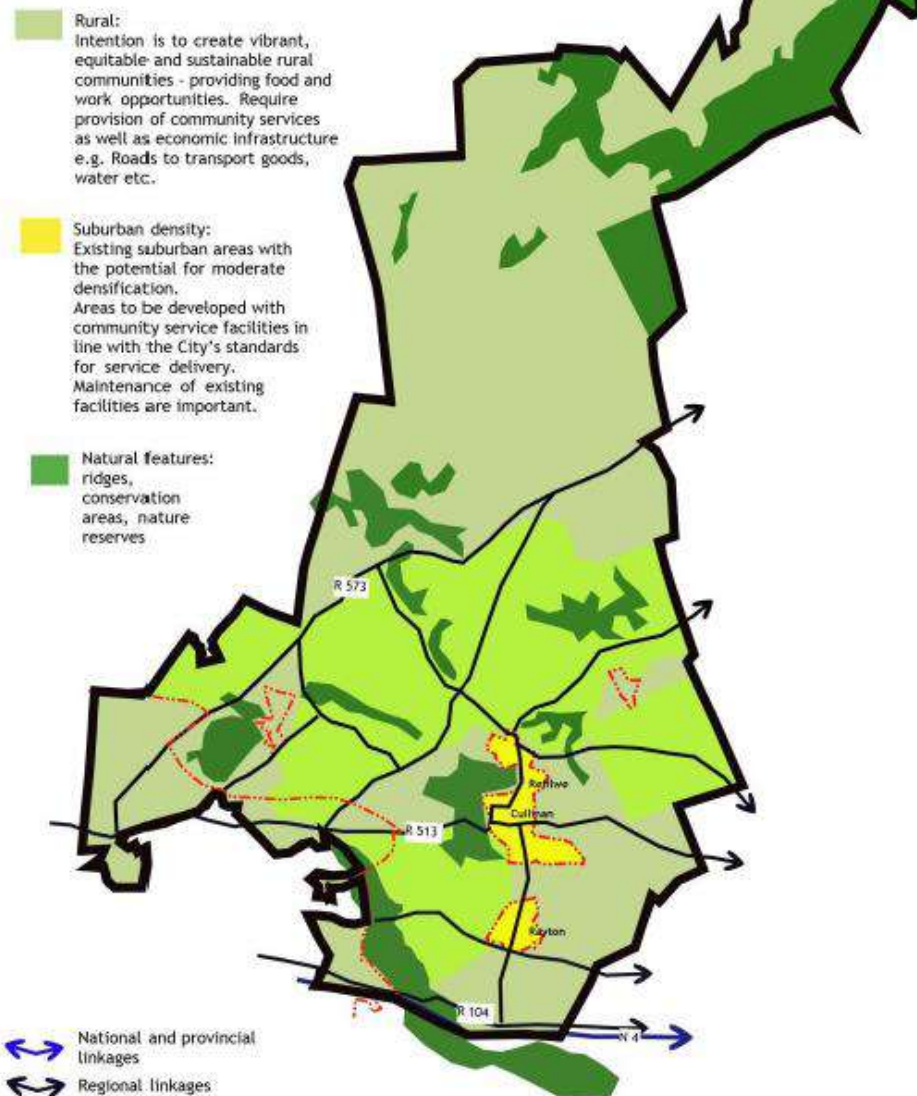


Figure 5: Regional Developmental Overview for Region 5 (Source: Region 5: Region 5 Spatial Development Framework (SDF) 2017)

In terms of the spatial development, some of the weaknesses identified for the region include a high level of unemployment and low skilled labour force. The Tshwane Vision for the Rural component of the area includes creating employment and business opportunities for the existing rural population, and ensuring food security by maximising the use and management of natural and other resources.

FINAL BASIC ASSESSMENT REPORT

Basic Assessment for the Zaforho Tracing's proposed development of a pig and vegetable production facility on Plot 78 of Jakkalsdans Farm 243 in Cullinan, Pretoria.

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 2017 SDF regards agriculture as one of the key opportunities of the region, and the greatest strength of Region 5, in respect of agriculture, is its central location and access to markets. 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

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

N/A

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

This BAR addresses a detailed analysis of the potential impacts associated with the proposed development of the project. The property available to the applicant has a total area of 21 hectares. At the start of the BA, the project proposal was for a piggery of 6 hectares on the site. The site includes an NFEPA wetland passing through the centre. The initial development proposal (based on desktop information) was to avoid and buffer this NFEPA wetland and consider development on the remaining extent of the property.

However, the field work for the ecology and wetland specialist studies found that the wetlands were of greater extent than captured in the national-scale mapping. Based on the Ecological and Wetland Assessment undertaken by Afzelia (dated May 2018; included in Appendix G) the impacts associated with the loss of wetland and wetland vegetation are rated as of high significance with and without mitigation and thus no recommendation for mitigation was provided by the Specialist. The specialist study suggested that the proposed development should not go ahead due to the presence and potential impacts on wetlands on site.

Thereafter, a Wetland Delineation and Assessment study was undertaken by SAZI (dated August 2018; included in Appendix G) that mapped the sensitivity of the site in more detail. The wetlands and seeps are a major constraint to development on the property. Potential nutrient loading and seepage from a piggery presents a greater risk to groundwater quality and wetlands than vegetable farming, and therefore the extent of the piggery was greatly reduced and buffered from the wetlands. This led to the following revised development proposal (refer to Figure 55 of SAZI Report in Appendix G, and Map 1B of Appendix A):

- 1 hectare available for piggery on areas of least sensitivity in terms of wetlands and ecology;
- 3.6 hectares of vegetable farming on areas of least sensitivity in terms of wetlands and ecology; and
- 15.6 hectares to be a "no-go" area for development due to high and medium sensitivity of wetlands and ecology.

The environmental assessment should consider a holistic view of environmental management, that balances the imperatives of agriculture to sustain livelihoods and contribute to socio-economic development with the need to protect and minimise significant impacts on the natural environment and maintain ecosystem services.

Furthermore, the applicant is being assisted on a pro bono basis under the Special Needs and Skills Development Programme which was commissioned by the DEA. This is the only land parcel that the applicant has and in an effort to achieve a balanced development future for the site, the option to identify potential areas of the site that are least sensitive in terms of wetlands and seeps, and that can potentially be used for vegetable farming and a piggery, is considered justifiable.

The proposed layout recommended by the supporting Wetland Delineation and Assessment study (SAZI, August 2018) and the resulting condition that the proposed layout should be located outside of areas of highest and moderate sensitivity (i.e. wetlands and seeps), assists in balancing these competing requirements of agriculture, livelihoods, wetlands and conservation.

This revised proposed development (Figure 55 of SAZI Report in Appendix G, and Map 1B in Appendix A) will have an impact of low to moderate significance, provided that the mitigation measures proposed in this report and the EMPr are effectively implemented.

It is the opinion of the EAP that with effective implementation of the mitigation measures suggested in this BAR, as well as adherence to the layout suggested in the Wetland Delineation and Assessment study undertaken by SAZI and captured in Figure 55, the impacts on the wetland system can be managed and reduced to reasonable levels.

It is therefore cautiously recommended by the EAP that the revised proposed development receive Environmental Authorisation, 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 Wetland Delineation and Assessment specialist, including avoiding the designated wetland area, 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 Waste Management Licence must be obtained for the storage of pig waste in the waste dam.
- A Water Use Licence must be obtained for the water usage associated with the piggery operations as well as the re-use of waste water for fertilisation.

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?	<p>Yes. The proposed land use is in line with some of the Region's Spatial Development Framework 2017 relating to Tshwane's Rural Component; which are:</p> <ul style="list-style-type: none"> • To promote an effective response to rural poverty; • To ensure food security by maximising the use and management of natural resources; • To contribute towards the redistribution and sustainable use of all potential agricultural land; • Rural communities will be supported by agriculture, and where possible by mining and tourism and agro processing; and • To create employment and business opportunities for the existing rural population.

FINAL BASIC ASSESSMENT REPORT

Basic Assessment for the Zaforho Tracing's proposed development of a pig and vegetable production facility on Plot 78 of Jakkalsdans Farm 243 in Cullinan, Pretoria.

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 : 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 vegetables to local stores and supermarkets, and with the proposed expansion, the company aims to supply major supermarkets and butcheries within the Cullinan and/or the Tshwane Market. Local butcheries have been approached as they have shown great interest in developing agriculture in South Africa. The business therefore aims to assist in addressing the unemployment challenges in the area, as well as demonstrate the significant role that the youth could contribute in agriculture. The business therefore aims to assist in addressing the unemployment difficulties in the area, restore dignity of farm workers in the long run, as well as demonstrate the significant role that the youth could contribute in agriculture. This opportunity is expected to be of economic benefit and contribution to the pork industry in the area.
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. The proposed project will make use of borehole water, for which a water use licence will be applied for, as well as rain water harvesting.
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, however not expected to be of high significance as the proposed development is for 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 piggery and vegetable production 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 pig 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>

FINAL BASIC ASSESSMENT REPORT

Basic Assessment for the Zaforho Tracing's proposed development of a pig and vegetable production facility on Plot 78 of Jakkalsdans Farm 243 in Cullinan, Pretoria.

Questions (Notice 792, NEMA, 2012)		Answer
PART II: DESIRABILITY		
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 vegetable production and development of a piggery. The historical use of the site included crop farming and pig farming (as evident with the dilapidated piggery structures on site), 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 pig and vegetable farming. With the implementation of best practice measures, the environmental impacts associated with this use are not expected to be of high significance. The proposed development is located in a rural area with very low-density dwellings, making it suitable for this type of environment.
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 2016 -20121 IDP and 2055 vision. It aims to align to the following objectives: <ul style="list-style-type: none"> • Promote shared economic growth and job creation • Improve financial sustainability • Continue institutional development, transformation and innovation
3.	Would the approval of this application compromise the integrity of the existing environmental management priorities for the area (e.g. as defined in EMFs), and if so, can it be justified in terms of sustainability considerations?	No. The agricultural sector is one of the identified targeted for sectors in the Gauteng Growth and Development Strategy. The proposed development 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.
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 piggery and associated infrastructure, as well as the vegetable farming, with a total footprint of approximately 4 hectares will exert an impact on the environment;

FINAL BASIC ASSESSMENT REPORT

Basic Assessment for the Zaforho Tracing's proposed development of a pig and vegetable production facility on Plot 78 of Jakkalsdane Farm 243 in Cullinan, Pretoria.

Questions (Notice 792, NEMA, 2012)		Answer
		however based on the findings of the specialist studies and this BA report, as well as the recommended layout, the impacts associated with this proposed development can be mitigated and in implementing those measures effectively can have a significantly reduce impacts.
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.)?	It should also be noted that although the odour from piggeries 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. The area has very few households, 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 pork industry is growing; pork production increased by an annual average of 4.5%, second to broiler production which grew by 6%. Production turnaround for pork is quicker and demand fundamentals for this product are unlikely to change. This industry also presents opportunities in that there is a huge potential in the rural markets and exports to the SADEC region.
8.	Will the proposed land use result in unacceptable cumulative impacts?	No. The proposed project and associated activities has identified 4 cumulative impacts, with impacts ranging from low to moderate significance 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 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.

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

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

EMPr attached

YES

Basic Assessment for the Zaforho Tracing's proposed
development of a pig and vegetable production facility
on Plot 78 of Jakkalsdans Farm 243 in Cullinan, Pretoria

FINAL BASIC ASSESSMENT REPORT

SECTION F: APPENDICES



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 - N/A 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)

SECTION F: APPENDICES

Basic Assessment for the Zaforho Tracing's proposed development of a pig and vegetable production facility on Plot 78 of Jakkalsdans Farm 243 in Cullinan, Pretoria.

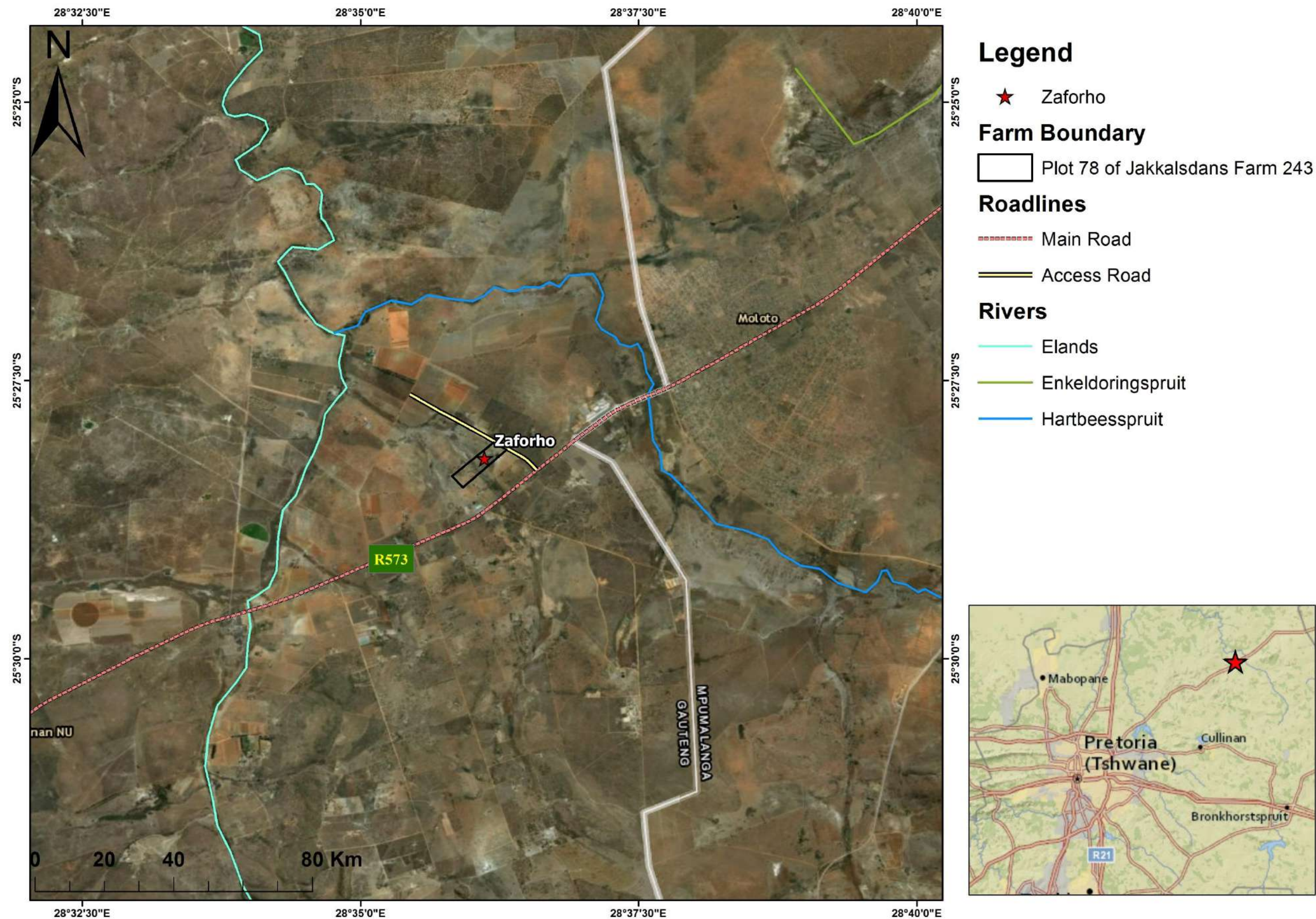
BASIC ASSESSMENT REPORT

APPENDIX A: SITE PLAN(S)

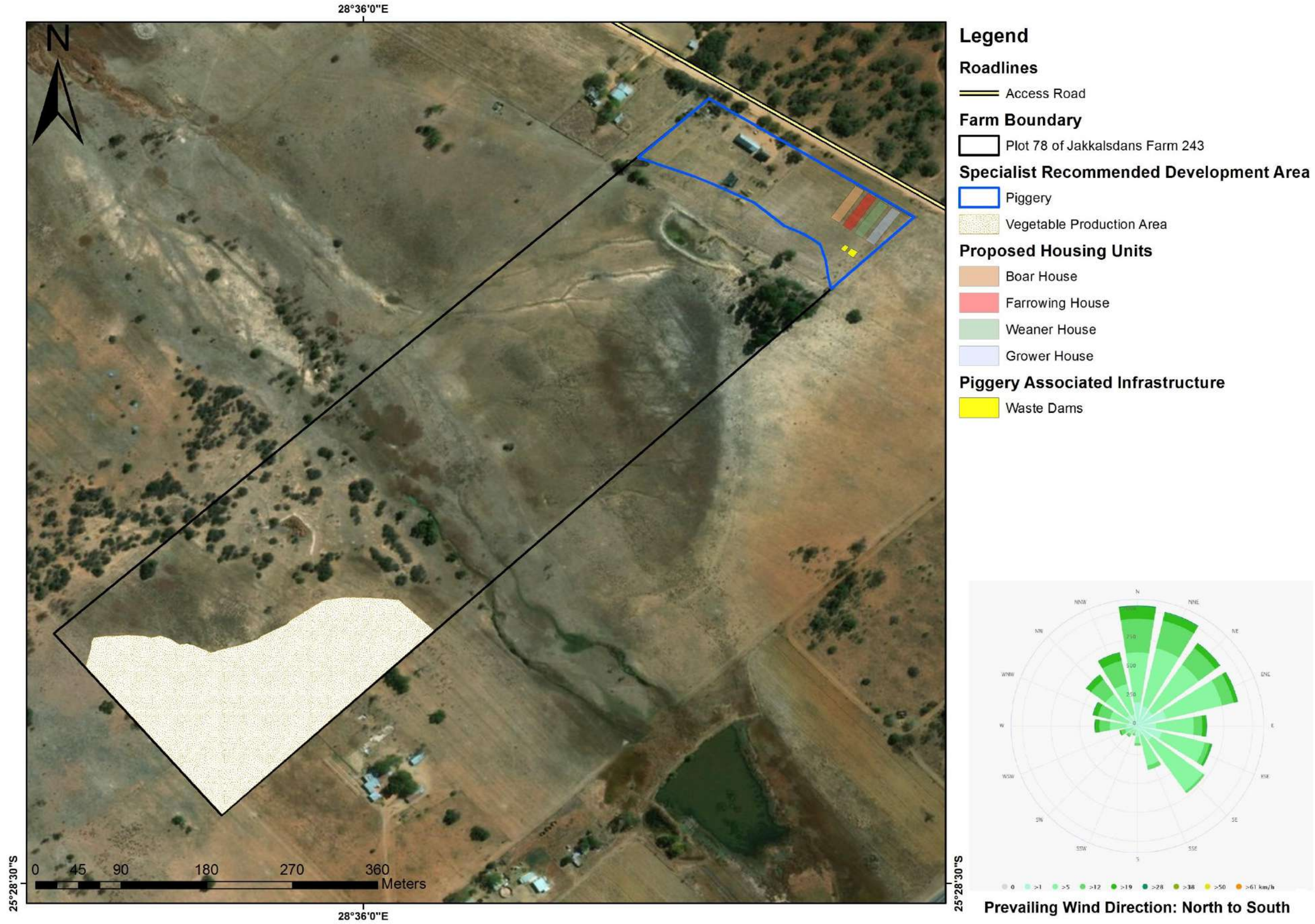
CONTENTS

Map 1A: Zaforho Tracing Site Location on Plot 78 of Jakkalsdans Farm 243 in Cullinan, Pretoria. ____	2
Map 1B: Zaforho Site Layout of proposed Piggery infrastructure and Vegetable production. _____	3
Map 1C: Zaforho Site Layout of proposed Piggery infrastructure and Vegetable production, including sensitivities. _____	4

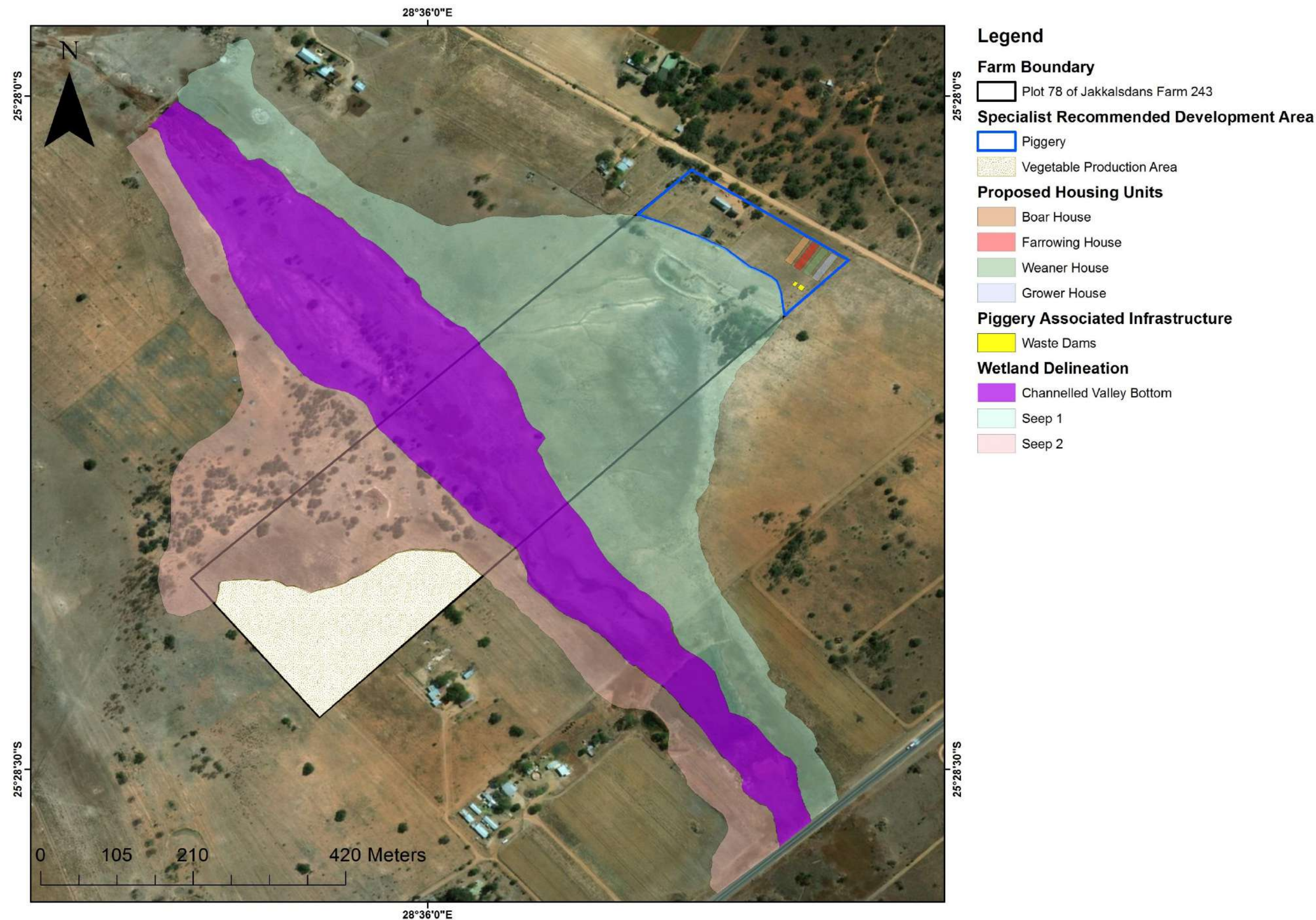
Map 1A: Zaforho Tracing Site Location on Plot 78 of Jakkalsdans Farm 243 in Cullinan, Pretoria.



Map 1B: Zaforho Site Layout of proposed Piggery infrastructure and Vegetable production.



Map 1C: Zaforho Site Layout of proposed Piggery infrastructure and Vegetable production, including sensitivities.



SECTION F: APPENDICES

Basic Assessment for the Zaforho Tracing's proposed development of a pig and vegetable production facility on Plot 78 of Jakkalsdams Farm 243 in Cullinan, Pretoria.

BASIC ASSESSMENT REPORT

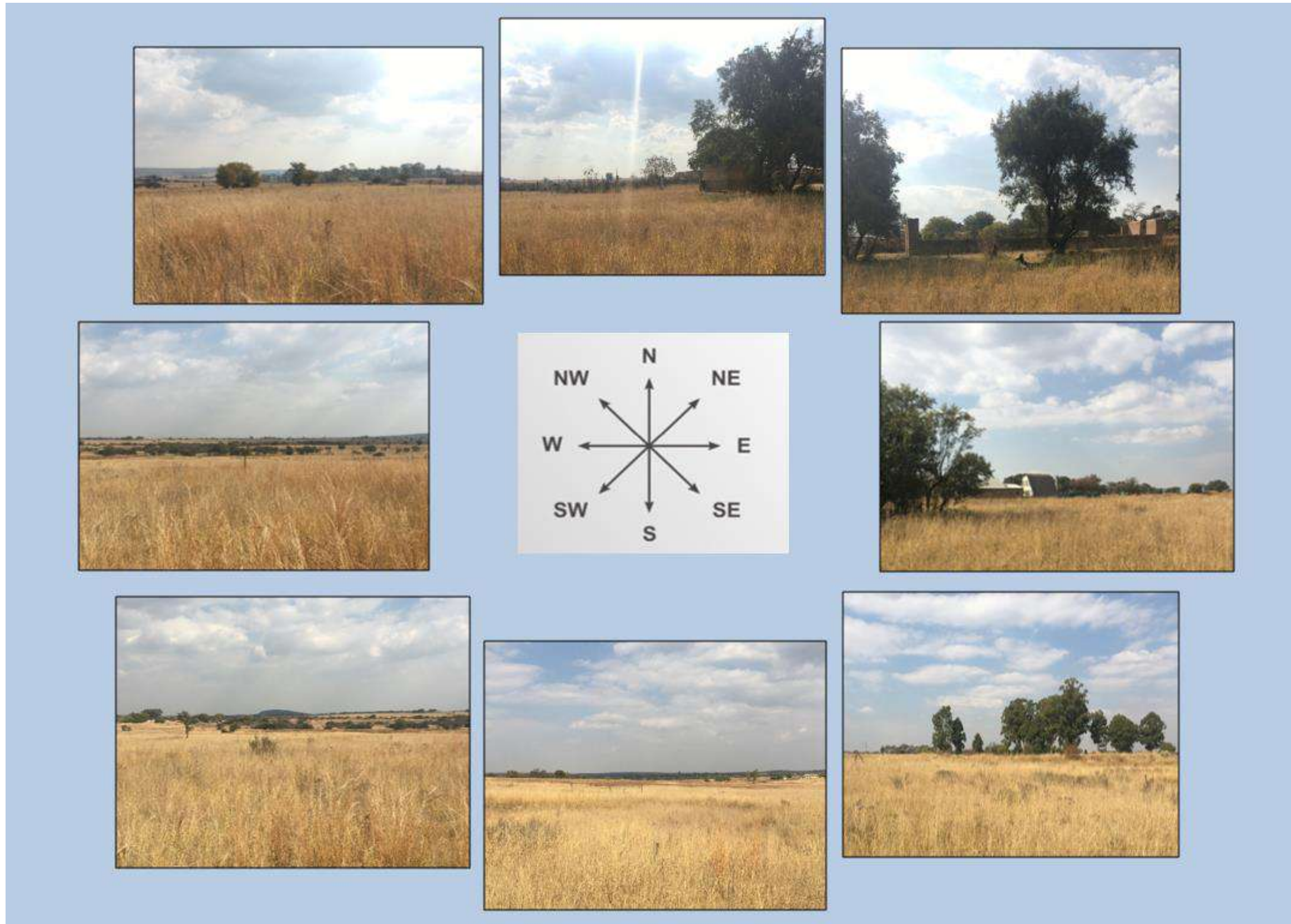
APPENDIX B: PHOTOGRAPHS

CONTENTS

Zaforho Site Photographs taken in the eight major compass directions_____ 2

SECTION F: APPENDICES

Zaforho Site Photographs taken in the eight major compass directions



SECTION F: APPENDICES

Basic Assessment for the Zaforho Tracing's proposed development of a pig and vegetable production facility on Plot 78 of Jakkalsdans Farm 243 in Cullinan, Pretoria.

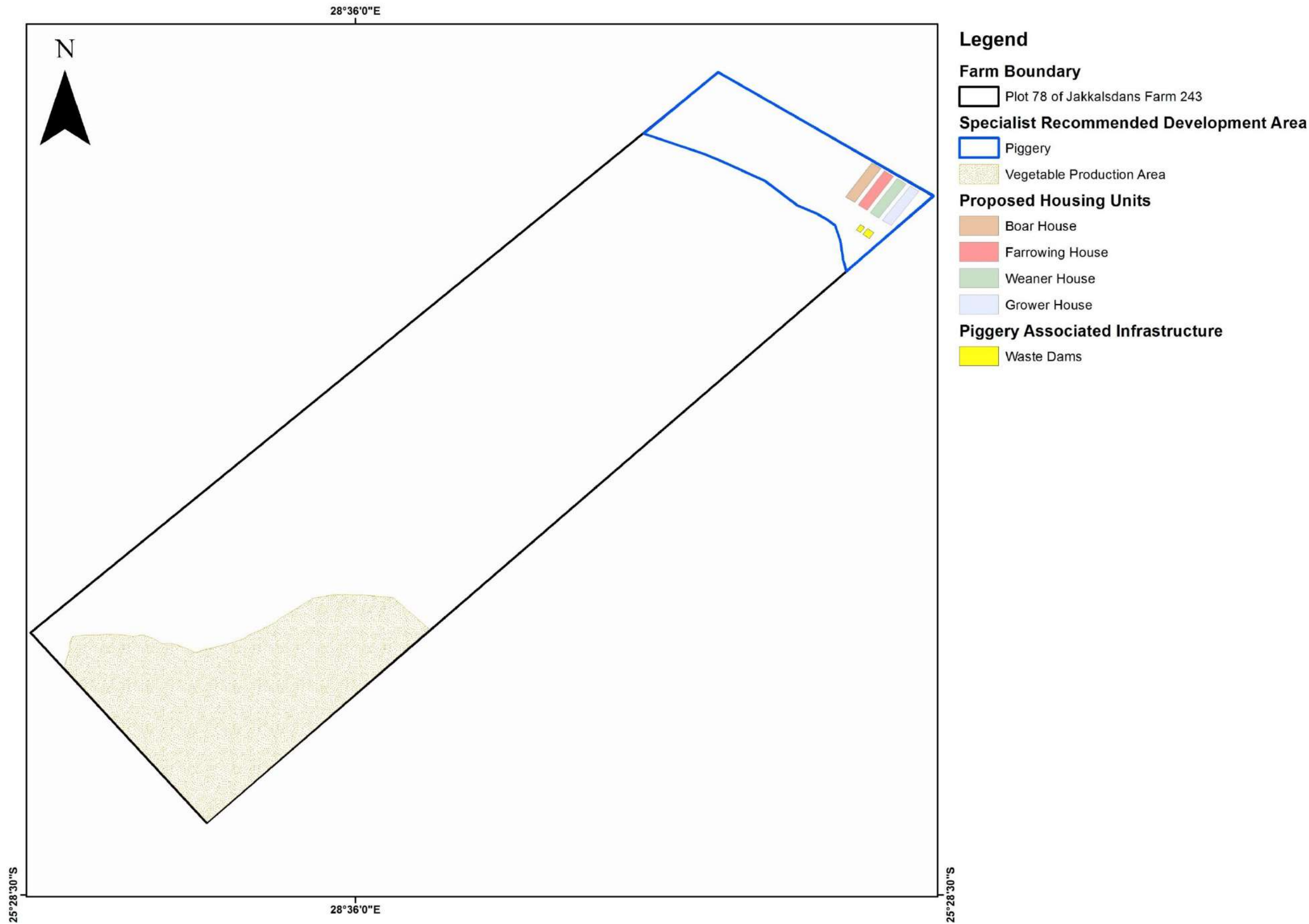
BASIC ASSESSMENT REPORT

APPENDIX C: FACILITY ILLUSTRATION(S)

CONTENTS

An illustration of the structures for the current and proposed facility relative to the site _____ 2

An illustration of the proposed facility relative to the site



SECTION F: APPENDICES

Basic Assessment for the Zaforho Tracing's proposed development of a pig and vegetable production facility on Plot 78 of Jakkalsdans Farm 243 in Cullinan, Pretoria.

BASIC ASSESSMENT REPORT

APPENDIX E: PUBLIC PARTICIPATION

CONTENTS

Appendix E1: Proof of site notice _____	2
Appendix E2: Written notices issued as required in terms of the regulations _____	5
Appendix E3: Proof of newspaper advertisement _____	10
Appendix E4: Communications to and from interested and affected parties _____	12
Appendix E5: Comments from I&APs following the release of the Draft Basic Assessment Report _	27
Appendix E6: Copy of the register of I&APs _____	39

SECTION F: APPENDICES

Basic Assessment for the Zavorho Tracing's proposed development of a pig and vegetable production facility on Plot 78 of Jakkalsdams Farm 243 in Cullinan, Pretoria.

Appendix E1: Proof of site notice

Site notices (English and IsiNdebele) placed at the entrance of the proposed development site (Site Notice GPS co-ordinates: 25°28'4"S, 28°36'13"E)



SECTION F: APPENDICES

Basic Assessment for the Zaforho Tracing's proposed development of a pig and vegetable production facility on Plot 78 of Jakkalsdams Farm 243 in Cullinan, Pretoria.

Contents of the English site notice placed at entrance of the proposed development site

Zaforho Tracing (Pty) Ltd **(Plot 78 Jakkalsdams Farm 243, Cullinan, Pretoria)**

Reference Number: CSIR/IU/021MH/IR/2017/0008/A

NOTICE OF A BASIC ASSESSMENT (BA) PROCESS

Notice is given in terms of the Environmental Impact Assessment (EIA) Regulations, under sub-regulation 41 (2) (a), published in Government Gazette (GG) No 40772 of 7 April 2017, of the National Environmental Management Act 1998 (Act No. 107 of 1998) and under GG No. 37083 of the National Environmental Management: Waste Act, (Act No. 59 of 2008), that the **Zaforho Tracing (Pty) Ltd** proposes the **a Pig production facility and Vegetable production on Plot 78 of Jakkalsdams Farm 243 in Cullinan, Pretoria.**

The Council for Scientific and Industrial Research (CSIR) has been appointed by **Zaforho** 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	4
GNR 327, 7 April 2017	27
GNR 324, 7 April 2017	12
GNR 921, 29 November 2013	Category A: 1 & 12

This notice is also in terms of the National Environmental Management: Waste Act (NEMWA 59 of 2008), as amended, where there are Listed Activities related to waste that the proposed project triggers. The BA Process will therefore include a Waste Management Licence Application.

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, and quote the CSIR Reference Number:



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



Figure 1. Zaforho Tracing's Proposed Piggery and Vegetable Production Farm

SECTION F: APPENDICES

Basic Assessment for the Zaforho Tracing's proposed development of a pig and vegetable production facility on Plot 78 of Jakkalsdans Farm 243 in Cullinan, Pretoria.

Contents of the IsiNdebele site notice placed at entrance of the proposed development site

Zaforho Tracing (Pty) Ltd (Plot 78 Jakkalsdans Farm 243, Cullinan, Pretoria)

Reference Number: CSIR/IU/021MH/IR/2017/0008/A

ISAZISO SEKAMBISO YE-BASIC ASSESSEMENT

Naso isiyeliso ngokuya ngokomthetho we-Environmental Impact Assessment (EIA) ngaphasi komthetholawulo ka41 (2) (a), eyakhitjwa encwadini yomthetho karhulumente yezaziso zomphakathi ye40772 ngomnyaka ka 2017 enyangeni kaApril nge7, ngokulawula mthetho weNational Environmental Management eyajanyiswa ngo1998 (Act No. 107 of 1998). **Zaforho Tracing (Pty) Ltd** ikhiphe isibawo senqenye yokwenziwa iPlasi leenwotji nofana leemfarigi nokukhiqizwa kwemirorho endaweni yeplasi Jakkalsdans eCullinan, ePretoria.

Njengombana iCouncil yeScientific ne-Industrial Research (CSIR), izijamela njengeIndependent Environmental Assessment Practitioner. Yeke izakulawula ihlelo lesibawo somtamo weBasic Assessment, ngaphezukwalapho umtamo lo uzakubhaliswa emnyangweni wezokulima nokuthukiswa kwenarha ngeGauteng (GDARD). Ukuthokeka kweBasic Assessment kulawula msebenzi otolwe emthethweni wesiyeliso sikarhulumente (GNR) 327 ka 7 April 2017.

Government Notice	Listed Activity Number
GNR 327, 7 April 2017	4
GNR 327, 7 April 2017	27
GNR 324, 7 April 2017	12
GNR 921, 29 November 2013	Category A: 1 & 12

Ukufumana ilwazi ngokuzeleko mayelana nomtamo lo namkhana iphrojekthi le kanye nekambiso yeBasic Assessment le nofana nawunekareko lokuzitlolisela njengelunga elithintekako la, thinta umphathi womtamo lo. Tjheja iminingwane ngaphasi begodu ungalibali ukutlola inomboro yeReference yeCSIR:



Figure 1: Umepe otjengisa indawo yesibawo somtamo.

SECTION F: APPENDICES

Basic Assessment for the Zaforho Tracing's proposed development of a pig and vegetable production facility on Plot 78 of Jakkalsdans Farm 243 in Cullinan, Pretoria.

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

Letter sent (14/09/18) to notify I&APs of the release of the Draft Basic Assessment Report for comment



Environmental Management Services

PO Box 17001
Congella,
Durban
4013

Tel: +27 31 242 2330
Fax: +27 31 281 8172
Email: bmqokeli@csir.co.za

12 September 2018

Dear Interested and/or Affected Party,

NOTICE OF BASIC ASSESSMENT PROCESS AND RELEASE OF DRAFT BASIC ASSESSMENT REPORT FOR A 30-DAY REVIEW PERIOD

BASIC ASSESSMENT FOR THE PROPOSED DEVELOPMENT OF A PIG AND VEGETABLE PRODUCTION FACILITY ON PLOT 78 OF JAKKALSDANS FARM 243 IN CULLINAN, PRETORIA, 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. Zaforho Tracing has been identified as an eligible client for this service and is proposing the development of a pig and vegetable production facility on Plot 78 of Jakkalsdans Farm 243 in Cullinan, Pretoria.

In terms of Government Notice Regulations (GNR) R326, R327, R325 and R324 on 7 April 2017 of the National Environmental Management Act (Act 107 of 1998) published in Government Gazette 40772, 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 R326, R327, R325 and R324 on 7 April 2017. The CSIR, as the independent Environmental Assessment Practitioner (EAP), is managing the Basic Assessment and Public Participation Process for this proposed project.

In line with the amended Environmental Impact Assessment requirements, Interested and Affected Parties (I&APs) are hereby notified of the release of the Draft BA Report for a 30-day review period, which will extend from **13 September 2018 to 15 October 2018**. Please submit any review comments on the Draft BAR by **13 October 2018** to the CSIR Project Manager via email or post at the contact details above.

A hard copy of the Draft BA Report is available for public viewing at the Rayton Library (Community Hall, CNR Montrose & Oakley Street, Rayton, Cullinan, 1001). The Draft BA Report is also available in the form of an electronic copy on the following website: <https://www.csir.co.za/environmental-impact-assessment>

The next step in the BA Process will entail compiling the Final BA Report and including all comments received from I&APs during the 30-day review period of the Draft BA Report. Once finalised, the Final BA Report will be submitted to the Gauteng Department of Agriculture and Rural Development (GDARD) for decision making. As a registered I&AP on the project database, you will be notified in writing of the submission of the Final BA Report, as well as the outcome of the decision making process.

Should you have any queries or require additional information please do not hesitate to contact the undersigned using the contact details provided above.

Sincerely,

Ms. Babalwa Mqokeli (Project Manager)

www.csir.co.za

SECTION F: APPENDICES

Basic Assessment for the Zavorho Tracing's proposed development of a pig and vegetable production facility on Plot 78 of Jakkalsdams Farm 243 in Cullinan, Pretoria.

Email sent (14/09/18) to notify I&APs of the release of the Draft Basic Assessment Report for comment

From: Babalwa Mqokeli
To: BC
BC mrabothata@environment.gov.za; SHlela@environment.gov.za; tmemarude@environment.gov.za; bonginkosi.zulu@drdlr.gov.za; mashuduma@daff.gov.za; thokob@daff.gov.za; mohapin@dws.gov.za; muthraparsadn@dws.gov.za; HettieB; steven.mukhola@gauteng.gov.za; karabo.mohatla@gauteng.gov.za; phuti.matlamela@gauteng.gov.za; albert.marumo@gauteng.gov.za; tshiswaiser@dws.gov.za; musekenem@dws.gov.za; rakgothot@dws.gov.za; bethuel.netshiswinzhe@gauteng.gov.za; Zingisa.Smole@gauteng.gov.za; rudzanim@tshwane.gov.za; Tshinyadzo A. Mphephu; lucasw@tshwane.gov.za; zavorho@yahoo.com; pietvdyk@gmail.com; owenthapelom@gmail.com; watmoloto@gmail.com; tumi.lehabe@wessa.co.za; ashleighd@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: 14/09/2018 12:15
Subject: Notice of Basic Assessment (BA) Process and Release of Draft BA Report for a 30-day Review/Comment
Period: Zavorho
Attachments: Letter to I&APs_DBAR_Zavorho.pdf

Dear stakeholder

Notice of Release of Draft Basic Assessment Report for comment

Basic Assessment for the proposed development of a pig and vegetable production facility on Plot 78 of Jakkalsdams Farm 243 in Cullinan, Pretoria.

Kindly find the attached **letter** notifying you of the Basic Assessment (BA) Process and release of the Draft BA Report for a 30-day public review period for the above-mentioned project.

In terms of Government Notice Regulations (GNR) 326, 327, 325 and 324 of 7 April 2017 of the National Environmental Management Act (Act 107 of 1998), Environmental Authorisation from the Competent Authority, in this case the Gauteng Department of Agriculture and Rural Development, 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), is managing the Basic Assessment and Public Participation Process for this proposed project under the DEA Special Needs and Skills Development Programme.

In line with the above, please submit any comments on the Draft BA Report to the CSIR Project Manager at the contact details provided below on or before the **15th October 2018**:

Ms. Babalwa Mqokeli (Project Manager)

PO Box 17001
Congella,
Durban
4013
Tel: 031 242 2330
Fax: 031 261 8172
E-mail: bmqokeli@csir.co.za

A hard copy of the Draft BA Report is available for public viewing at the Rayton Library (Community Hall, CNR Montrose & Oakley Street, Rayton, Cullinan, 1001). The Draft BA Report is also available in the form of an electronic copy on the following website: <https://www.csir.co.za/environmental-impact-assessment>

Many thanks,
Babalwa Mqokeli
CSIR - Environmental Management Services






SECTION F: APPENDICES

Basic Assessment for the Zaforho Tracing's proposed development of a pig and vegetable production facility on Plot 78 of Jakkalsdams Farm 243 in Cullinan, Pretoria.

Proof email delivery sent on 14 September 2018






Message Id:	5B9B8ABD.6B3 : 119 : 306
Subject:	Notice of Basic Assessment (BA) Process and Release of Draft BA Report for a 30-day Review/Comment Period: Zaforho
Created By:	BMqokeli@csir.co.za
Scheduled Date:	
Creation Date:	14/09/2018 12:17
From:	Babalwa Mqokeli

Recipients:

Recipient	Action	Date & Time	Comment
 birdlife.org.za	Transferred	14/09/2018 12:17	
BC: advocacy@birdlife.org.za(advocacy@birdlife.org.za)	Delivered	14/09/2018 12:17	
 daff.gov.za	Transferred	14/09/2018 12:17	
BC: HettieB(HettieB@daff.gov.za)			
BC: mashuduma@daff.gov.za(mashuduma@daff.gov.za)			
BC: thokob@daff.gov.za(thokob@daff.gov.za)			
 drdlr.gov.za	Transferred	14/09/2018 12:17	
BC: bonginkosi.zulu@drdlr.gov.za(bonginkosi.zulu@drdlr.gov.za)	Delivered	14/09/2018 12:19	
 dws.gov.za	Transferred	14/09/2018 12:17	
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BC: musekenem@dws.gov.za(musekenem@dws.gov.za)	Transferred	14/09/2018 12:17	2.0.0 message relayed
BC: muthraparsadn@dws.gov.za(muthraparsadn@dws.gov.za)	Transferred	14/09/2018 12:17	2.0.0 message relayed
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BC: tshiswaiser@dws.gov.za(tshiswaiser@dws.gov.za)	Transferred	14/09/2018 12:17	2.0.0 message relayed
 environment.gov.za	Transferred	14/09/2018 12:17	
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BC: SHlela@environment.gov.za(SHlela@environment.gov.za)	Transferred	14/09/2018 12:17	2.0.0 message relayed
BC: tnemarude@environment.gov.za(tnemarude@environment.gov.za)	Transferred	14/09/2018 12:17	2.0.0 message relayed
 ewt.org.za	Transferred	14/09/2018 12:17	



SECTION F: APPENDICES

Basic Assessment for the Zaforho Tracing's proposed development of a pig and vegetable production facility on Plot 78 of Jakkalsdans Farm 243 in Cullinan, Pretoria.

BC: ashleighd@ewt.org.za(ashleighd@ewt.org.za)	Delivered	14/09/2018 12:18	
BC: ewt@ewt.org.za(ewt@ewt.org.za)	Delivered	14/09/2018 12:18	
 gauteng.gov.za	Transferred	14/09/2018 12:17	
BC: albert.marumo@gauteng.gov.za(albert.marumo@gauteng.gov.za)	Transferred	14/09/2018 12:17	2.0.0 message relayed
BC: bethuel.netshiswinzhe@gauteng.gov.za(bethuel.netshiswinzhe@gauteng.gov.za)	Transferred	14/09/2018 12:17	2.0.0 message relayed
BC: karabo.mohatla@gauteng.gov.za(karabo.mohatla@gauteng.gov.za)	Transferred	14/09/2018 12:17	2.0.0 message relayed
BC: phuti.matlamela@gauteng.gov.za(phuti.matlamela@gauteng.gov.za)	Transferred	14/09/2018 12:17	2.0.0 message relayed
BC: steven.mukhola@gauteng.gov.za(steven.mukhola@gauteng.gov.za)	Transferred	14/09/2018 12:17	2.0.0 message relayed
BC: Zingisa.Smale@gauteng.gov.za(Zingisa.Smale@gauteng.gov.za)	Transferred	14/09/2018 12:17	2.0.0 message relayed
 geoscience.org.za	Transferred	14/09/2018 12:17	
BC: Sfoya@geoscience.org.za(Sfoya@geoscience.org.za)	Transferred	14/09/2018 12:17	2.0.0 message relayed
 gmail.com	Transferred	14/09/2018 12:17	
BC: owenthapelom@gmail.com(owenthapelom@gmail.com)	Transferred	14/09/2018 12:17	2.0.0 message relayed
BC: pietvdyk@gmail.com(pietvdyk@gmail.com)	Transferred	14/09/2018 12:17	2.0.0 message relayed
BC: watmoloto@gmail.com(watmoloto@gmail.com)	Transferred	14/09/2018 12:17	2.0.0 message relayed
 nra.co.za	Transferred	14/09/2018 12:17	
BC: Khathutshelo Ramavhoya (HO)(RamavhoyaK@nra.co.za)	Transferred	14/09/2018 12:17	2.0.0 message relayed
BC: Victoria Bota (HO)(BotaV@nra.co.za)	Transferred	14/09/2018 12:17	2.0.0 message relayed
 sanparks.org	Transferred	14/09/2018 12:17	
BC: howard.hendricks@sanparks.org(howard.hendricks@sanparks.org)	Transferred	14/09/2018 12:17	2.0.0 message relayed
 tshwane.gov.za	Transferred	14/09/2018 12:17	
BC: lucasw@tshwane.gov.za(lucasw@tshwane.gov.za)	Transferred	14/09/2018 12:17	2.0.0 message relayed
BC: rudzanim@tshwane.gov.za(rudzanim@tshwane.gov.za)	Transferred	14/09/2018 12:17	2.0.0 message relayed

SECTION F: APPENDICES

Basic Assessment for the Zaforho Tracing's proposed development of a pig and vegetable production facility on Plot 78 of Jakkalsdans Farm 243 in Cullinan, Pretoria.

BC: Tshinyadzo A. Mphephu(TshinyadzoM@tshwane.gov.za)	Transferred	14/09/2018 12:17	2.0.0 message relayed
 wessa.co.za	Transferred	14/09/2018 12:17	
BC: tumi.lehabe@wessa.co.za(tumi.lehabe@wessa.co.za)	Undeliverable	14/09/2018 12:17	
 yahoo.com	Transferred	14/09/2018 12:17	
BC: zaforho@yahoo.com(zaforho@yahoo.com)	Transferred	14/09/2018 12:17	2.0.0 message relayed

Basic Assessment for the Zaforho Tracing's proposed development of a pig and vegetable production facility on Plot 78 of Jakkalsdans Farm 243 in Cullinan, Pretoria.

Newspaper advertisement in English published in Pretoria News on 13 September 2018

Newspaper advertisement in English published in Pretoria News on 13 September 2018

Thursday September 23 2010 | PRETORIA NEWS



Editorial

[illegible]
**WHAT'S ON
19TH BIOMECHANICS LECTURE**[illegible]

THE memorial service of these field gliders who died in the fire at the Bank of India building in Jodhpur last week was held at the Film Park Arena, African News Agency (ANA).

■ SAD FAREWELL

Families want answers

S. HUNGATE & D. HUNGATE

THAIRS and flowered did mean to wipe away the pain of families that were left behind by the soldiers who died for the cause of those firefighters at the flank of Elburn last week.

At a mass civil service for the fallen — Norrington, Montgomery, Midantze, Ndlovu and Khathumelo Madi — thousands of people gathered to bid adieu to men on whose their loved ones died.

Ndlovu's nephew, Erasmus Madi, said: "We lost young women and school doctors. He was a dedicated firefighter. He would be on standby waiting for his assignment. I don't know where he is and he died this way."

The man died when he stepped off the government building last week, long flagged as a safety hazard.

This call for government responsibility was echoed by the dead fireman's wife, Shingiso Madi, who told a packed Nkomo Park area that

Government blamed for firemen's deaths

Another firefighter, Marikayra Zumea, said whenever the mayor wanted to demolish unsafe buildings, people spoke of "human rights."

"Where are our rights now?" he said. Zumea said he was shocked

The funeral service for Moropane will be tomorrow at Gosh's Family Church in Davenport. Muzili will be buried on Sunday at Ikwamele Davenport in Limpopo and Nkhosho's funeral will be on Sunday at Doringburg Farm, Maribouba. Burial in Doringburg Farm, KwaZulu-Natal.

[illegible]

NO CLOSURE

Church tragedy casts pall

UNCLE SUEB AND SIBINGUE WASHAWA

[illegible][illegible]

NOTICE OF BASIC ASSESSMENT (BA)
PROCESS AND RELEASE OF DRAFT
BA REPORT FOR 30-DAY PUBLIC
COMMENT PERIOD

National Academies of Sciences, Engineering, and Medicine (NASEM) is a non-profit, non-partisan organization that provides independent advice to the federal government on scientific, technical, and health matters. NASEM is composed of 12 national academies, each of which is made up of members who are experts in their respective fields. NASEM's work is funded by the federal government, and its reports and recommendations are widely cited by policymakers and the public.

NASEM's work is organized into several major areas of research and analysis, including:

- **Health and Medicine:** NASEM has conducted numerous studies on a wide range of health issues, including the effectiveness of medical treatments, the safety of medical devices, and the impact of health care costs on patients and society.
- **Science and Technology:** NASEM has provided advice on a variety of scientific and technological issues, including the development of new technologies, the management of natural resources, and the impact of climate change.
- **Education:** NASEM has conducted research on the effectiveness of different educational approaches and has provided recommendations on how to improve the quality of education in the United States.
- **Environment and Natural Resources:** NASEM has provided advice on a variety of environmental issues, including the management of forests, the protection of endangered species, and the impact of climate change.

NASEM's work is highly respected and its reports are widely cited by policymakers and the public. NASEM's non-partisan nature and its focus on providing independent advice make it a valuable resource for the federal government and the public alike.

References:

1. National Academies of Sciences, Engineering, and Medicine. (2018). *Health and Medicine*. Washington, DC: National Academies Press.
2. National Academies of Sciences, Engineering, and Medicine. (2017). *Science and Technology*. Washington, DC: National Academies Press.
3. National Academies of Sciences, Engineering, and Medicine. (2016). *Education*. Washington, DC: National Academies Press.
4. National Academies of Sciences, Engineering, and Medicine. (2015). *Environment and Natural Resources*. Washington, DC: National Academies Press.

CSIR



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SECTION F: APPENDICES

Basic Assessment for the Zaforho Tracing's proposed development of a pig and vegetable production facility on Plot 78 of Jakkalsdans Farm 243 in Cullinan, Pretoria.

Contents of Newspaper advertisement in English published in Pretoria News on 13 September 2018

NOTICE OF BASIC ASSESSMENT (BA) PROCESS AND RELEASE OF DRAFT BA REPORT FOR 30-DAY PUBLIC COMMENT PERIOD

**Basic Assessment for the proposed development of a Pig and
Vegetable Production Facility for Zaforho Tracing on Plot 78
Jakkalsdans Farm 243, near Cullinan, Pretoria, Gauteng.**

Notice is hereby given, in terms of the Environmental Impact Assessment (EIA) Regulations, under sub-regulation 41(1) and sub-regulation 41(4), published in Government Gazette No 40772 of 4 December 2014 (as amended on 7 April 2017), of the National Environmental Management Act, 1998 (Act No 107 of 1998), and the National Environmental Management Waste Act (NEM:WA) Regulation published in GNR 921 on the 29 November 2013 GG No. 37083 that **Zaforho Tracing** proposes a small-scale **piggery and vegetable farming** facility on Plot 78 of Jakkalsdans Farm 243 near Cullinan, in Gauteng.

The Council for Scientific and Industrial Research (CSIR) is the Environmental Assessment Practitioner (EAP) who will be managing the process. In terms of the NEMA EIA Regulations and NEM:WA Regulations, a BA process is required as the project triggers the following listed activities:

GNR 327 Activity (4)
GNR 327 Activity (12)
GNR 327 Activity (27)
GNR 324 Activity (12)

GNR 324 Activity (14)
GNR 921 Category A(1)
GNR Category A(12)

You are hereby notified of the release and availability of the Draft BA Report for a **30-day** review period by Interested and Affected Parties (I&APs). A hard copy of the Draft BA Report is available for public viewing at the Rayton Library (Community Hall, CNR Montrose & Oakley Street, Rayton, Cullinan, 1001). The Draft BA Report is also available in the form of an electronic copy on the following website: <https://www.csir.co.za/environmental-impact-assessment>

You are invited to register as an I&AP and/or to provide any written comments on the Draft BA Report. Review comments are to be submitted by **15th October 2018**. To obtain further information, to comment 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 17001, Congella, Durban 4013, Phone: (031) 242 2330, Fax: (031) 261 8172 or Email: bmqokeli@csir.co.za**. Please contact the indicated person within 30 days of this notification.

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SECTION F: APPENDICES

Basic Assessment for the Zaforho Tracing's proposed development of a pig and vegetable production facility on Plot 78 of Jakkalsdans Farm 243 in Cullinan, Pretoria.

Appendix E4: Communications to and from interested and affected parties

(Comments on Draft Basic Assessment Report)

1.

From: LEGAU, MORENA (GDARD)
Sent: Tuesday, September 18, 2018 8:39 PM
To: 'bmgokeli@csir.co.za'
Cc: MASANGANE, CALEB (GDARD); 'zaforho@yahoo.com'
Subject: 002/18-19/I0004

Good Day Sir/Madam

Kindly find the Acknowledgement letter for your Application for Integrated Environmental Authorization & Draft BAR.

Morena Legau
Gauteng Department of Agriculture & Rural Development
56 Eloff Street, Umnotho House, JOHANNESBURG 2000
Tel: 011 240 3380 **email:** morena.legau@gauteng.gov.za
Website: <http://www.gdard.gpg.gov.za>

SECTION F: APPENDICES

Basic Assessment for the Zaforho Tracing's proposed development of a pig and vegetable production facility on Plot 78 of Jakkalsdans Farm 243 in Cullinan, Pretoria.



agriculture and rural development

Department: Agriculture and Rural Development
GAUTENG PROVINCE

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

Telephone: (011) 240-2500

Fax: (011) 240-2700

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

Reference:	002/18-19/10004
Enquiries:	Patience Xaba
Telephone:	(011) 240-3053
Email:	patience.xaba@gauteng.gov.za

Council for Scientific and Industrial Research

Email/Fax. bmgokeli@csir.co.za

Dear Sir / Madam

**Application for Integrated Environmental Authorisation & Draft Basic Assessment Report:
The development of a 1 hectore pig production facility and 3.6 hectares of vegetable farming
on Plot 78 of Jakkalsdans Farm 243 near Cullinan, Pretoria**

The Department acknowledges having received the Application for Integrated Environmental Authorisation & Draft Basic Assessment Report for environmental authorisation of the above-mentioned project on 13/09/2018.

You are required to submit five (5) copies (3 full colour hard copies and 2 CDs-PDF) of the Final Basic Assessment Report as well as a copy of the previously submitted application form for environmental authorisation.

In terms of Regulation 45 of the EIA Regulations 2014, this application will lapse should you fail to meet any of the time-frames prescribed in terms of these regulations, unless an extension has been granted in terms of regulation 3(7).

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

Yours faithfully

Boniswa Belot

Deputy Director: Strategic Administration Support

Date: 17/09/2018

CC: Zaforho Tracing Pty Ltd

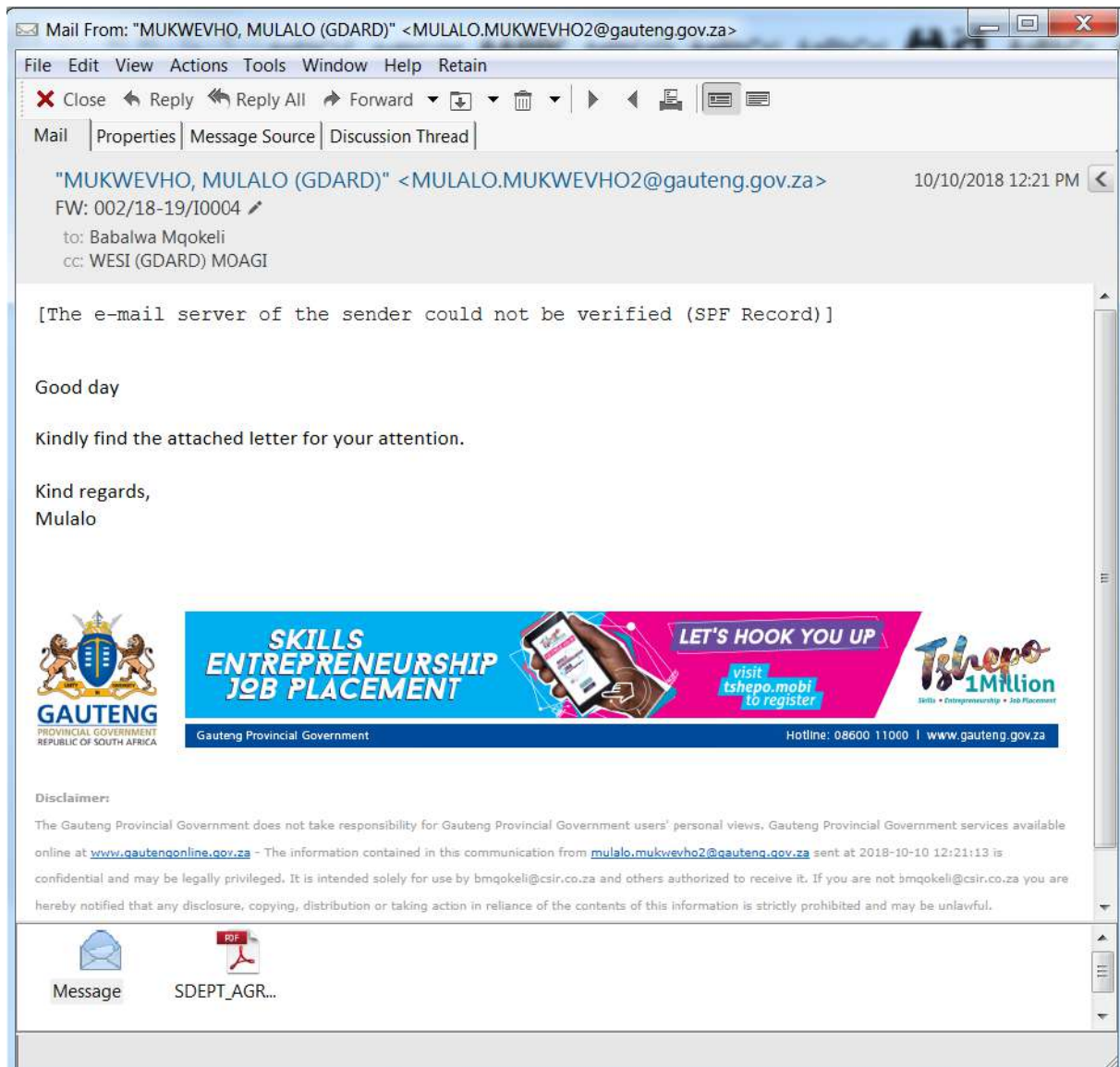
Att: Z Madumo

Email/Fax: zaforho@yahoo.com

SECTION F: APPENDICES

Basic Assessment for the Zaforho Tracing's proposed development of a pig and vegetable production facility on Plot 78 of Jakkalsdans Farm 243 in Cullinan, Pretoria.

2.



SECTION F: APPENDICES

Basic Assessment for the Zaforho Tracing's proposed development of a pig and vegetable production facility on Plot 78 of Jakkalsdans Farm 243 in Cullinan, Pretoria.



GAUTENG PROVINCE

AGRICULTURE AND RURAL DEVELOPMENT
REPUBLIC OF SOUTH AFRICA

Umnotho House, 56 Eloff Street, Johannesburg
PO Box 8769, Johannesburg, 2000
Tel: 011 240 2500
Fax: 011 240 2700

Reference: Gaut 002/18-19/0004
Enquiries: Phuti Matlamela
Telephone: 011 240 3420
Email: Phuti.Matlamela@gauteng.gov.za

Council for Scientific and Industrial Research
P.O. Box 17001
Congella
DURBAN
4013

Tel no.: 031 242 2330
Fax no.: 031 261 8172
Email: bmqokeli@csir.co.za

Dear Babalwa Mqokeli

COMMENTS ON DRAFT BASIC ASSESSMENT REPORT FOR THE PROPOSED DEVELOPMENT OF A PIG AND VEGETABLE PRODUCTION FACILITY ON PLOT 78 OF JAKKALSDANS FARM 243 IN CULLINAN, CITY OF TSHWANE METROPOLITAN MUNICIPALITY.

The draft report regarding the above-mentioned development received by the Department on 13 September 2018 has reference.

The proposal entails development of a pig and vegetable production facility consist of 1 Boar house, 1 farrowing house, 1 weaner house, 1 Grower house, 50 m³ Waste dam and 30 m³ Wastewater holding dam. The proposed activities are listed as activity 4, 12, 27 of Listing Notice 1, activity 12 and 14 of listing notice 3 and GNR.921 category A(1) and category A(12) of the Environmental Impact Assessment Regulations, 2014. The activity is proposed to take place on plot 78 of Jakkalsdans farm 243 in Cullinan. The proposed area located outside urban build-up area and within geographical areas identified in listing notice 3. The area also located within Agricultural Hub Nr. 7 Nokeng. The proposed site measures approximately 21 hectares in extent and the proposed development will measure 4 hectares in extent.

The Department will like to comment as follows:

A. Alignment of the activity with applicable legislations and policies

The report make provisions to accommodate applicable legislations, policies and guidelines applicable in the area. The activity entails development of a pig and vegetable production facility which has an impact in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998 as amended). Gauteng Provincial Environmental Management Framework, 2015 (GPEMF, 2015) identifies the proposed site as Environmental Management Zone 3 which is a High control zone (outside the urban development zone) and Environmental Management Zone 4 which is a Normal Control Zone dominated by agricultural uses outside the urban development zone as defined in the GEMF, 2015. The proposed activity must be in line with the intention of the Environmental Management Zone 3 and 4. All other related infrastructures must also be assessed in relation to the Gauteng Environmental Management Framework, 2015 (GEMF, 2015) to check if all are in line with the GEMF, 2015.

SECTION F: APPENDICES

Basic Assessment for the Zavorho Tracing's proposed development of a pig and vegetable production facility on Plot 78 of Jakkalsdams Farm 243 in Cullinan, Pretoria.

Department of Agriculture and Rural Development
Environmental Authorisation Registration Number: Gaut 002/18-19/0004

B. Guidelines GDARD requirements

All relevant studies must be included in the final report and please note that they must be in accordance with GDARD requirements for Biodiversity Assessments.

C. Alternatives

The report did cover alternatives excluding No-Go alternative therefore a no-go option must also be considered on the final report. Alternatives must include the following:

- Location of activity components on the site in relation to the surrounding land uses;
- Alternatives must be assessed in relation to the GEMF, 2015 and other Spatial Development Frame work of the area to check if the activities applied are in line;
- Alternatives must also be assessed in relation to other Technology alternatives such as energy.

D. Significant rating of impacts

Identification of impacts and significant rating provided on the draft were noted however they must lead to reliable conclusion that the mitigation measures identified will reduce impacts to an acceptable level.

E. Locality map and layout plans or facility illustrations

Locality Maps and Layout Plans must meet the requirements below –

- 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 are in colour;
- for gentle slopes the 1m contour intervals must be indicated on the plan and whenever the slope of the site exceeds 1:10, the 500mm contours must be indicated on the plan;
- 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 shows and identifies (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.

The layout plan

- The layout plan must be printed in colour and overlaid with a sensitivity map;
- The layout plan must be printed on A4 size paper size and be 1:8000 scale;
- layout plan must show the position of services, electricity supply cables (indicate above or underground), water supply pipelines, boreholes, sewage pipelines, septic tanks, storm water infrastructure and existing telecommunication infrastructure (where possible);
- servitudes indicating the purpose of the servitude;

F. EMPr

EMPr must also be included in the final report and must be practical, site specific and easily enforceable.

G. Public participation process

City of Tshwane Metropolitan Municipality Open Space Management Section must be given an opportunity to comment on the Final BAR and their comments must be included in the final basic assessment report to be submitted to this Department for a review. All the issues raised by

SECTION F: APPENDICES

Basic Assessment for the Zaforho Tracing's proposed development of a pig and vegetable production facility on Plot 78 of Jakkalsdans Farm 243 in Cullinan, Pretoria.

Department of Agriculture and Rural Development
Environmental Authorisation Registration Number: Gaut 002/18-19/0004

interested and affected parties must be addressed and responses must be attached on the final Basic Assessment Report. Department of Water and Sanitation (DWS) must also be consulted regarding the proposed 2 waste dam.

H. Other issues to be considered

- It is indicated on the draft report that there will composting of solids from pig waste, the applicant must indicate the quantity of materials to be composted in order to identify if it triggered a listed activity in terms of the National Environmental Management Waste Act, 2008 (Act No. 59 of 2008) listing notice, Government notice 921 of 23 November 2013 as amended. Please note that if the composting activity is listed, it must be assessed and included in the final BAR with other applied activities.
- Design drawing for the proposed 2 waste dams (lagoons) must be submitted to the Department of Water and Sanitation (DWS) for approval prior to any commencement of the activity.
- Information on how slurry dams will be lined to prevent ground water contamination must be indicated on the final report.
- Waste management plan must also be attached on the final report and must clearly indicate on how odour will be managed and indicate a responsible person for monitoring this impact.

If you have any queries regarding the contents of this letter, please contact the official of the Department at the number or email address indicated above.

Yours faithfully

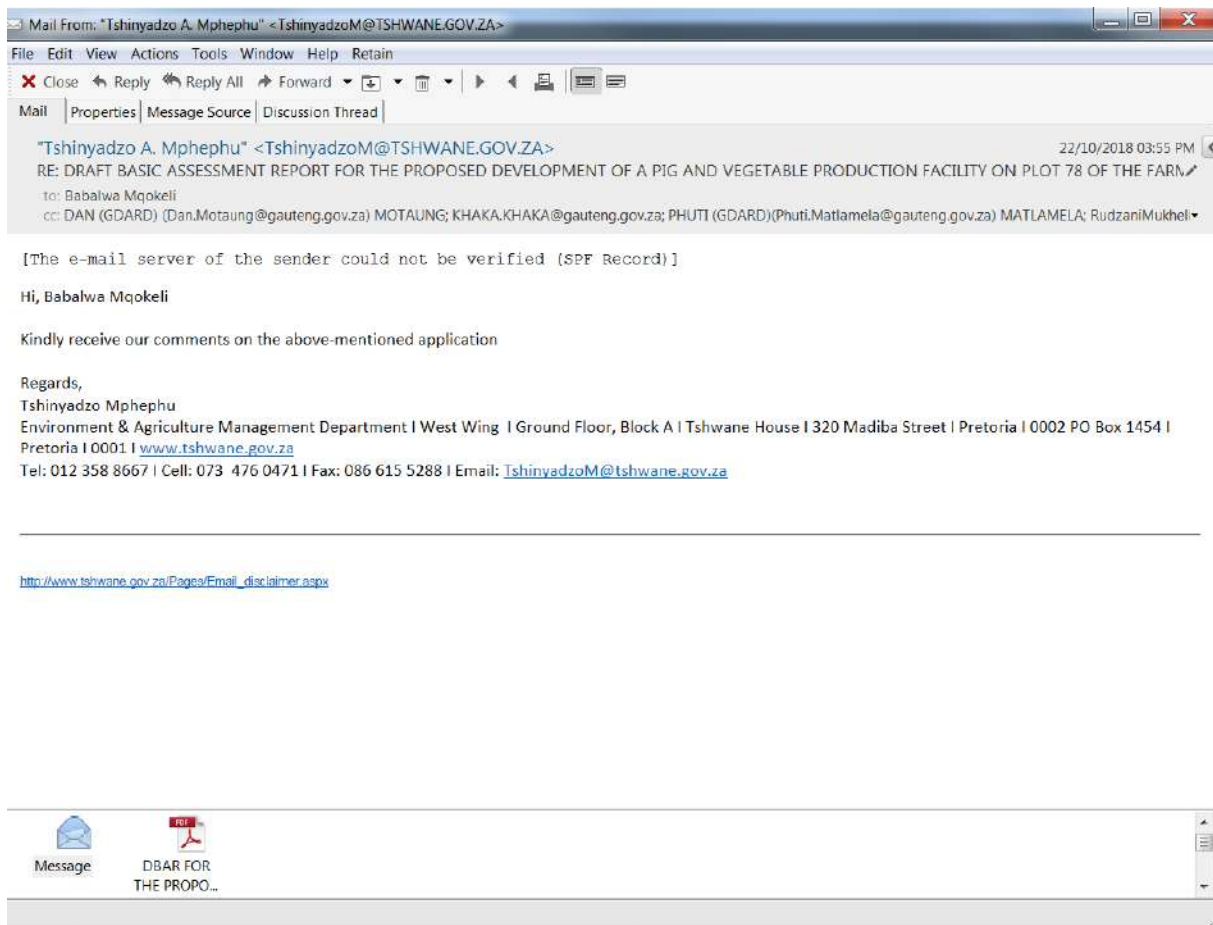


Mr. P. Matlamela
CEO- Grade A: Impact Management
Date: 09/10/2018

SECTION F: APPENDICES

Basic Assessment for the Zaforho Tracing's proposed development of a pig and vegetable production facility on Plot 78 of Jakkalsdans Farm 243 in Cullinan, Pretoria.

3.



SECTION F: APPENDICES

Basic Assessment for the Zaforho Tracing's proposed development of a pig and vegetable production facility on Plot 78 of Jakkalsdans Farm 243 in Cullinan, Pretoria.



Environment & Agriculture Management Department

Room CP 83 | Tshwane House | Ground Floor, Block A | 320 Madiba Street | Pretoria | 0002
P O Box 1454 | Pretoria | 0001
Tel: 012 358 2449/1351 |
Email: mtshobeli@tshwane.gov.za | www.tshwane.gov.za | [www.facebook.com/ City Of Tshwane](https://www.facebook.com/CityOfTshwane)

My ref: 8/4/R/7

Your ref:

Contact person: T. Mphaphu

Section: Environmental Planning & Open Space Management Section

Tel: 012 358 8667

Fax: 012 358 8934

Email: TshinyadzoM@tshwane.gov.za

Date: 17 October 2018

Council for Scientific and Industrial Research (CSIR)

P O Box 17001,
Congella,
Durban,
4013

Attention: Ms. Babalwa Mqokeli

Tel: +27 31 242 2330

Fax: +27 31 261 8172

Email: bmqokeli@csir.co.za

Dear Madam

DRAFT BASIC ASSESSMENT REPORT FOR THE PROPOSED DEVELOPMENT OF A PIG AND VEGETABLE PRODUCTION FACILITY ON PLOT 78 OF THE FARM JAKKALSDANS 243-JR, IN CULLINAN, PRETORIA

The above application dated 12 September 2018 refers.

1. INTRODUCTION

The Environment and Agriculture Management Department (the Department) has considered the Draft Basic Assessment Report (BAR) dated 12 September 2018 in respect of the abovementioned application. The Draft Basic Assessment Report is submitted to the Environmental Management & Parks Division of the City of Tshwane, hereafter referred to as 'the City', as a commenting authority as required in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998) and the Environmental Impact Assessment Regulations, 04 December 2014.

2. PROJECT LOCATION AND DESCRIPTION

The Council for Scientific and Industrial Research (CSIR) has been appointed by Zaforho Tracing (Pty) Ltd to undertake the required Basic Assessment process for the proposed development of a pig and vegetable production facility on Plot 78 of the Farm Jakkalsdans 243-JR, in Cullinan, Pretoria.

The proposed project involves the development of a pig and vegetable production farm on Plot 78 of the Farm Jakkalsdans 243-JR. The application is for the construction of pig housing units with a maximum capacity of 1 000 pigs at the farm, during full operation. The entire farm comprises 21 hectares. The proposed infrastructure of the piggery upon completion will entail the following:
1 x Boar house (40m x 9m)

Please note that these comments do not supersede any conditions or requirements from the GDARD or any other statutory body.

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IweBhoduluko nezeliLimo neFuyo • Kgoro ya Taolo ya Tikologo le Temo • Mubasho wa Ndangulo ya Mupo na Vhulimi • Ndzawulo ya Mafambiselo ya Yurimi na
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SECTION F: APPENDICES

Basic Assessment for the Zaforho Tracing's proposed development of a pig and vegetable production facility on Plot 78 of Jakkalsdans Farm 243 in Cullinan, Pretoria.

- 1 x Farrowing house (40m x 9m)
- 1 x Weaner house (40m x 9m)
- 1 x Grower house (40m x 9m)
- 1 x 50 m³ Waste dam
- 1 x 30 m³ Wastewater holding dam

According to the report the activity entails undertaking the following listed activity in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998) and Environmental Impact Assessment Regulation, 2014, and in terms of the National Environmental Waste Act (NEM:WA) Regulations GNR 921 of 29 November 2013 there under will take place under:

GN R327:

- Activity 4, 12 & 27

GN R324

- Activity 12 & 14

GNR. 921 Category A 1 & 12

3. KEY FACTORS INFORMING THE COMMENTS

In making its comments in respect of the proposed activity the Department has taken, *inter alia*, the following into consideration:

- a) The information contained in the Draft Basic Assessment Report compiled by Council for Scientific and Industrial Research (CSIR) dated 12 September 2018 and received by the Department on the 18 September 2018.
- b) Information obtained from the Departments' s information base including *inter alia*:
 - Geographic Information System (GIS data).
 - Gauteng Open Space Plan (GOSP).
- c) Compliance with applicable Municipal, provincial and national policies and guidelines including:
 - The National Environmental Management Act 1998 (Act 107 of 1998) (NEMA): its decision-making principles and Environmental Impact Assessment Regulations;
 - The Tshwane Integrated Environmental Policy (TIEP);
 - The Tshwane Open Space Framework (TOSF) Policy Statements and Typologies 2005;
 - The Draft Bioregional Plan for the City of Tshwane Metropolitan Municipality;
 - The Gauteng Provincial Environmental Management Framework (GPEMF) 2014;
 - Town-Planning and Townships Ordinance, 1986 (Ordinance 15 of 1986);
 - The Spatial Planning and Land Use Management Act, 2013 (Act 16 of 2013);
 - City of Tshwane Land Use Management By-Laws, 2016; and
 - Tshwane Town Planning Scheme 2008 (Revised 2014).

4. DISCUSSION

In reviewing the application the Department made the following findings:

- a) According to the Tshwane Geographic Information System (GIS) the middle section of the proposed development site is affected by Non-perennial River associated with wetlands that must be conserved. The proposed development site is situated within the wetlands and the impacts of the proposed activity can irreversibly alter wetland conditions.

The Wetland Delineation & Assessment Report found that the study site contained three hydrogeomorphic (HGM) units; two seep wetlands as well as a channelled valley bottom wetland.

Please note that these comments do not supersede any conditions or requirements from the GDARD or any other statutory body.

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kweBhoduloko nezetiImo neFuyo • Kgoro ya Taolo ya Tikologo le Temo • Mulasho wa Ndalungulo ya Mupo na Vhulimi • Ndzawulo ya Mafambiselu ya Vurimi na
Mbango • Umnyango wezokusingathwa Kwemvelo Nezolimo

SECTION F: APPENDICES

Basic Assessment for the Zavorho Tracing's proposed development of a pig and vegetable production facility on Plot 78 of Jakkalsdams Farm 243 in Cullinan, Pretoria.

- b) According to the Draft Bioregional Plan for the City of Tshwane Metropolitan Municipality a portion of the proposed site is situated within some parts of Ecological Support Areas 1. It is noted that the portion of the site that is noted as Ecological Support Areas 1 is associated with the riverine system associated with wetlands in the middle section of the site. The development proposal will exclude this part of the site as an open space therefore the impacts on the Ecological Support Areas will be insignificant.
- c) According to the Gauteng Provincial Environmental Management Framework (GPEMF) November 2014 the middle section of the proposed development site is situated within Zone 3: High control zone (outside the urban development zone) due to the riverine system associated with wetlands that must be conserved. Therefore, the proposed activity is not aligned with the GPEMF's conservation objectives in this zone as new extensive agriculture should not be encouraged in this zone.
- d) According to the Gauteng Provincial Environmental Management Framework (GPEMF) November 2014 the proposed development site is situated within Zone 4: Normal control zone. The proposed activity is aligned with the GPEMF's conservation objectives in this zone. However, no listed activities may be excluded from environmental assessment requirements in this zone.
- e) The report indicates that alternative properties or locations for the proposed activity have not been identified, due to the fact that it is a site of a pre-existing piggery (although dilapidated), as well as current vegetable production activities by the applicant.
- f) The Ecological & Wetland Assessment Report several Species of Conservation Concern were found on site including species of *Aloe* and *Hypoxis*, which were common within the site. The site is relatively species poor and largely transformed. However, a small area of *Terminalia* bushveld remains largely natural and there are several wetlands including seeps on the site.
- g) The Ecological & Wetland Assessment Report indicates that as the buffer for an National Freshwater Ecosystem Priority Areas (NFEPA) wetland is 100m, and that required for cranes (for which this wetland is listed) is 500m, the presence of all aspects of this project within the wetland itself, as well as the buffer zone for the wetland, constitutes a fatal flaw for the proposed development.
- h) The Ecological & Wetland Assessment Report indicates that it is the opinion of the specialist that this project should not go ahead due to its presence within a National Freshwater Ecosystem Priority Areas (NFEPA) wetland and associated buffer. Despite the degraded nature of the natural vegetation and the wetland hydrogeomorphic (HGM) units themselves, the listing of the wetland as crane breeding habitat means that it is highly sensitive regardless. This habitat will be completely lost with the construction of the proposed development.
- i) The Wetland Delineation & Assessment Report found that the study site contained three hydrogeomorphic (HGM) units; two seep wetlands as well as a channelled valley bottom wetland. The Wetland Delineation & Assessment Report concludes that the property is 20.7 hectares in size with 74% being wetland which consists of two seeps and a channelled valley bottom wetland. The wetland's conditions range from being moderately modified (C) to largely modified (D).

In light of the above the Department is of the view that development of the site in terms of the proposal activity may compromise the ecological conservation objectives in the area and disturbance of the ecological functioning of the wetlands, should the development be allowed. Therefore, the Department does not support the proposed activity on the proposed development site.

Please note that these comments do not supersede any conditions or requirements from the GDARD or any other statutory body.

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kweBhoduluka nezeliLimo neFuyo • Kgoro ya Taolo ya Tikologo le Temo • Muhasho wa Ndagulo ya Mupo na Vitulimi • Ndzawulo ya Mafambiselo ya Vurimi na
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SECTION F: APPENDICES

Basic Assessment for the Zaforho Tracing's proposed development of a pig and vegetable production facility on Plot 78 of Jakkalsdans Farm 243 in Cullinan, Pretoria.

5. RECOMMENDATIONS

The Department recommends that the following issues be taken into consideration:

- a) According to Tshwane Open Space Framework (TOSF) wetlands are strategically important ecological structuring elements within the Tshwane Open Space network and must be conserved and transformed and degraded wetlands must be actively rehabilitated and such rehabilitation must be based on site specific, ecologically sound principles. This principle is therefore proposed to be implemented on the proposed development site due to the ecological state of the site.
- b) According to the Ecological & Wetland Assessment Report compiled by Afzelia Environmental Consultant (Pty) dated May 2018 indicates that it is the opinion of the specialist that this project should not go ahead due to its presence within a National Freshwater Ecosystem Priority Areas (NFEPA) wetland and associated buffer. *The Department recommends that an alternative site for the proposed development activity should be sought and the current site be left undeveloped.*
- c) According to the Wetland Delineation & Assessment Report compiled by Sazi Environmental Consultant dated August 2018 concludes that the property is 20.7 hectares in size with 74% being wetland which are consists out of two seeps and a channelled valley bottom wetland. *The Department is of the view that the proposed development on the wetland will have detrimental impacts on the functioning of the wetland and the overall hydrological functioning of the stream and therefore cannot support the proposed development on the proposed site.*

6. CONCLUSION

Based on the above, the Department is of the view that the proposed development could pose detrimental impacts on the environment as it directly impacts on the wetland and other sensitive ecological features identified on site. As a result of the above and on the basis of information submitted it is the Department's viewpoint that the adverse impacts associated with the proposed development activity may not be mitigated to an acceptable level.

The Department therefore does not support the proposed development of a pig and vegetable production facility on Plot 78 of the Farm Jakkalsdans 243-JR, in Cullinan

Yours faithfully



18/10/2018

Mr Aluoneswi Mafunzwaini

Date:

DIVISIONAL HEAD: ENVIRONMENTAL MANAGEMENT AND PARKS DIVISION

Letter signed by: Rudzani Mukheli

Designation: Deputy Director: Environmental Impact Management

CC Gauteng Department of Agriculture and Rural Development

Attn: Mr. Steven Mukhola

Tel: (011) 240 2572

Fax: (011) 240 2700

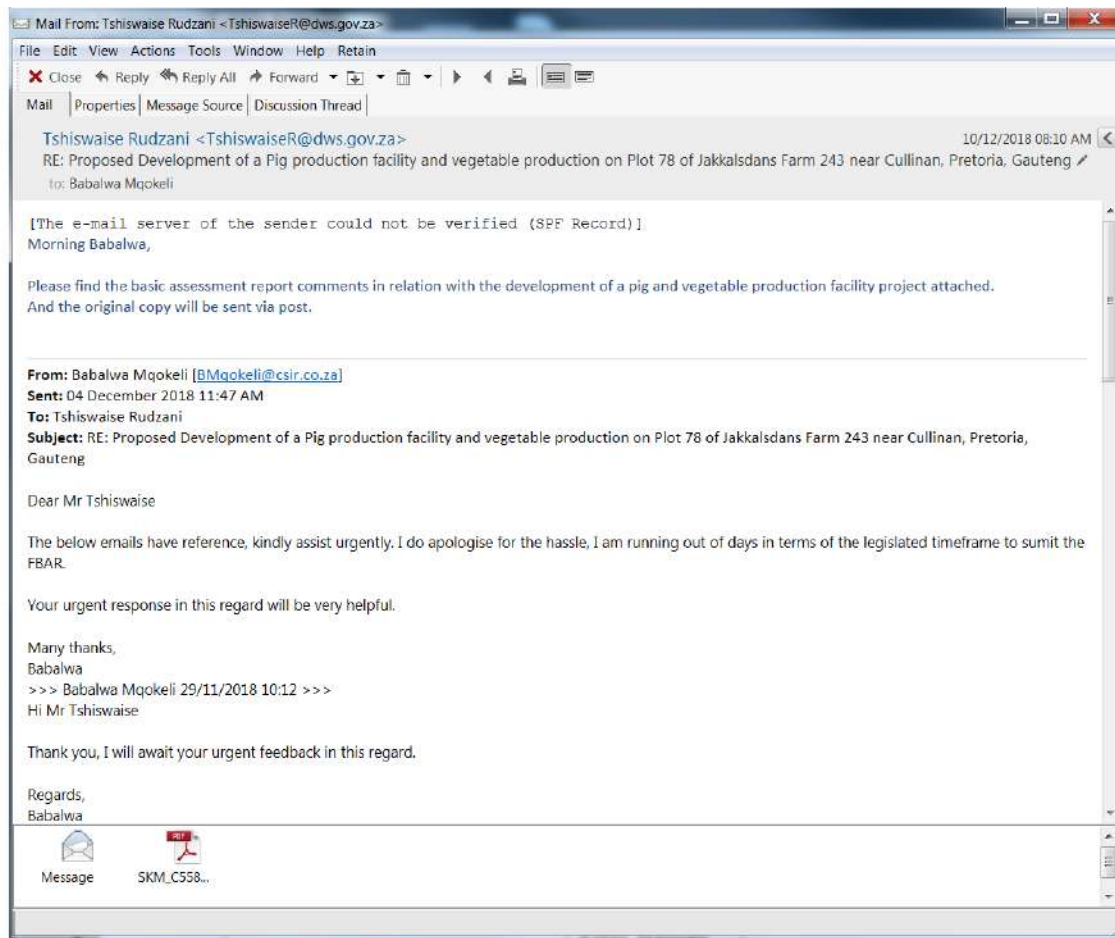
Please note that these comments do not supersede any conditions or requirements from the GDARD or any other statutory body.

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SECTION F: APPENDICES

Basic Assessment for the Zaborho Tracing's proposed development of a pig and vegetable production facility on Plot 78 of Jakkalsdams Farm 243 in Cullinan, Pretoria.

4.



SECTION F: APPENDICES

Basic Assessment for the Zavorho Tracing's proposed development of a pig and vegetable production facility on Plot 78 of Jakkalsdams Farm 243 in Cullinan, Pretoria.



water & sanitation

Department:
Water and Sanitation
REPUBLIC OF SOUTH AFRICA

MPUMALANGA

Private Bag X 11259, MBOMBELA, 1200 Prorom Building, Cnr Brown and Paul Kruger, MBOMBELA, 1200, Tel: 013 759 7300

Enquiries: Mr R. Tshiswaise

Telephone: 012 318 0548

Council for Scientific and Industrial Research (CSIR)
P.O. Box 17001
Congella
DURBAN
4013

Attention: Minnelise Levendal

BASIC ASSESSMENT REPORT FOR THE TRACING'S PROPOSED DEVELOPMENT OF A PIG AND VEGETABLE PRODUCTION FACILITY ON PLOT 78 OF JAKKALSDANS 243 FARM IN CULLINAN, PRETORIA.

The Department of Water and Sanitation (DWS) has assessed the above-mentioned report prepared by Council for Scientific and Industrial Research (CSIR) on behalf of the Zavorho Tracing (Pty) Ltd and wish to comment as follows:

1. The applicant shall take note of Section 22(1) of the National Water Act (NWA), 1998 (Act No. 36 of 1998) "Permissible water use", a person may only use water-
 - a) *without a licence-*
 - I. *if that water use is permissible under Schedule 1;*
 - II. *If that water is permissible as a continuation of an existing lawful use (section 32); or*
 - III. *If that water use is permissible in terms of general authorisation issued under section 39;*
 - b) *If the water use is authorised by a licence under this Act; or*
 - c) *If the responsible authority has dispensed with a licence requirement under subsection (3), (of the same Act).*

2. Surface and groundwater contamination

The DWS urge the applicant to avoid surface and groundwater pollutions by implementing the proper measures to protect water resources during the entire life of the operation. Mitigation potential impact on surface water runoff and groundwater quality should be done.

3. Stormwater management

The surface water contamination in the event of a stormwater runoff occurring during the project is expected (Appendix H, Page 25). Stormwater must be diverted around areas of cement mixing, chemical/fuel handling and storage and waste containment areas. The proper storm water management practices should be implemented and inspected regularly to ensure proper functioning of the stormwater structures.



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SECTION F: APPENDICES

Basic Assessment for the Zavorho Tracing's proposed development of a pig and vegetable production facility on Plot 78 of Jakkalsdans Farm 243 in Cullinan, Pretoria.

4. Soil erosion

The applicant mentioned the high possibility of the soil erosion due to exposed soil during the construction phase (Appendix H, Page 19). Therefore, the applicant must control and implement suitable mitigation measures as mentioned on the Environmental Management Programme report (EMPr) document (Appendix H, Page 19) to prevent the erosion.

5. Wetlands disturbances

An indication shall also be provided on the availability of any wetlands within the area of activity as these regarded as water resources in terms of NWA and requires full protection from any possible impacts. The DWS would like to emphasize that if wetlands, streams and drainages are to be destructed, the applicant must ensure that mitigation measures are taken to mitigate impacts or alternatively, the applicant must provide another option which will not involve destruction of these watercourses. The applicant must also note that destruction of watercourses triggers section 21 (c) and (i) water uses in terms of the National Water Act, 1998 (Act No. 36 of 1998).

6. Fuel and lubricant spillages/leakages

Improper diesel, oil and chemical handlings including the mixing or disposal of cement and concrete, if allowed occur, will result in the pollution of the surface water runoff and the groundwater regime through runoff contamination and seepage/infiltration, respectively (Appendix H, Pages 23 and 38). The regular maintenance and monitoring of the company's equipment should be done to avoid the leakages and spillages. Hence, ensure that the spills are cleaned up immediately after an incident happens to avoid the surface and groundwater contact and contamination. Furthermore, the applicant shall ensure that fluids are stored and handled properly in a concrete or cement lined surface with berm walls to avoid any seepage into the groundwater resources and also ensure that the design of the storage area is such that any leakages or spillages can be contained.

7. Waste management

The applicant shall ensure that waste to be generated on site is handled, transported and disposed of at a designated landfill site (Appendix H, Pages 24). Waste generated on the site should be recycled as far as possible and sold/given to interested contractors. Furthermore, the hazardous waste (i.e. fuels, paints and solvents) should be disposed of at waste disposal site permitted to handle such waste materials. Prior to the commencement of the activities, a signed copy of service level agreement must be submitted to the DWS to demonstrate that provision will be made to render such service.

8. Ablution facilities

The applicant mentioned that the sanitation facilities are to be provided for use by employees on the site during the operational activities (Appendix H, page 31). Therefore, the applicant should also provide the Department with the disposal method of the waste. In addition, these facilities must not be situated within 100m from a watercourse or within the 1:100 year flood-line (whichever is the greatest) unless authorised.

SECTION F: APPENDICES

Basic Assessment for the Zaforho Tracing's proposed development of a pig and vegetable production facility on Plot 78 of Jakkalsdams Farm 243 in Cullinan, Pretoria.

BASIC ASSESSMENT REPORT FOR THE TRACING'S PROPOSED DEVELOPMENT OF A PIG AND VEGETABLE PRODUCTION FACILITY ON PLOT 78 OF JAKKALSDANS 243 FARM IN CULLINAN, PRETORIA.

9. Pollution Incidents

The applicant shall note that in terms of section 19(1) of the National Water Act, 1998 (Act No. 36 of 1998), it has been stated that *"An owner of land, a person in control of land or a person who occupies or uses the land on which-(a) any activity or process is or was performed or undertaken; or (b) any other situation exists, which causes, has caused or is likely to cause pollution of a water resources must take all reasonable measures to prevent any such pollution from occurring, continuing or recurring"*. Any pollution incident(s) originating from the proposed project shall be reported to the Provincial Head of the DWS within 24 hours.

For enquiries, please do not hesitate to contact Mr R. Tshiswaise on the contact details listed above, alternatively on e-mail address: TshiswaiseR@dws.gov.za

Yours faithfully,


PROVINCIAL HEAD: MPUMALANGA

DATE: 6/12/18

SECTION F: APPENDICES

Basic Assessment for the Zaforho Tracing's proposed development of a pig and vegetable production facility on Plot 78 of Jakkalsdans Farm 243 in Cullinan, Pretoria.

Appendix E5: Comments from I&APs following the release of the Draft Basic Assessment Report

COMMENTATOR	ISSUE/COMMENT	RESPONSE FROM ENVIRONMENTAL ASSESSMENT PRACTITIONER
1. Boniswa Belot (Gauteng Department of Agriculture and Rural Development)	<p>The Department acknowledges having received the basic assessment application & draft basic assessment report for environmental authorisation of the above-mentioned project on 13/09/2018.</p> <p>You are required to submit five (5) copies (3 full colour hard copies and 2 CDs-PDF) of the Final Basic Assessment Report as well as a copy of the previously submitted application form for environmental authorisation.</p> <p>In terms of Regulation 45 of the EIA Regulations 2014, this application will lapse should you fail to meet any of the time-frames prescribed in terms of these regulations, unless an extension has been granted in terms of regulation 3(7).</p> <p>Please draw the applicant's attention to the fact that the activity may not commence prior to an environmental authorisation being granted by the Department.</p>	<p>CSIR:</p> <p>Thank you to the Department for the acknowledgement letter. The BA process will adhere to the information provided.</p>
2. Phuti Matlamela (Gauteng Department of Agriculture and Rural Development)	<p>The Department will like to comment as follows:</p> <p>A. Alignment of the activity with applicable legislations and policies</p> <p>The report makes provisions to accommodate applicable legislations, policies and guidelines applicable in the area. The activity entails development of a pig and vegetable production facility which has an impact in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998 as amended). Gauteng Provincial Environmental Management Framework, 2015 (GPEMF, 2015) identifies the proposed site as Environmental</p>	<p>CSIR:</p> <p>Thank you to the Department for these comments. Please see responses below as per your corresponding letters:</p> <p>A. The comment is correct and noted. Information regarding the zoning of the area was requested from the City of Tshwane Municipality to inform the BA Process. The site falls within an area zoned as Class 3: High control zone, as well as Class 4: Normal control zone under the Gauteng Provincial Environmental Management Framework Zones. Zone 3 is sensitive to development activities and in several cases also have specific values that need to be protected. It is important to note that the proposed development will avoid the centre of the farm identified as Zone 3 under the GPEMF, and will</p>

SECTION F: APPENDICES

Basic Assessment for the Zavorho Tracing's proposed development of a pig and vegetable production facility on Plot 78 of Jakkalsdams Farm 243 in Cullinan, Pretoria.

COMMENTATOR	ISSUE/COMMENT	RESPONSE FROM ENVIRONMENTAL ASSESSMENT PRACTITIONER
	<p>Management Zones 3 which is a High control zone (outside the urban development zone) and Environmental Management Zone 4 which is a Normal Control Zone dominated by agricultural uses outside the urban development zone as defined in the GEMF, 2015. The proposed activity must be in line with the intention of the Environmental Management Zone 3 and 4. All other related infrastructure must also be assessed in relation to the Gauteng Environmental Management Framework, 2015 (GEMF, 2015) to check if all are in line with the GEMF, 2015.</p> <p>B. Guidelines GDARD requirements</p> <p>All relevant studies must be included in the final report and please note that they must be in accordance with GDARD requirements for Biodiversity Assessments.</p> <p>C. Alternatives</p> <p>The report did cover alternatives excluding No-Go alternative therefore a no-go option must also be considered on the final report. Alternatives must include the following:</p> <ul style="list-style-type: none"> - Location of activity components on the site in relation to the surrounding land uses; - Alternatives must be assessed in relation to the GEMF, 2015 and other Spatial Development Framework of the area to check if the activities applied are in line; - Alternatives must also be assessed in relation to other Technology alternatives such as energy. <p>D. Significant rating of impacts</p> <p>Identification of impacts and significant rating provided on the draft were noted however they must lead to reliable conclusion</p>	<p>therefore not take place in this sensitive environment. The proposed development will be located within the area identified as Zone 4, which is defined as being 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. 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. The proposed development is an agricultural land use and is therefore compatible with the current zoning for the area. It is also important to note that the developer will avoid the Zone 3 area not suitable for development and will take special precaution to protect and minimise significant impacts on this sensitive environment.</p> <p>B. The comment is noted and complied with. The relevant studies have been undertaken and included in Appendix G of this BAR.</p> <p>C. This BA Process considers the No-Go alternative assessment as the baseline against which the impacts of the other alternatives are assessed (Section E of the Report). Please refer to Section A.3 of the BA Report which includes the proposal and alternatives that have been considered in this assessment, as well as the motivation for the preferred alternatives. 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. The proposed area of development has been informed and recommended by the Wetland Delineation and Assessment study conducted as part of this Basic Assessment. The initial proposed footprint was reduced, and the layout was revised as a measure to avoid areas of high sensitivity. It would not be economically feasible or practical for the applicant to embark on a different</p>

SECTION F: APPENDICES

Basic Assessment for the Zaforho Tracing's proposed development of a pig and vegetable production facility on Plot 78 of Jakkalsdans Farm 243 in Cullinan, Pretoria.

COMMENTATOR	ISSUE/COMMENT	RESPONSE FROM ENVIRONMENTAL ASSESSMENT PRACTITIONER
	<p>that the mitigation measures identified will reduce impacts to an acceptable level.</p> <p>E. Locality map and layout plans or facility illustrations</p> <p>Locality Maps and Layout Plans must meet the requirements below –</p> <ul style="list-style-type: none"> - 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 are in colour. - 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 plan. - 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 shows and identifies (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. <p>The layout plan</p> <ul style="list-style-type: none"> - the layout plan must be printed in colour and overlaid with a sensitivity map; - the layout plan must be printed on A4 size paper and be 1:8000 scale; - layout plan must show the position of services, electricity supply cables (indicate above or 	<p>activity on the site. In addition, the applicant is a special needs applicant who is being assisted under the Special Needs and Skills Development Programme which is being managed by the CSIR.</p> <p>D. The comment is noted and has been complied with. Management guidelines and best practice to minimise impacts on the surrounding environment have been recommended as part of this BA process and included in the EMPr.</p> <p>E. The comment is noted and has been complied with. Project maps are included in Appendix A and a Facility illustration has been included in Appendix C.</p>

SECTION F: APPENDICES

Basic Assessment for the Zavorho Tracing's proposed development of a pig and vegetable production facility on Plot 78 of Jakkalsdams Farm 243 in Cullinan, Pretoria.

COMMENTATOR	ISSUE/COMMENT	RESPONSE FROM ENVIRONMENTAL ASSESSMENT PRACTITIONER
	<p>underground), water supply pipelines, boreholes, sewage pipelines, septic tanks, storm water infrastructure and existing telecommunication infrastructure (where possible);</p> <ul style="list-style-type: none"> - servitudes indicating the purpose of the servitude; <p>F. EMPr</p> <p>EMPr must also be included in the final report and must be practical, site specific and easily enforceable.</p> <p>G. Public participation process</p> <p>City of Tshwane Metropolitan Municipality Open Space Management Section must be given an opportunity to comment on the Final BAR and their comments must be included in the final basic assessment report to be submitted to this Department for a review. All the issues raised by interested and affected parties must be addressed and responses must be attached on the final Basic Assessment Report. Department of Water and Sanitation (DWS) must also be consulted regarding the proposed 2 waste dam.</p> <p>H. Other issues to be considered</p> <ul style="list-style-type: none"> • It is indicated on the draft report that there will be composting of solids from pig waste, the applicant must indicate the quantity of materials to be composted in order to identify if it triggered a listed activity in terms of the National Environmental Management Waste Act, 2008 (Act No. 59 of 2008) listing notice, Government Notice 921 Of 23 November 2013 as amended. Please note that if the composting activity is listed, it must be assessed and included in the final BAR with other applied activities. 	<p>F. The comment is noted and has been complied with.</p> <p>G. The comment is noted. The City City of Tshwane Metropolitan Municipality Open Space Management Section and the Department of Water and Sanitation were provided an opportunity to comment on the Draft BAR and comments were received in this regard and are included in the final basic assessment report (Appendix E - this Section).</p> <p>H.</p> <ul style="list-style-type: none"> • 32 m³ of pig waste will be produced per month. The pig waste will be collected and stored on a concrete surface and composted. The amount of waste to be composted equals 11 tons per month and is therefore less than a ton per day. It is therefore understood that this activity does not trigger listed activities on Recycling in terms of NEMWA. As part of the proposed piggery development and vegetable production expansion, identified listed activities defined under the National Environmental Management Act, Act No. 107 of 1998 (NEMA, 1998), as amended, in terms of the amended

SECTION F: APPENDICES

Basic Assessment for the Zavorho Tracing's proposed development of a pig and vegetable production facility on Plot 78 of Jakkalsdams Farm 243 in Cullinan, Pretoria.

COMMENTATOR	ISSUE/COMMENT	RESPONSE FROM ENVIRONMENTAL ASSESSMENT PRACTITIONER
	<ul style="list-style-type: none"> Design drawing for the proposed 2 waste dams (lagoons) must be submitted to the Department of Water and Sanitation (DWS) for approval prior to any commencement of the activity. Information on how slurry dams will be lined to prevent ground water contamination must be indicated on the final report. Waste management plan must also be attached on the final report and must clearly indicate on how odour will be managed and indicate a responsible person for monitoring this impact. 	<p>Environmental Impact Assessment (EIA) Regulations, Government Notice (GNR) 326 of 7 April 2017, and in terms of the National Environmental Waste Act (NEM:WA) Regulations GNR 921 of 29 November 2013 are included in Section A of the BAR.</p> <ul style="list-style-type: none"> The comment is noted and the recommendation has been included in the Final EMPr, attached as Appendix H. Recommendations included in the EMPr will be considered by the Applicant during the design construction and operation phase, as applicable and where possible. 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. Information on waste management to prevent ground water contamination is included in Section A of the BAR. Waste management measures have been included in the Final EMPr, attached as Appendix H. A Waste management plan has been included in the EMPr of the proposed project (Appendix H). 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.
Mr Aluoneswi Mafunwaini (City of Tshwane)	<p>In reviewing the application the Department made the following findings:</p> <p>a) According to the Tshwane Geographic Information System (GIS) the middle section of the proposed development site is affected by Non-perennial River associated with wetlands that must be conserved. The proposed development site is situated within</p>	<p>CSIR:</p> <p>Thank you to the Department for these comments. Please see responses below as per your corresponding numbering:</p> <p>a) It is important to note that the assessment regards the middle section of the farm as sensitive and therefore recommended that the proposed development occurs outside of the sensitive environment. The initial footprint was revised to ensure that the recommended layout is located</p>

SECTION F: APPENDICES

Basic Assessment for the Zavorho Tracing's proposed development of a pig and vegetable production facility on Plot 78 of Jakkalsdans Farm 243 in Cullinan, Pretoria.

COMMENTATOR	ISSUE/COMMENT	RESPONSE FROM ENVIRONMENTAL ASSESSMENT PRACTITIONER
	<p>the wetlands and the impacts of the proposed activity can irreversibly alter wetland conditions.</p> <p><i>The Wetland Delineation & Assessment Report found that the study site contained three hydrogeomorphic (HGM) units; two seep wetlands as well as a channelled valley bottom wetland.</i></p> <p>b) According to the Draft Bioregional Plan for the City of Tshwane Metropolitan Municipality a portion of the proposed site is situated within some parts of Ecological Support Areas 1. It is noted that the portion of the site that is noted as Ecological Support Areas 1 is associated with the riverine system associated with wetlands in the middle section of the site. The development proposal will exclude this part of the site as an open space therefore the impacts on the Ecological Support Areas will be insignificant.</p> <p>c) According to the Gauteng Provincial Environmental Management Framework (GPEMF) November 2014 the middle section of the proposed development site is situated within Zone 3: High control zone (outside the urban development zone) due to the riverine system associated with wetlands that must be conserved. Therefore, the proposed activity is not aligned with the GPEMF's conservation objectives in this zone as new extensive agriculture should not be encouraged in this zone.</p> <p>d) According to the Gauteng Provincial Environmental Management Framework (GPEMF) November 2014 the proposed development site is situated within Zone 4: Normal control zone. The proposed activity is aligned with the GPEMF's conservation objectives in this zone. However, no listed activities may be excluded from environmental assessment requirements in this zone.</p>	<p>outside of areas of highest and moderate sensitivity (i.e. wetlands and seeps). This revised proposed development (Figure 55 of SAZI Report in Appendix G, and Map 1B in Appendix A) will have an impact of low to moderate significance, provided that the mitigation measures proposed in this report and the EMPr are effectively implemented.</p> <p>b) The comment is correct and noted.</p> <p>c) & d) The comment is correct and noted. Information regarding the zoning of the area was requested from the City of Tshwane Municipality to inform the BA Process. The site falls within an area zoned as Class 3: High control zone, as well as Class 4: Normal control zone under the Gauteng Provincial Environmental Management Framework Zones. Zone 3 is sensitive to development activities and in several cases also have specific values that need to be protected. It is important to note that the proposed development will avoid the centre of the farm identified as Zone 3 under the GPEMF, and will therefore not take place in this sensitive environment. The proposed development will be located within the area identified as Zone 4, which is defined as being 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. 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. The proposed development is an agricultural land use and</p>

SECTION F: APPENDICES

Basic Assessment for the Zaforho Tracing's proposed development of a pig and vegetable production facility on Plot 78 of Jakkalsdans Farm 243 in Cullinan, Pretoria.

COMMENTATOR	ISSUE/COMMENT	RESPONSE FROM ENVIRONMENTAL ASSESSMENT PRACTITIONER
	<p>e) The report indicates that alternative properties or locations for the proposed activity have not been identified, due to the fact that it is a site of a pre-existing piggery (although dilapidated), as well as current vegetable production activities by the applicant.</p> <p>f) The Ecological & Wetland Assessment Report several Species of Conservation Concern were found on site including species of Aloe and Hypoxis, which were common within the site. The site is relatively species poor and largely transformed. However, a small area of Terminalia bushveld remains largely natural and there are several wetlands including seeps on the site.</p> <p>g) The Ecological & Wetland Assessment Report indicates that as the buffer for an National Freshwater Ecosystem Priority Areas (NFEPA) wetland is 100m, and that required for cranes (for which this wetland is listed) is 500m, the presence of all aspects of this project within the wetland itself, as well as the buffer zone for the wetland, constitutes a fatal flaw for the proposed development.</p> <p>h) The Ecological & Wetland Assessment Report indicates that it is the opinion of the specialist that this project should not go ahead due to its presence within a National Freshwater Ecosystem Priority Areas (NFEPA) wetland and associated buffer. Despite the degraded nature of the natural vegetation and the wetland hydrogeomorphic (HGM) units themselves, the listing of the wetland as crane breeding habitat means that it is highly sensitive regardless. This habitat will be completely lost with the construction of the proposed development.</p> <p>i) The Wetland Delineation & Assessment Report found that the study site contained three hydrogeomorphic (HGM) units; two seep wetlands as well as a channelled valley bottom wetland. The Wetland Delineation & Assessment Report concludes that the property is 20.7 hectares in size with 74% being wetland which</p>	<p>is therefore compatible with the current zoning for the area. It is also important to note that the developer will avoid the Zone 3 area not suitable for development and will take special precaution to protect and minimise significant impacts on this sensitive environment.</p> <p>e) The comment corresponds to the information included in the Ecological & Wetland Assessment Report (Appendix G).</p> <p>f) The comment corresponds to the information included in the Ecological & Wetland Assessment Report (Appendix G).</p> <p>g) The comment corresponds to the information included in the Ecological & Wetland Assessment Report (Appendix G).</p> <p>h) The comment corresponds to the information included in the Ecological & Wetland Assessment Report (Appendix G).</p> <p>i) The comment corresponds to the information included in the Wetland Delineation & Assessment Report (Appendix G).</p>

SECTION F: APPENDICES

Basic Assessment for the Zaforho Tracing's proposed development of a pig and vegetable production facility on Plot 78 of Jakkalsdans Farm 243 in Cullinan, Pretoria.

COMMENTATOR	ISSUE/COMMENT	RESPONSE FROM ENVIRONMENTAL ASSESSMENT PRACTITIONER
	<p>consists of two seeps and a channelled valley bottom wetland. The wetland's conditions range from being moderately modified (C) to largely modified (D).</p> <p>In light of the above the Department is of the view that development of the site in terms of the proposal activity may compromise the ecological conservation objectives in the area and disturbance of the ecological functioning of the wetlands, should the development be allowed. Therefore, the Department does not support the proposed activity on the proposed development site.</p> <p>5. RECOMMENDATIONS</p> <p>The Department recommends that the following issues be taken into consideration:</p> <p>a) According Tshwane Open Space Framework (TOSF) wetlands are strategically important ecological structuring elements within the Tshwane Open Space network and must be conserved and transformed and degraded wetlands must be actively rehabilitated and such rehabilitation must be based on site specific, ecologically sound principles. This principle is therefore proposed to be implemented on the proposed development site due to the ecological state of the site.</p> <p>b) According to the Ecological & Wetland Assessment Report compiled by Afzelia Environmental Consultant (Pty) dated May 2018 indicates that it is the opinion of the specialist that this project should not go ahead due to its presence within a National Freshwater Ecosystem Priority Areas (NFEPA) wetland and associated buffer. The Department recommends that an alternative site for the proposed development activity should be sought and the current site be left undeveloped.</p>	<p>The assessment takes cognisance of the impacts associated with the proposed development on the sensitive environment. The option to identify potential areas of the site that are least sensitive in terms of wetlands and seeps was considered. With effective implementation of the mitigation measures suggested in this BAR, as well as adherence to the layout suggested in the Wetland Delineation and Assessment study undertaken by SAZI and captured in Figure 55, the impacts on the wetland system can be managed and reduced to reasonable levels. The Environmental Management Programme (Appendix H) 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 development of the pig farming and vegetable production facility and associated infrastructure.</p> <p>5</p> <p>a) The comment is noted. The assessment takes cognisance of the impacts associated with the proposed development on the sensitive environment. The proposed design and layout have been informed by the Wetland studies undertaken as part of the BA process to minimise impacts on the sensitive wetland areas. The proposed development is planned to take place outside of wetlands and seeps.</p> <p>b) The comment is noted. The preferred proposed layout is on part of the property which has the least potential impact on the sensitive areas on site. Alternative properties or locations for the proposed activity have not been identified, due to the fact it is a site of a pre-existing piggery (although dilapidated), as well as current vegetable production activities by the applicant. The owner was only able to acquire this land parcel, and it would not be economically feasible for the business to find and or purchase new property. Therefore, no alternate properties have been investigated in the Basic Assessment.</p>

SECTION F: APPENDICES

Basic Assessment for the Zaforho Tracing's proposed development of a pig and vegetable production facility on Plot 78 of Jakkalsdans Farm 243 in Cullinan, Pretoria.

COMMENTATOR	ISSUE/COMMENT	RESPONSE FROM ENVIRONMENTAL ASSESSMENT PRACTITIONER
	<p>c) According to the Wetland Delineation & Assessment Report compiled by Sazi Environmental Consultant dated August 2018 concludes that the property is 20.7 hectares in size with 74% being wetland which are consists out of two seeps and a channelled valley bottom wetland. The Department is of the view that the proposed development on the wetland will have detrimental impacts on the functioning of the wetland and the overall hydrological functioning of the stream and therefore cannot support the proposed development on the proposed site.</p> <p>6. CONCLUSION</p> <p>Based on the above, the Department is of the view that the proposed development could pose detrimental impacts on the environment as it directly impacts on the wetland and other sensitive ecological features identified on site. As a result of the above and on the basis of information submitted it is the Department's viewpoint that the adverse impacts associated with the proposed development activity may not be mitigated to an acceptable level.</p> <p>The Department therefore does not support the proposed development of a pig and vegetable production facility on Plot 78 of the Farm Jakkalsdans 243-JR, in Cullinan</p>	<p>c) The comment corresponds to the information included in the Wetland Delineation & Assessment Report (Appendix G). The preferred proposed layout is on part of the property which has the least potential impact on the sensitive areas on site, as identified in the Wetland Delineation and Assessment study. It is also important to note that the developer will avoid the wetland area and will take special precaution to protect and minimise significant impacts on this sensitive environment. The implementation of mitigation measure included in this EMPr will assist to avoid and/or mitigate any potential negative impacts associated with the construction and operational activities associated with the proposed development. 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. Failure to do so may result to legal action by the Competent Authority. Any non-compliance to the conditions of the Environmental Authorisation, should this be granted, can be reported to GDARD.</p>
3. R. Tshiswaise (Department of Water and Sanitation)	<p>The Department of Water and Sanitation (DWS) has assessed the above-mentioned report prepared by Council for Scientific and Industrial Research (CSIR) on behalf of the Zaforho Tracing (Pty) Ltd and wish to comment as follows:</p> <p>1. The applicant shall take note of Section 22(1) of the National Water Act (NWA), 1998 (Act No. 36 of 1998) "Permissible water use", a person may only use water-</p> <p>a) without a licence-</p> <p><i>i. if that water use is permissible under Schedule 1;</i></p>	<p>CSIR:</p> <p>Thank you to the Department for these comments. Please see responses below as per your corresponding numbering:</p> <p>1. The comment is noted and correct. An application for the determination of the need for a Water Use Licence Application (WULA) is being lodged by the applicant.</p>

SECTION F: APPENDICES

Basic Assessment for the Zaforho Tracing's proposed development of a pig and vegetable production facility on Plot 78 of Jakkalsdams Farm 243 in Cullinan, Pretoria.

COMMENTATOR	ISSUE/COMMENT	RESPONSE FROM ENVIRONMENTAL ASSESSMENT PRACTITIONER
	<p><i>ii. If that water is permissible as a continuation of an existing lawful use (section 32); or</i></p> <p><i>iii. If that water use is permissible in terms of general authorisation issued under section 39;</i></p> <p><i>b) If the water use is authorised by a licence under this Act; or</i></p> <p><i>c) If the responsible authority has dispensed with a licence requirement under subsection (3), (of the same Act).</i></p> <p>2. Surface and groundwater contamination</p> <p>The DWS urge the applicant to avoid surface and groundwater pollutions by implementing the proper measures to protect water resources during the entire life of the operation. Mitigation potential impact on surface water runoff and groundwater quality should be done.</p> <p>3. Stormwater management</p> <p>The surface water contamination in the event of a stormwater runoff occurring during the project is expected (Appendix H, Page 25). Stormwater must be diverted around areas of cement mixing, chemical/fuel handling and storage and waste containment areas. The proper storm water management practices should be implemented and inspected regularly to ensure proper functioning of the stormwater structures.</p> <p>4. Soil erosion</p> <p>The applicant mentioned the high possibility of the soil erosion due to exposed soil during the construction phase (Appendix H, Page 19). Therefore, the applicant must control and implement suitable mitigation measures as mentioned on the Environmental</p>	<p>2. Mitigation measures have been recommended in the Report and EMPr (included in Appendix H) to avoid groundwater and surface water pollution associated with the proposed activities. The implementation of mitigation measure included in this EMPr will assist to avoid and/or mitigate any potential negative impacts associated with the construction and operational activities associated with the proposed development. 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>3. A Stormwater Management Plan has been included in the EMPr and is recommended as a construction control plan to prevent the risk of soil erosion and contamination as a result of uncontrolled stormwater or wash water runoff associated with the proposed facility. This includes recommendation for monitoring suggested by the Department.</p> <p>4. The comment is noted and will be adhered to. Measures to minimise the potential for soil erosion have been included in the EMPr. The project applicant must take precautionary measures to prevent or minimise soil erosion as a result of activities associated with the proposed development.</p>

SECTION F: APPENDICES

Basic Assessment for the Zavorho Tracing's proposed development of a pig and vegetable production facility on Plot 78 of Jakkalsdams Farm 243 in Cullinan, Pretoria.

COMMENTATOR	ISSUE/COMMENT	RESPONSE FROM ENVIRONMENTAL ASSESSMENT PRACTITIONER
	<p>Management Programme report (EMPr) document (Appendix H, Page 19) to prevent the erosion.</p> <p>5. Wetlands disturbances</p> <p>An indication shall also be provided on the availability of any wetlands within the area of activity as these regarded as water resources in terms of NWA and requires full protection from any possible impacts. The DWS would like to emphasize that if wetlands, streams and drainages are to be destructed, the applicant must ensure that mitigation measures are taken to mitigate impacts or alternatively, the applicant must provide another option which will not involve destruction of these watercourses. The applicant must also note that destruction of watercourses triggers section 21 (c) and (i) water uses in terms of the National Water Act, 1998 (Act No. 36 of 1998).</p> <p>6. Fuel and lubricant spillages/leakages</p> <p>Improper diesel, oil and chemical handlings including the mixing or disposal of cement and concrete, if allowed occur, will result in the pollution of the surface water runoff and the groundwater regime through runoff contamination and seepage/infiltration, respectively (Appendix H, Pages 23 and 38). The regular maintenance and monitoring of the company's equipment should be done to avoid the leakages and spillages. Hence, ensure that the spills are cleaned up immediately after an incident happens to avoid the surface and groundwater contact and contamination. Furthermore, the applicant shall ensure that fluids are stored and handled properly in a concrete or cement lined surface with berm walls to avoid any seepage into the groundwater resources and also ensure that the design of the storage area is such that any leakages or spillages can be contained.</p>	<p>5. Based on the findings of the Ecological and Wetland Assessment, as well as the Wetland Delineation and Assessment study, the project site includes a channeled valley bottom wetland that traverses the site, as well as two wetland seeps (Appendix A). The proposed design and layout have been informed by these studies undertaken as part of the BA process to minimise impacts on the sensitive wetland areas. The preferred proposed layout, included in Appendix A, is on part of the property which has the least potential impact on the sensitive areas on site, as identified in the Wetland Delineation and Assessment study. An application for the determination of the need for a Water Use Licence Application (WULA) is being lodged by the applicant.</p> <p>6. Measures to prevent the deterioration of water quality and downstream aquatic ecology have been included in this BAR and EMPr. This includes mitigation measures suggested by the Department.</p>

SECTION F: APPENDICES

Basic Assessment for the Zaforho Tracing's proposed development of a pig and vegetable production facility on Plot 78 of Jakkalsdans Farm 243 in Cullinan, Pretoria.

COMMENTATOR	ISSUE/COMMENT	RESPONSE FROM ENVIRONMENTAL ASSESSMENT PRACTITIONER
	<p>7. Waste management</p> <p>The applicant shall ensure that waste to be generated on site is handled, transported and disposed of at a designated landfill site (Appendix H, Pages 24). Waste generated on the site should be recycled as far as possible and sold/given to interested contractors. Furthermore, the hazardous waste (i.e. fuels, paints and solvents) 'should be disposed of at waste disposal site permitted to handle such waste materials. Prior to the commencement of the activities, a signed copy of service level agreement must be submitted to the DWS to demonstrate that provision will be made to render such service.</p> <p>8. Ablution facilities</p> <p>The applicant mentioned that the sanitation facilities are to be provided for use by employees on the site during the operational activities (Appendix H, page 31). Therefore, the applicant should also provide the Department with the disposal method of the waste. In addition, these facilities must not be situated within 100m from a watercourse or within the 1:100 year flood-line (whichever is the greatest) unless authorised.</p> <p>9. Pollution Incidents</p> <p>The applicant shall note that in terms of section 19(1) of the National Water Act, 1998 (Act No. 36 of 1998), it has been stated that "An owner of land, a person in control of land or a person who occupies or uses the land on which-(a) any activity or process is or was performed or undertaken; or (b) any other situation exists, which causes, has caused or is likely to cause pollution of a water resources must take all reasonable measures to prevent any such pollution from occurring, continuing or recurring'. Any pollution</p>	<p>7. The comment is noted and will be adhered to. The EMPr of this proposed project, including this recommendation from the Department, must form part of the contractual agreement and be adhered to by both the contractors/workers and the applicant.</p> <p>8. The comment is noted and will be adhered to. The EMPr of this proposed project, including this recommendation from the Department, must form part of the contractual agreement and be adhered to by both the contractors/workers and the applicant.</p> <p>8. The comment is noted and will be adhered to. The EMPr of this proposed project, including this recommendation from the Department, must form part of the contractual agreement and be adhered to by both the contractors/workers and the applicant.</p>

SECTION F: APPENDICES

Basic Assessment for the Zaforho Tracing's proposed development of a pig and vegetable production facility on Plot 78 of Jakkalsdans Farm 243 in Cullinan, Pretoria.

COMMENTATOR	ISSUE/COMMENT	RESPONSE FROM ENVIRONMENTAL ASSESSMENT PRACTITIONER
	incident(s) originating from the proposed project shall be reported to the Provincial Head of the DWS within 24 hours.	

Appendix E6: Copy of the register of I&APs

Company/organization	Name	Physical Address	Phone	Postal	Cell	Email
NATIONAL						
Department of Environmental Affairs- National	Mmatlala Rabothata					mrabothata@environment.gov.za
Department of Rural Development and Land Reform	Bonginkosi Zulu					bonginkosi.zulu@drdlr.gov.za
Department of Agriculture, Forestry and Fisheries	Mashudu Marubini					mashuduma@daff.gov.za
Department of Agriculture, Forestry and Fisheries (AgriLand and Liaison Officer)	Ms Thoko Buthelezi					thokob@daff.gov.za
National Department of Water Affairs	Ms Ndileka K Mohapi					MohapiN@dwa.gov.za
National Department of Water Affairs	Namisha Muthraparsad					MuthraparsadN@dwa.gov.za
PROVINCIAL						
Department of Agriculture and Rural Development	Steven Mukhola					steven.mukhola@gauteng.gov.za

SECTION F: APPENDICES

Basic Assessment for the Zaforho Tracing's proposed development of a pig and vegetable production facility on Plot 78 of Jakkalsdans Farm 243 in Cullinan, Pretoria.

Company/organization	Name	Physical Address	Phone	Postal	Cell	Email
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Department of Water and Sanitation	Rudzani Tshiswaise					tshiswaiser@dws.gov.za
Department of Water and Sanitation	Ms M Musekene					MusekeneM@dws.gov.za
Department of Water and Sanitation	Ms T Rakgotho					RakgothoT@dws.gov.za
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Gauteng Department of Economic Development	Phindile Mbanjwa					phindile.mbanjwa@gauteng.gov.za
The Provincial Heritage Resources Authority Gauteng	Tebogo Molokomme					tebogo.molokomme@gauteng.gov.za
GDARD waste management	Zingisa Smale					Zingisa.Smale@gauteng.gov.za
LOCAL MUNICIPALITY						
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City of Tshwane Metropolitan Municipality	Tshinyadzo Mpephu					TshinyadzoM@tshwane.gov.za
City of Tshwane Metropolitan Municipality	Ms Rudzani Mukheli					rudzanim@tshwane.gov.za
WARD COUNCILLORS						
Ward 99 Tshwane Councillor	Mr Lucas Welmans					lucas@tshwane.gov.za

SECTION F: APPENDICES

Basic Assessment for the Zaforho Tracing's proposed development of a pig and vegetable production facility on Plot 78 of Jakkalsdans Farm 243 in Cullinan, Pretoria.

Company/organization	Name	Physical Address	Phone	Postal	Cell	Email
CLIENT & NEIGHBOURS						
Client	Zacharia Madumo					zaforho@yahoo.com
Neighbour	Mr Piet van Dyk					pietvdyk@gmail.com
Neighbour	Mr Owen Mahlangu					owenthapelom@gmail.com
LANDOWNER						
Moloto Traditional Community Authority	Chief: Mabina Hendrik Moloto					watmoloto@gmail.com
OTHER I&APs						
WESSA	Tumi Lehabe					Tumi.lehabe@wessa.co.za
EWT	Ashleigh Dore					ashleighd@ewt.org.za
EWT	Dr Harriet Davies-Mostert					ewt@ewt.org.za
Council for Geoscience	Dr Stewart Foya					Sfoya@geoscience.org.za
Birdlife	Simon Gear					advocacy@birdlife.org.za
South African National Parks (SANParks)	Dr. Howard Hendricks					howard.hendricks@sanparks.org
South African National Roads Agency	Victoria Bota					BotaV@nra.co.za
South African National Roads Agency	Khathutshelo Ramavhoya					RamavhoyaK@nra.co.za
AgriLand	Hettie Buys					HettieB@daff.gov.za

SECTION F: APPENDICES

Basic Assessment for the Zaforho Tracing's proposed development of a pig and vegetable production facility on Plot 78 of Jakkalsdans Farm 243 in Cullinan, Pretoria.

BASIC ASSESSMENT REPORT

APPENDIX F:

Water use license(s) authorization – *Not applicable at this stage*
SAHRA information

Service letters from municipalities, water supply information
– *Not applicable at this stage*

CONTENTS

Water Use Licence Authorisation : **Not Applicable at this stage, in process of applying.**

SAHRA information

Service letters: **Not Applicable**

South African Heritage Resources Information System Status on Zaforho Project _____ 2

SECTION F: APPENDICES

Basic Assessment for the proposed development of a chicken layer facility for New Age Chicken Supply Primary Co-operative on Holding 75 Endicott near Springs in Gauteng.

South African Heritage Resources Information System Status on Zaforho Project

SAHRIS

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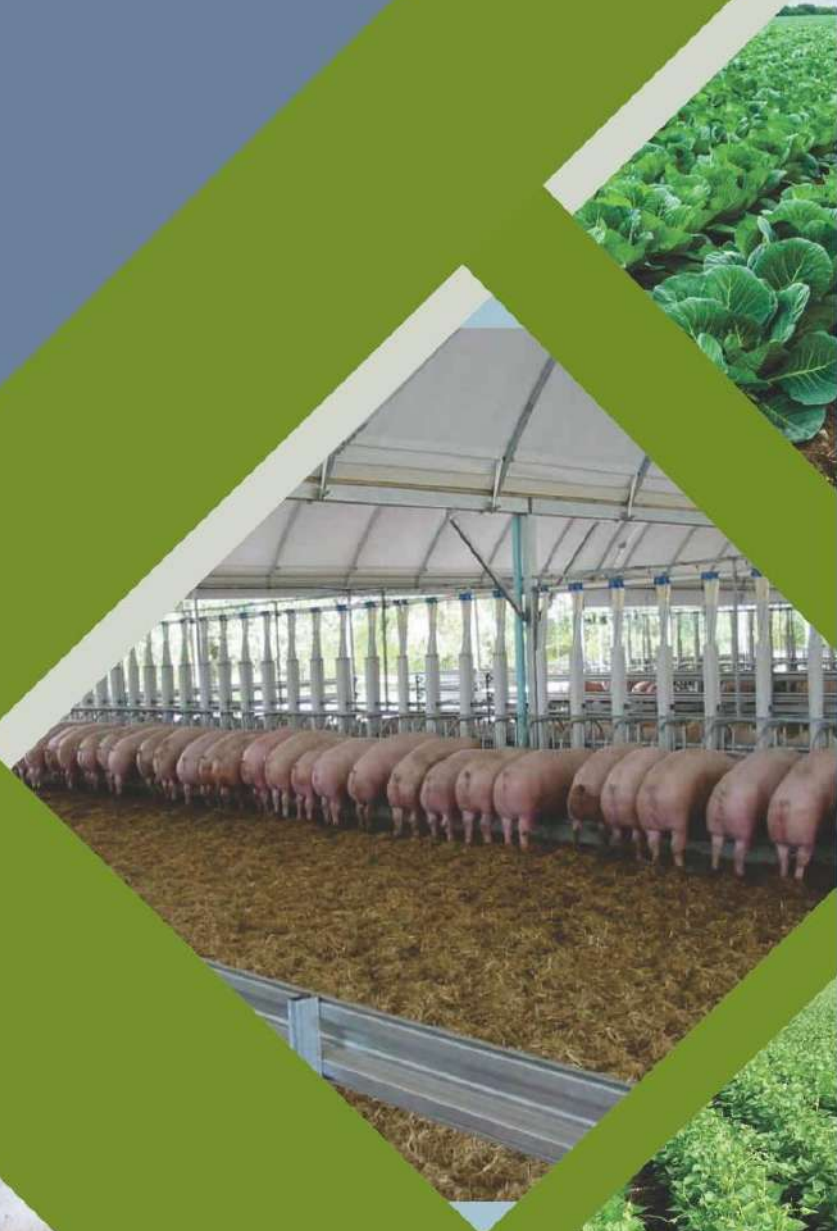
Zaforho Tracing (Pty) Ltd's Pig Production and Vegetable Production Facility

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CaseHeader	LocationInfo	Admin
<p>Status: Closed (Approved)</p> <p>HeritageAuthority(s): PHRA-G</p> <p>Case Type: Section 38 (8) - Statutory Comment Required</p> <p>Development Type: Agriculture</p> <p>ProposalDescription: Proposed Development of a Pig production facility and vegetable production on Plot 78 of Jakkalsdans Farm 243 near Cullinan, Pretoria, Gauteng</p> <p>Expanded_Motivation: Zaforho is a small-scale vegetable production farm located on Plot 78 of Jakkalsdans Farm 243 in Cullinan, Pretoria. The business proposed the development of a Pig production facility on the 21 hectare farm. The Pig farming division of the enterprise would utilise an area of approximately 6 ha with a throughput of 1500 pigs, as well as a 280 m2 slurry dam. A site visit was undertaken for the proposed project on the 5th of July 2017. Currently on site there is Vegetable Production, a Concrete Dam (2m diameter); Sand Dam; One Borehole; 3m x 12m piggery structure (vandalised); Small non-perennial stream; 1 double storey house, single storey house and staff houses (dilapidated).</p> <p>ApplicationDate: Wednesday, February 28, 2018 - 12:12</p> <p>CaseID: 12276</p> <p>Applicants: Zacharia Vincent madumo</p> <p>Consultants/Experts: CSIR</p> <p>OtherReferences:</p> <p>ReferenceList:</p>		

Basic Assessment for the Zaforho Tracing's proposed development of a pig and vegetable production facility on Plot 78 of Jakkalsdans Farm 243 in Cullinan, Pretoria

APPENDIX G: SPECIALIST REPORTS



CSIR

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**ECOLOGICAL ASSESSMENT FOR THE PROPOSED ZAFORHO PIG
PRODUCTION FACILITY SITE, CULLINAN, PRETORIA, GAUTENG
VERSION 2**

May 2018



Prepared by:
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Declaration

I, **Leigh-Ann de Wet**, declare that -

- I act as the independent specialist in this matter;
- I do not have and will not have any vested interest (either business, financial, personal or other) in the undertaking of the proposed activity, other than remuneration for work performed in terms of the Environmental Impact Assessment Regulations, 2014;
- 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 National Environmental Management Act (Act 107 of 1998) (NEMA), regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the NEMA Act, regulations and all other applicable legislation;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity; and
- 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 report are true and correct.

Signature of the specialist:



Specialist:	Afzelia Environmental Consultants		
Contact person:	Ms. Leigh-Ann de Wet		
Qualification:	MSc (Botany)		
Professional affiliation(s) (if any)	Pri.Sci.Nat. (SACNASP) (400233/12)		
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Executive summary

Zaforho is a small-scale vegetable production farm located on Plot 78 of Jakkalsdams Farm 243 in Cullinan, Pretoria, within the City of Tshwane Metropolitan municipality. The business proposed the development of a Pig production facility on the 21 hectare farm. The Pig farming division of the enterprise would utilise an area of approximately 6 ha with a throughput of 1500 pigs, as well as a 280 m² slurry dam.

Central Sandy Bushveld, into which the site falls occurs in Limpopo, Mpumalanga and North-West Province on undulating hills from the Pilansberg through to GaMasemola in the east. The vegetation type supports deciduous *Terminalia sericea* and *Burkea africana* on deep sandy soils and low, broadleaved *Combretum* woodland on shallow rocky or gravelly soils. The site, however, contains only one small area of *Terminalia* bushveld with the rest of the site comprising a mosaic of disturbed grassland, monotypic stands of *Eucalyptus* and *Seriphium*, and wetlands.

Overall, the site comprised three vegetation communities (grassland, bushveld and wetland). Several Species of Conservation Concern were found on site including species of *Aloe* and *Hypoxis*, which were common within the site. Several alien invasive species were recorded from the site and will need to be managed throughout the life of the project. The site is relatively species poor and largely transformed. However, a small area of *Terminalia* bushveld remains largely natural and there are several wetlands including seeps on the site.

The presence of the project within either an NFEPA wetland itself or a 100m buffer of that wetland constitutes a Fatal Flaw for the project.

Impacts associated with the proposed development are presented in Table 7.1.

Table 1.1: Summary of impacts associated with the Zaforho pig production and vegetable farming facility

Impact	With Mitigation	Without mitigation
1: Loss of degraded grassland	Low -	Very low -
2: Loss of bushveld	Moderate -	Low -
3: Loss of wetland vegetation	High -	High -
4: Loss of floral SCC	Moderate -	Low -
5: Loss of biodiversity (general)	Low -	Very low -
6: Fragmentation and edge effects	Low -	Very low -
7: Invasion of alien species	Moderate -	Low -

It is the opinion of the specialist that this project should not go ahead due to its presence within an NFEPA wetland and associated buffer. Despite the degraded nature of the natural vegetation and the wetland HGM units themselves, the listing of the wetland as crane breeding habitat means that it is highly sensitive regardless. This habitat will be completely lost with the construction of the proposed development. As such, the presence of the wetland constitutes a Fatal Flaw for the development.

Table of Contents

1	Introduction	8
1.1	Site description.....	8
1.2	Aim of impact assessment	9
1.3	Terms of reference for the impact assessment	9
1.4	Assumptions and limitations.....	9
2	Methodology	10
2.1	Desktop assessment.....	10
2.2	Field assessment.....	10
2.3	Impact assessment	14
3	Description of the project area	17
3.1.1	Vegetation	17
3.1.2	Protected areas.....	17
3.1.3	Conservation guidelines.....	19
3.1.4	NFEPA Wetlands and rivers.....	21
4	Ecological assessment.....	23
4.1	Vegetation	23
4.1.1	Bushveld	25
4.1.2	Grassland.....	26
4.1.3	Wetland.....	28
4.2	Flora.....	30
4.2.1	Species of Conservation Concern (SCC).....	30
4.2.2	Invasive species.....	31
5	Wetland assessment.....	33
5.1	Wetland delineation.....	33
5.1.1	Soil indicator.....	33
5.1.2	Vegetation indicator	34
5.1.3	Historical Imagery	34
5.1.4	Delineation	38
5.2	Buffers	38
5.3	Present Ecological State.....	38
6	Impact Assessment.....	44
6.1	Issue 1: Loss of Vegetation Communities	44
6.1.1	Impact 1: Loss of Degraded Grassland.....	44
6.1.2	Impact 2: Loss of Bushveld	44
6.1.3	Impact 3: Loss of Wetland Vegetation.....	45
6.2	Issue 2: Loss of Species of Conservation Concern and Biodiversity	45

6.2.1	Impact 4: Loss of flora SCC	45
6.2.2	Impact 5: Loss of biodiversity (general).....	45
6.3	Issue 3: Loss of Ecosystem Function and Process	46
6.3.1	Impact 6: Fragmentation and edge effects.....	46
6.3.2	Impact 7: Invasion of alien species	46
7	Conclusions and recommendations.....	47
7.1	General	47
8	References.....	48

List of Tables

Table 1.1: Summary of impacts associated with the Zaforho pig production and vegetable farming facility	3
Table 4.1: List of alien invasive flora species identified within the Zaforho site.....	32
Table 5.1: Present Ecological State (PES) of the HGM 1 – channeled valley bottom wetland on the Zaforho site.....	38
Table 5.2: Present Ecological State (PES) of the HGM 2a – seep wetland on the Zaforho site.....	38
Table 5.3: Present Ecological State (PES) of the HGM 2b – seep wetland on the Zaforho site.....	39
Table 7.1: Summary of impacts associated with the Zaforho pig production and vegetable farming facility	47

List of Figures

Figure 1.1: Location of the Zaforho site.....	8
Figure 2.1: Location of the vegetation sample points at the Zaforho site.....	12
Figure 2.2: Location of the wetland transects at the Zaforho site.....	13
Figure 2.3: Guide to assessing risk/impact significance as a result of consequence and probability.....	15
Figure 3.1: Protected Areas and Protected Area Expansion Strategy Zones.....	18
Figure 3.2: Gauteng Conservation Plan Critical Biodiversity Areas.....	20
Figure 3.3: National Freshwater Ecosystem Priority Areas within proximity to the study site.	22
Figure 4.1: Vegetation types and communities of the Zaforho site.	23
Figure 4.2: Vegetation map of the Zaforho Site.....	24
Figure 4.3: <i>Acacia</i> dominated bushveld.	25
Figure 4.4: <i>Terminalia</i> dominated bushveld.	26
Figure 4.5: Grassland.....	27
Figure 4.6: <i>Seriphium plumosum</i> stand within the disturbed grassland.	27
Figure 4.7: <i>Eucalyptus grandis</i> stand within the disturbed grassland.....	28
Figure 4.8: A dam on the Zaforho site.....	28
Figure 4.9: A seep on the Zaforho site.....	29
Figure 4.10: The stream on the Zaforho site.	29
Figure 4.11: Species of Conservation Concern found on the Zaforho site. A: <i>Aloe</i> sp., B: <i>Bulbine</i> sp. and C: <i>Hypoxis</i> sp.	31
Figure 4.12: Alien invasive found on the Zaforho site. A: <i>Eucalyptus grandis</i> , B: <i>Harrisia martinii</i> , C: <i>Lantana camara</i> , D: <i>Verbena bonariensis</i> and E: <i>Cereus jamacara</i>	32
Figure 5.1: Soils of the <i>Imperata cylindrica</i> stands are grey with few high chroma mottles indicating temporary wetness.....	33
Figure 5.2: Soils of the stream bed indicating a prominent grey matrix with few mottles and thus the permanent zone.	34
Figure 5.3: Historical imagery (2004) wetland delineation for the Zaforho site.....	35
Figure 5.4: Historical imagery (2008) wetland delineation for the Zaforho site.....	35
Figure 5.5: Historical imagery (2011) wetland delineation for the Zaforho site.....	36
Figure 5.6: Historical imagery (2014) wetland delineation for the Zaforho site.....	36
Figure 5.7: Historical imagery (2016) wetland delineation for the Zaforho site.....	37
Figure 5.8: Historical imagery (2017) wetland delineation for the Zaforho site.....	37
Figure 5.9: Wetland delineation of the Zaforho site.....	40
Figure 5.10: Wetland delineation and mapped NFEPA wetland of the Zaforho site.....	41
Figure 5.11: Wetland delineation and 50m and 100m buffers for the Zaforho site.....	42
Figure 5.12: Wetland delineation and HGM units.....	43

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DRAFT

1 Introduction

1.1 Site description

Zaforho is a small-scale vegetable production farm located on Plot 78 of Jakkalsdans Farm 243 in Cullinan, Pretoria (Figure 1.1), within the City of Tshwane Metropolitan municipality. The business proposed the development of a Pig production facility on the 21 hectare farm. The Pig farming division of the enterprise would utilise an area of approximately 6 ha with a throughput of 1500 pigs, as well as a 280 m² slurry dam.

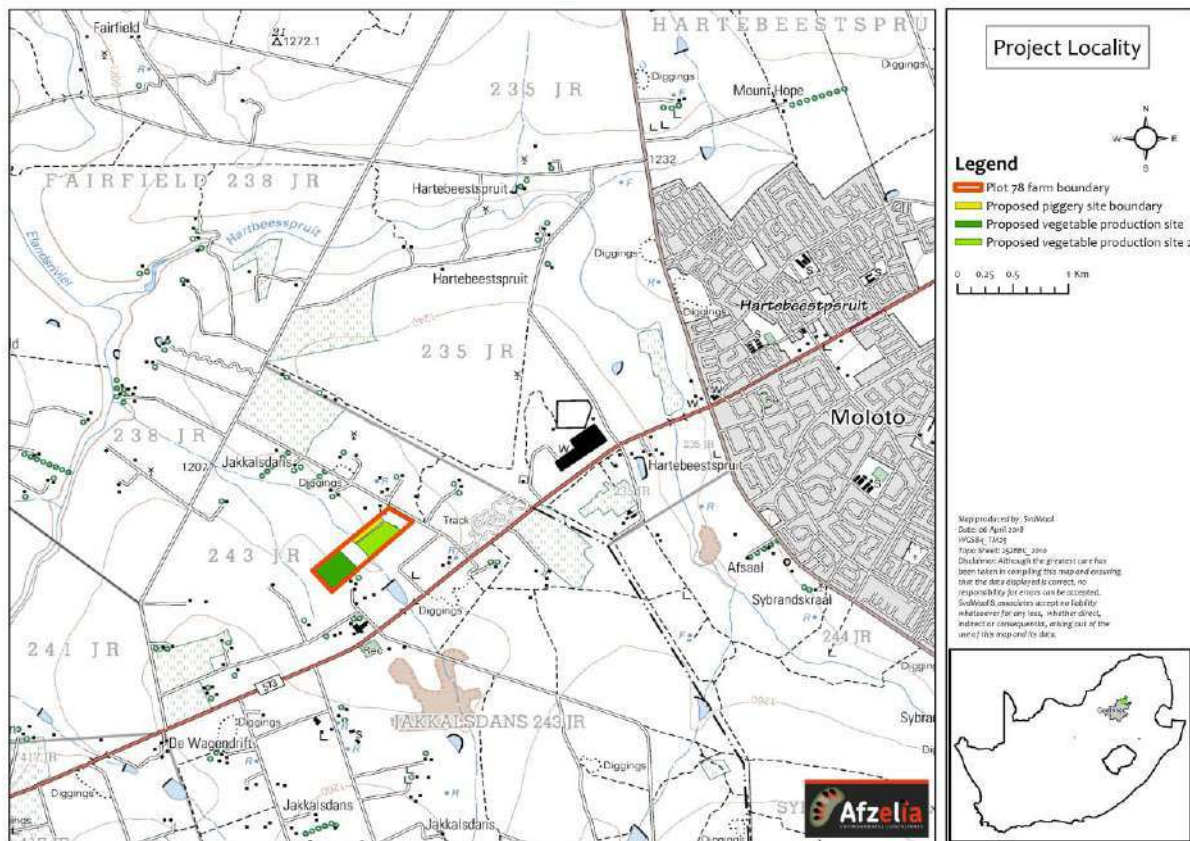


Figure 1.1: Location of the Zaforho site.

1.2 Aim of impact assessment

An ecological impact assessment serves to determine the current ecological state of a site, including vegetation and habitats, and then determines the likely impacts of the proposed development on that ecology. A wetland assessment determines the boundaries of any wetlands on site, and the impacts of the proposed activities to those wetlands. In addition, mitigation measures are recommended to reduce negative, and enhance positive impacts.

1.3 Terms of reference for the impact assessment

- Identify and map the main vegetation types and plant communities;
- Identify and delineate wetlands present on site;
- Identify and record the main plant species that occur within the project area;
- Where possible identify any flora species of conservation concern (SCC);
- Assess the extent of alien plant species over the site, and associated risks of alien invasion as a result of the proposed development;
- Identify any significant landscape features or rare or important vegetation/faunal associations such as wetlands or rocky areas that might support rare or important vegetation/faunal associations;
- Identify the main animal communities associated with the plant communities (mammals, amphibians and reptiles);
- Place the project area within the biodiversity context of the wider area (i.e. provide the “bigger picture”);
- Identify (as far as is possible from the data collected) the principal ecological processes evident within the project site and its relative importance in determining the biodiversity characteristics present;
- Assess the potential direct and indirect impacts resulting from the proposed development and associated infrastructure, both on the footprint and the immediate surrounding area during construction and operation; and
- Provide a description of appropriate mitigation measures that can be adopted to reduce negative impacts for each phase of the project, where required.

1.4 Assumptions and limitations

- This report is based on a site visit conducted on the 25th of March 2018.

2 Methodology

2.1 Desktop assessment

In order to correctly classify the site, a desktop assessment was undertaken. Desktop assessments are based on available information for the area, and several databases and datasets were checked. These included the following:

- Google Earth imagery was used to assess the current vegetation cover of the site.
- Mucina and Rutherford Vegetation Map and associated plant species lists. This map is the accepted vegmap for South Africa and was used to place the study site in context.
- Conservation Planning Tools such as the list of Threatened Ecosystems in Need of Protection, Wetland datasets (NFEPA), were checked and mapped for the study site to provide context.

2.2 Field assessment

Botanical

The study area was explored on foot, and dominant, invasive plant species or Species of Conservation Concern (SCC) found were identified and recorded. Photographs were taken for each species. Particular care was taken to identify any SCC. SCC include those species that are listed on any database as rare, threatened or endangered and include international lists such as IUCN as well as national and provincial lists. Care was taken to identify any alien invasive species in the area. Sample points taken for vegetation can be seen in Figure 2.1.

Fauna

At this stage, faunal lists for the site was assessed at a desktop level only as time did not allow for a full survey and opportunistic sightings were not made due to the short field assessment time. However, it should be noted that the site is listed as an NFEPA wetland for crane breeding, and as such, constitutes an important habitat for birds.

Wetlands

The study site was first assessed using aerial photography, available contour information and relevant spatial datasets for the presence of wetland areas. These areas were then ground-truthed during the field investigation.

For the purpose of this assessment, wetlands are considered as those ecosystems defined by the National Water Act as: "land which is transitional between terrestrial and aquatic systems where the water table is usually at or near the surface, or the land is periodically covered with shallow water, and which land in normal circumstances supports or would support vegetation typically adapted to life in saturated soil."

The wetland delineations were conducted as per the procedures described in 'A Practical Field Procedure for Identification and Delineation of Wetland and Riparian Areas – Edition 1' (Department of Water Affairs, 2005). This document requires the delineator to give consideration to four indicators in order to find the outer edge of the wetland zone:

- The Terrain Unit Indicator helps to identify those parts of the landscape where wetlands are more likely to occur.
- The Soil Form Indicator identifies the soil forms, as defined by the Soil Classification Working Group (1991), which are associated with prolonged and frequent saturation.
- The Soil Wetness Indicator identifies the morphological "signatures" developed in the soil profile as a result of prolonged and frequent saturation. Signs of wetness are characterised by a variety of aspects. These include marked variations in the colours of various soil components, known as mottling; a gleyed

soil matrix or the presence of Fe/Mg concretions. It should be noted that the presence of signs of wetness within a soil profile is sufficient to classify an area as a wetland area despite the lack of other indicators.

- The Vegetation Indicator identifies hydrophilic vegetation associated with frequently saturated soils.

In practice all indicators should be used in any wetland assessment / delineation exercise, the presence of hydric features being most important, with the other indicators being confirmatory. According to the DWAF delineation guidelines, the more wetland indicators that are present the higher the confidence of the delineation. Indicators should be 'combined' to determine whether an area is a wetland, to delineate the boundary of that wetland and to assess its level of functionality. In assessing whether an area is a wetland, the boundary of a wetland or a non-wetland area should be considered to be the point where indicators are no longer present. In addition, an understanding of the hydrological processes active within the area, is considered important when undertaking a wetland assessment. Transects through wetlands were done, and soil samples taken to delineate each of the wetlands. These transect locations can be seen in Figure 2.2.

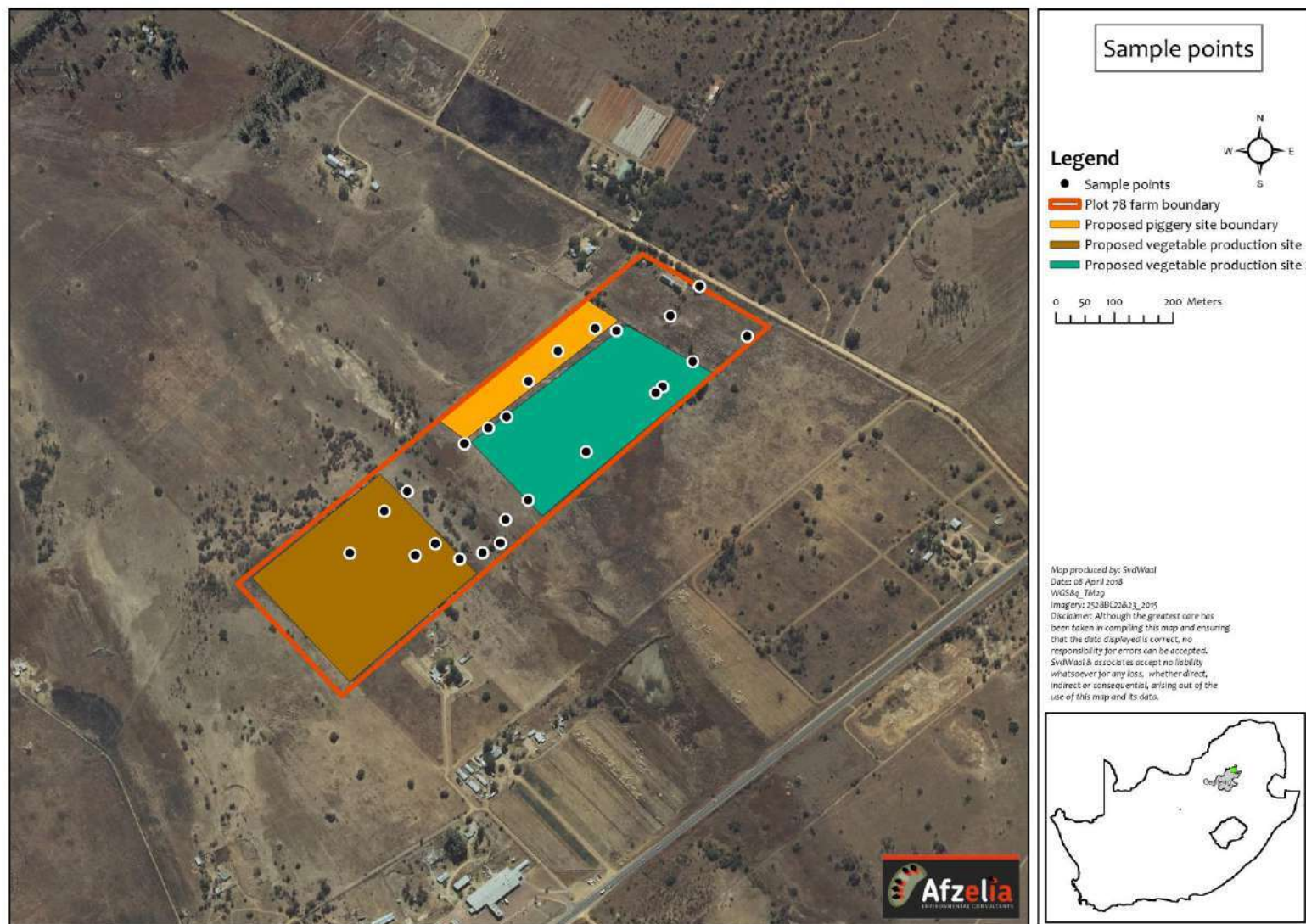


Figure 2.1: Location of the vegetation sample points at the Zaforho site.

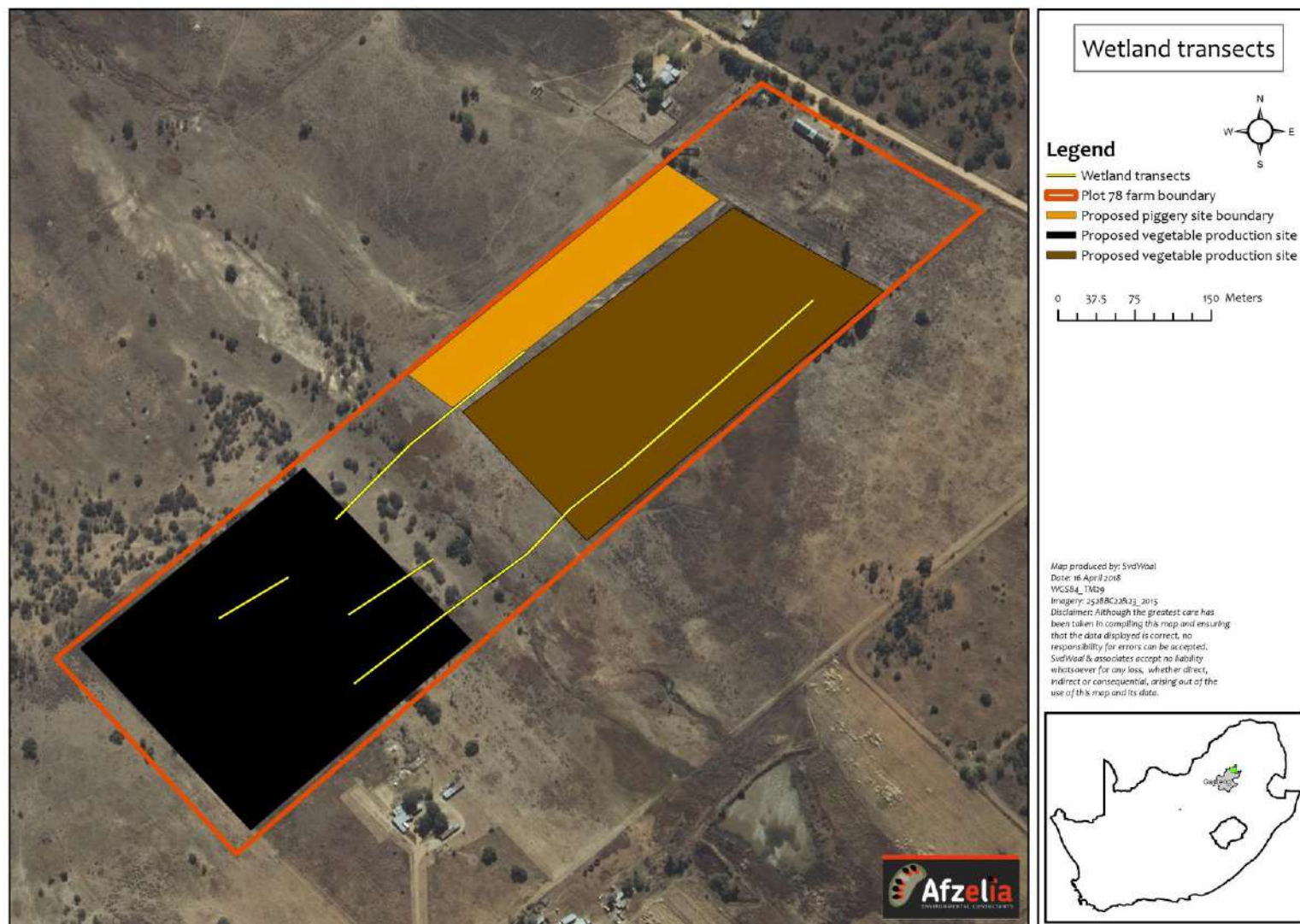


Figure 2.2: Location of the wetland transects at the Zaforho site.

2.3 Impact assessment

The significance (quantification) of potential environmental impacts identified during the Ecological Assessment has been assessed in terms of the following criteria (Guideline Documentation on EIA Regulation, Department of Environmental Affairs and Tourism, 2014). These guidelines have been developed and supplied by CSIR for use in this report.

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).

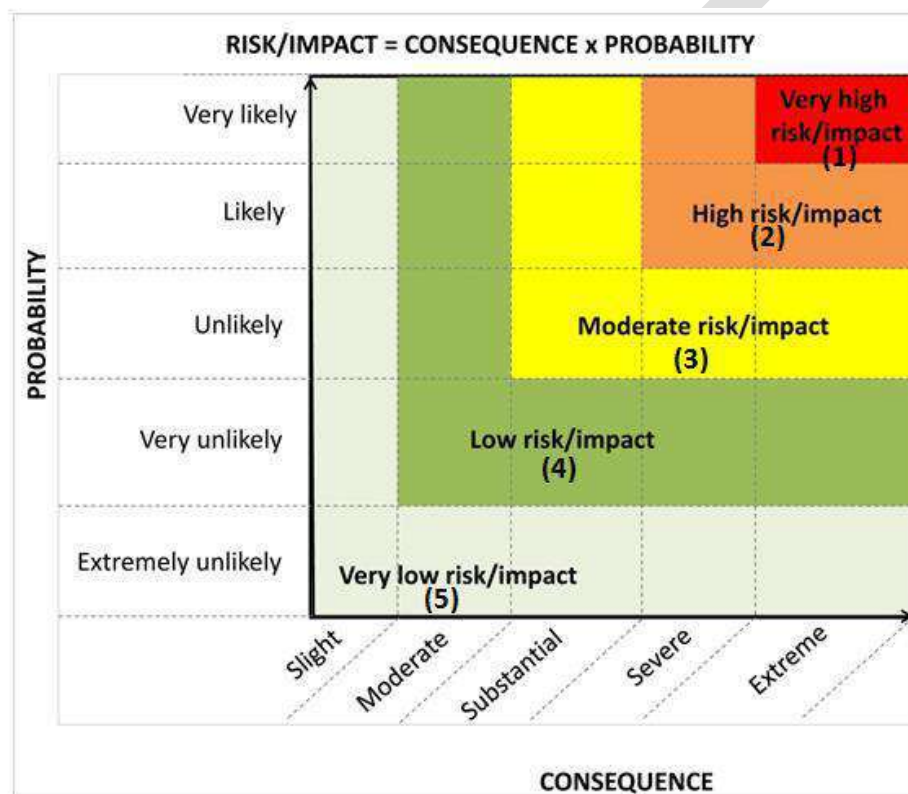


Figure 2.3: Guide to assessing risk/impact significance as a result of consequence and probability.

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:

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.

3 Description of the project area

3.1.1 Vegetation

Vegetation of the study site is described by Mucina and Rutherford (2006) as Central Sandy Bushveld. The description of this vegetation type by Mucina and Rutherford (2006) is as follows:

Central Sandy Bushveld

This vegetation type occurs in Limpopo, Mpumalanga and North-West Province on undulating hills from the Pilansberg through to GaMasemola in the east (Mucina & Rutherford, 2006). The vegetation type supports deciduous *Terminalia sericea* and *Burkea africana* on deep sandy soils and low, broadleaved *Combretum* woodland on shallow rocky or gravelly soils. Common species on flats and lower slopes include *Acacia*, *Ziziphus* and *Euclea* with *Acacia tortilis* dominating some areas along valleys. This vegetation type is Vulnerable, with a conservation target of 19% and less than 3% statutorily conserved. At least 24% is transformed for cultivation and urban areas. It tends to be invaded by *Cereus jamacaru*, *Eucalyptus* species, *Lantana camara*, *Melia azedarach*, *Opuntia ficus-indica* and *Sesbania punicea*.

3.1.2 Protected areas

Protected areas are defined by the Protected Areas Expansion Strategy as: "areas of land or sea that are protected by law and managed mainly for biodiversity conservation" (Government of South Africa, 2008). Formal protected areas include those that are recognised in the National Environmental Management: Protected Areas Act (Act 57 of 2003). Several categories of Protected Area exist and include special nature reserves, national parks, nature reserves and protected environments.

The function of protected areas is to ensure ecological sustainability and adaptation to climate change (Government of South Africa, 2008). They ensure the continued provision of ecosystem services such as the provision of clean water, flood attenuation, erosion prevention, carbon sequestration and aesthetic and spiritual value. Overall, South Africa has insufficient protected areas to ensure the conservation of different vegetation, marine and habitats. As a result, the National Protected Areas Expansion Strategy (NPAES) was developed. Overall, targets were established for protected areas that indicate how much of an ecosystem should be included in protected area and help to focus protected area expansion on the least protected ecosystems (Government of South Africa, 2008).

The NPAES utilises biodiversity thresholds that are specific to ecosystems ensuring that the targets and areas earmarked for protected area expansion are based on science (Government of South Africa, 2008). Two factors, importance and urgency are used to determine which areas should be prioritised as protected areas. There are 42 focus areas for land-based protected area expansion. These areas are "large intact and unfragmented areas suitable for the creation or expansion of large protected areas" (Government of South Africa, 2008).

Protected areas are important to look at in relation to the study site. If there are protected areas within 10km of the study site, or PAES focus areas within 10km of the study site, this indicates that the study area may be important from a biodiversity perspective. Proximity to protected areas and expansion areas is thus important for looking at biodiversity value of a site. The Leeuwofontein Provincial Nature Reserve is located within 10kms of the site (Figure 3.1).

Important Bird Areas are areas internationally recognised for the bird species that occur there and are internationally important for bird conservation (BirdLife SA 2017). There are no IBAs in close proximity (within 10kms) of the study site.

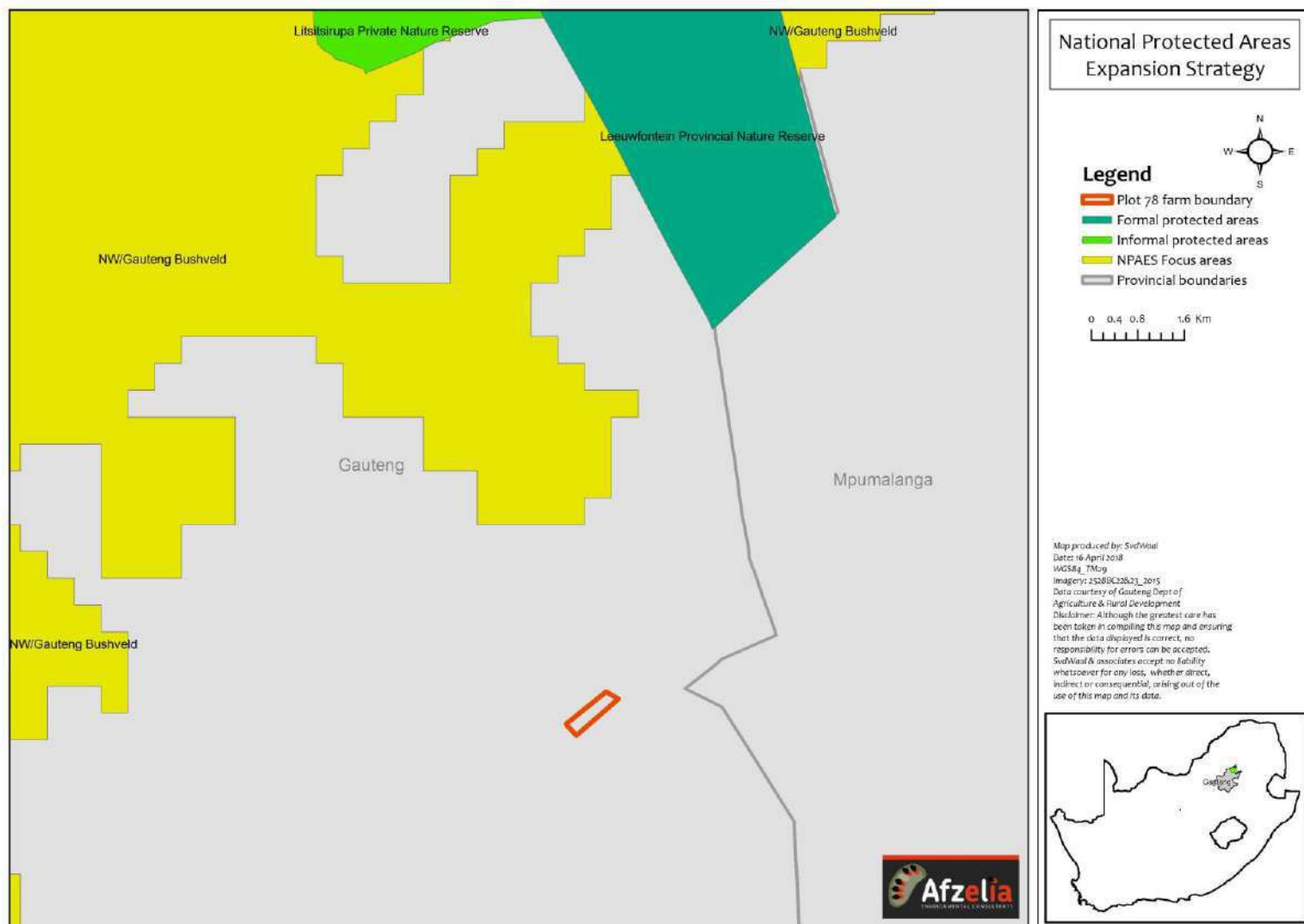


Figure 3.1: Protected Areas and Protected Area Expansion Strategy Zones.

3.1.3 Conservation guidelines

The Gauteng Conservation Plan includes several datasets for the province, and it defines Critical Biodiversity Areas, and Ecological Support Areas. There are two main biodiversity areas within the province (GDARD 2014).

Critical Biodiversity Areas (CBAs): CBAs were selected based on biodiversity characteristics, spatial configuration and requirement for meeting biodiversity pattern and process targets. These areas include irreplaceable sites where no other options exist for meeting conservation targets as well as sites that form the best option for meeting conservation targets. Some CBAs may be degraded but are still required to meet targets (GDARD 2014).

Ecological Support Areas (ESAs): ESAs include natural, near-natural degraded or even heavily modified areas that are required to be maintained in a functioning state to support CBAs and Protected Areas. These areas maintain ecological processes on which Protected Areas and CBAs depend (GDARD 2014).

The study area includes an Ecological Support Area (ESA) which is formed by the stream running through the site (Figure 3.2).

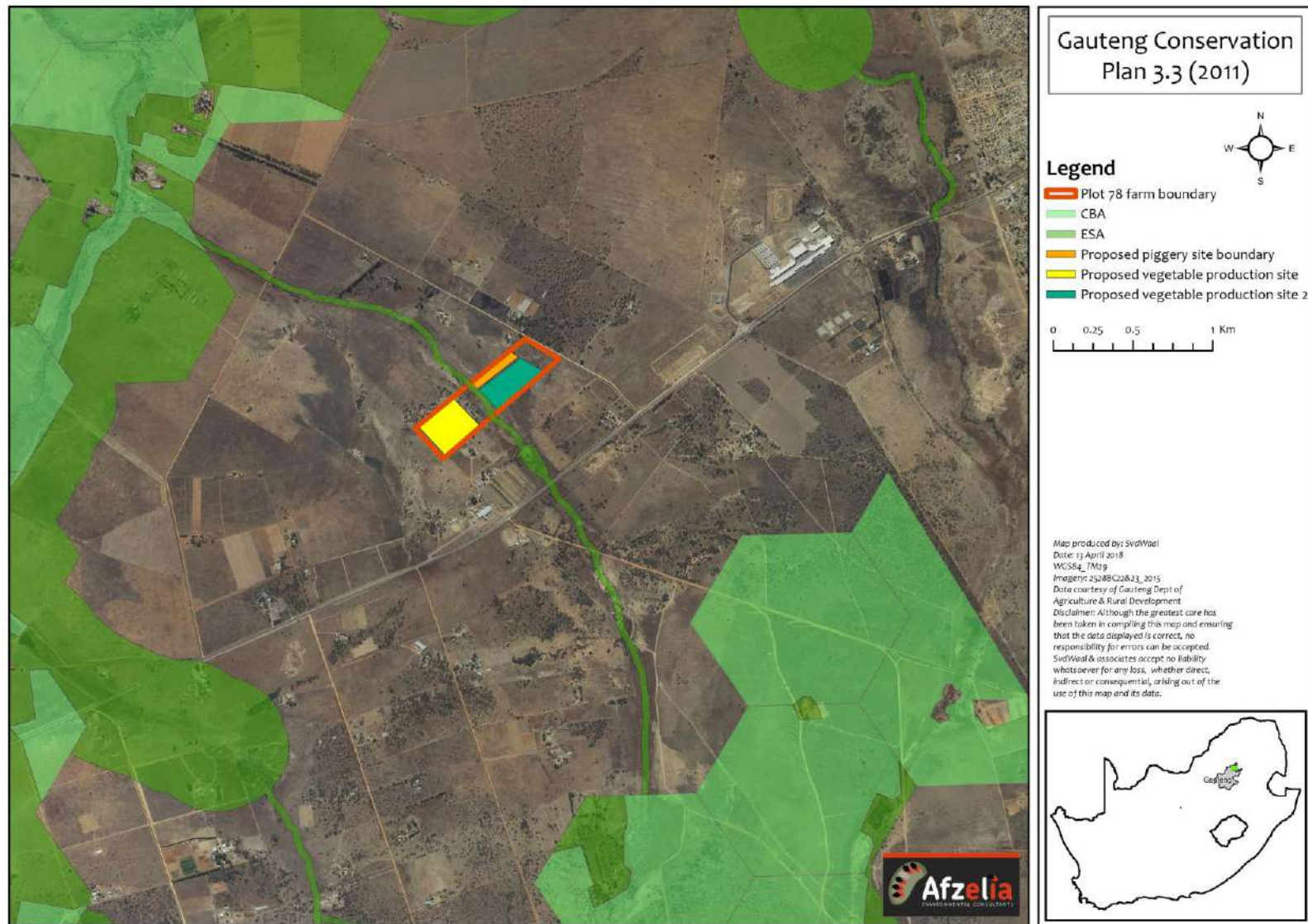


Figure 3.2: Gauteng Conservation Plan Critical Biodiversity Areas.

3.1.4 NFEPA Wetlands and rivers

The Zaforho development is situated within the B31B quaternary catchment which is part of the Olifants Sub Water Management Area and the Olifants Water Management Area. The Olifants water management area corresponds with the South African portion of the Olifants river catchment and falls into three provinces; Gauteng, Mpumalanga and Limpopo (DWA 2011). Main tributaries include the Wilge, Elands and Ga-Selati Rivers on the left bank and the Klein Olifants, Stellpoort, Blyde, Klaserie and Timbavati Rivers on the right bank (DWA 2011). Economic activities in the catchment include primarily mining with coal, platinum, vanadium, chrome, copper and phosphate mines in the catchment. Coal mining is also extensive, with associated coal fired power stations (DWA 2011).

The National Freshwater Ecosystem Priority Areas (NFEPA) project aims to:

1. Identify Freshwater Ecosystem Priority Areas (FEPAs) to meet national biodiversity goals for freshwater ecosystems; and
2. Develop a basis for enabling effective implementation of measures to protect FEPAs, including free-flowing rivers (Nel *et al.* 2011).

The project was developed to respond to the threats to water resources in South Africa including river, wetland and estuary ecosystems and provides strategic spatial priorities for conserving freshwater ecosystems as well as supporting sustainable use of water resources. The strategic spatial priorities are known as Freshwater Ecosystem Priority Areas (FEPAs) (Nel *et al.* 2011).

Examination of the National Freshwater Ecosystem Priority Areas (NFEPA)'s databases was undertaken to ascertain if wetland systems are located within the proposed development area. The NFEPA project aims to produce maps which provide strategic spatial priorities for conserving South Africa's freshwater ecosystems and supporting sustainable use of water resources (Nel *et al.* 2011). They are identified based on a range of criteria dealing with the maintenance of key ecological processes and the conservation of ecosystem types and species associated with rivers, wetlands and estuaries. Wetland FEPAs are also identified using ranks that are based on a combination of special features and modelled wetland conditions. Special features include expert knowledge on features of conservation importance as well as available spatial data on the occurrence of threatened frogs and wetland-dependant birds (Nel *et al.* 2011).

The FEPA maps were created at a national scale and are therefore useful for proactive planning. Ground-truthing the existence and condition of FEPA wetlands is important to understand local conditions which have an impact on the wetland systems, their functional integrity and health.

The study area includes a wetland that traverses the centre of the site (Figure 3.3). This wetland is flagged as an NFEPA wetland due to the presence of breeding cranes, and is thus an important habitat for bird SCC as well as being a wetland.

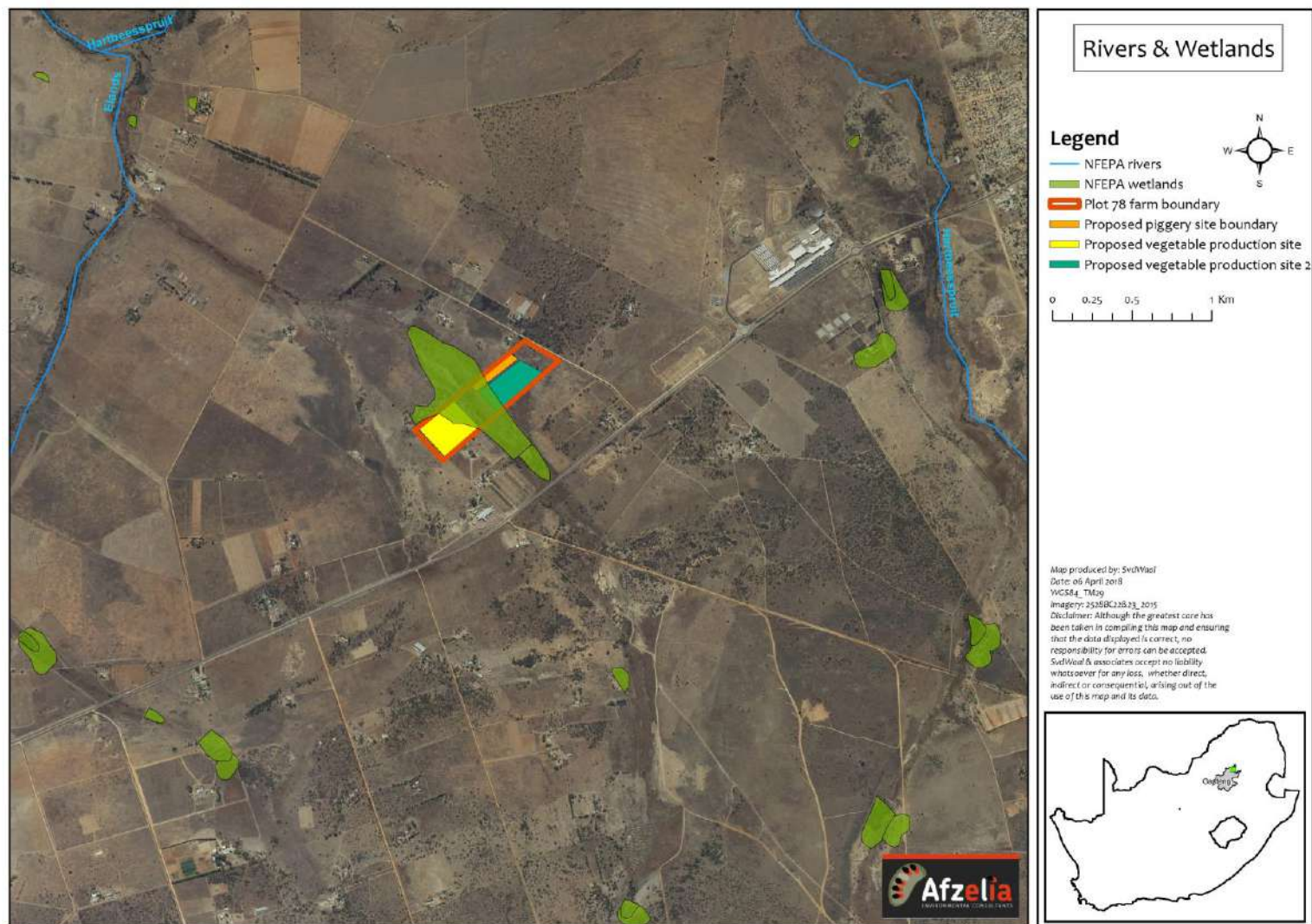


Figure 3.3: National Freshwater Ecosystem Priority Areas within proximity to the study site. .

4 Ecological assessment

4.1 Vegetation

The Zaforho site comprises agricultural lands, with a wetland running through the site and bushveld vegetation. Most of the site is degraded in some way due to vegetable gardening, as well as grazing. The site visit determined the presence of moist grassland on the north-east of the site, and bushveld on the south-west of the site. The bushveld is divided into two types: *Terminalia* bushveld and *Acacia* bushveld. Other areas have been identified as wetlands or containing monotypic stands of vegetation. Each of these types are described below, with their classification outlined by Figure 4.1 and their distribution described in Figure 4.2

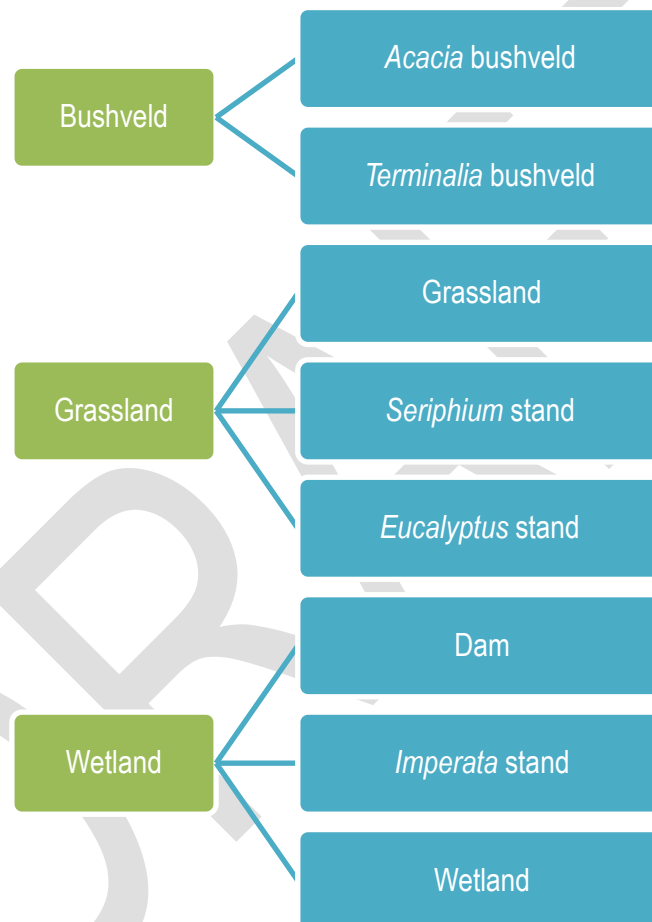


Figure 4.1: Vegetation types and communities of the Zaforho site.

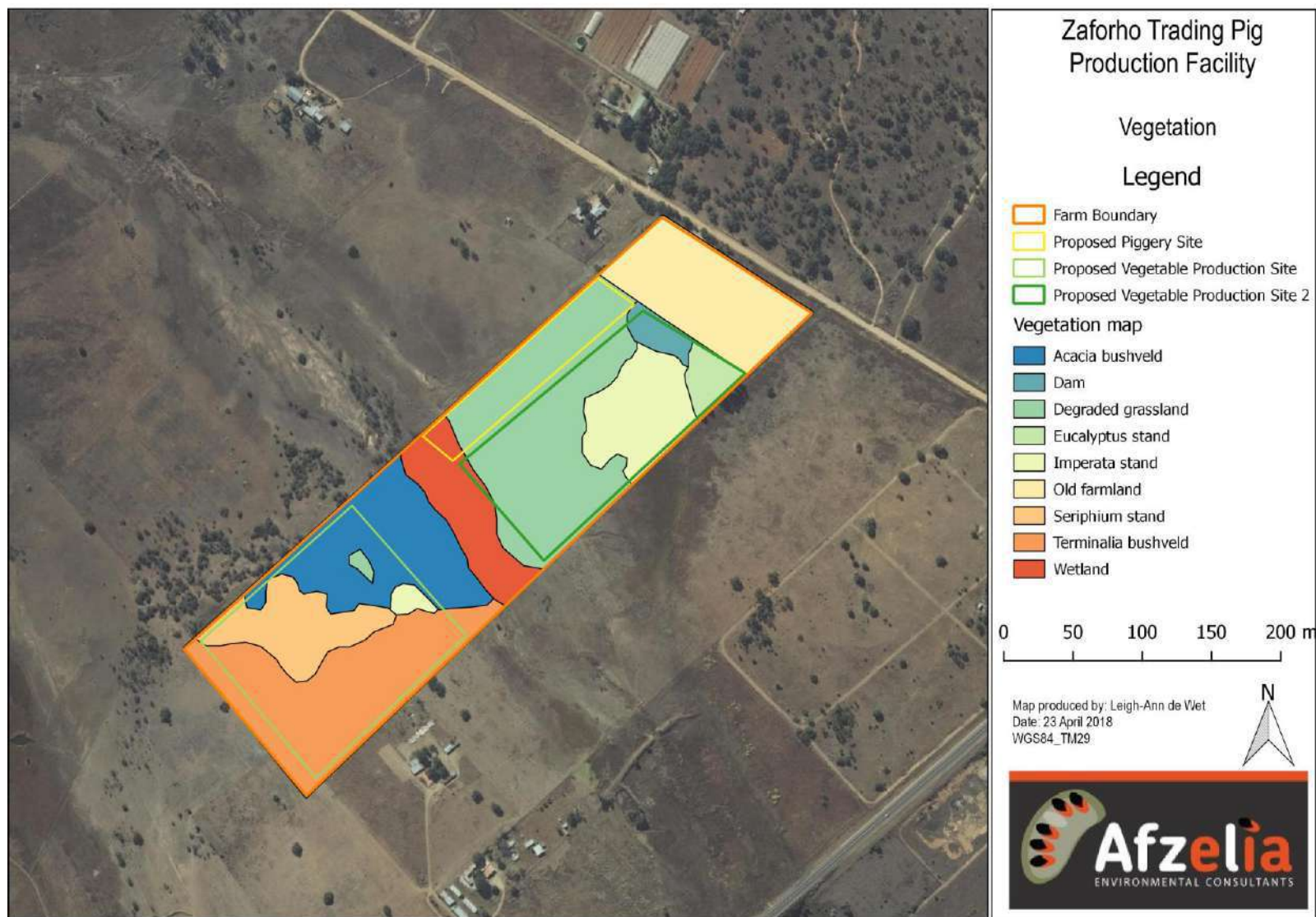


Figure 4.2: Vegetation map of the Zaforho Site.

4.1.1 Bushveld

The bushveld area of the site comprises two distinct types. Closer to the central wetland is the *Acacia* bushveld (Figure 4.2). This bushveld type comprises the dominant tree: *Acacia luederitzii*, which forms clumps that play host to several other plant species including *Asparagus* sp., *Cereus jamacara* (alien invasive), *Harrisia martini* (alien invasive), *Euclea undulata* and *Searsia lancea*. The vegetation community is characterised by clumps of dense vegetation surrounded by closely cropped grass indicating that the area is used for grazing. The south-west of the site comprises *Terminalia* bushveld. This bushveld type is more typical of the area, dominated by the tree *Terminalia sericea* with an understory of grasses and scattered herbs. Other species include the grasses *Eragrostis curvula*, *Aristida congesta* and *Pogonarthria squarrosa*. Scattered *Hypoxis* and *Aloe* species also occur in this vegetation type.



Figure 4.3: *Acacia* dominated bushveld.



Figure 4.4: *Terminalia* dominated bushveld.

4.1.2 Grassland

The majority of the site comprises disturbed grassland. This land appears to have been cultivated in the past and the grassland comprises scattered alien invasives along with indigenous pioneer species (Figure 4.5). Grassland species include *Melinis reopens*, *Cynodon dactylon*, *Aristida congesta*, *Digitaria eriantha* and *Hyarrhenia* sp. Aliens include *Lantana camara* and *Hibiscus trionum*. *Aloe* sp. was also found in the grassland. Some areas of grassland comprise monotypic stands of *Seriphium plumosum*, an indigenous shrub known for invading productive grassland and reducing carrying capacity (Figure 4.6). A stand of *Eucalyptus* also occurs on site, and harbours an understory of *Lantana camara*, *Melinis repens* and *Aloe* sp.



Figure 4.5: Grassland.



Figure 4.6: *Seriphium plumosum* stand within the disturbed grassland.



Figure 4.7: *Eucalyptus grandis* stand within the disturbed grassland.

4.1.3 Wetland

Change in vegetation and standing water allowed for the determination of three wetland types defined by floral indicators on site. These are described in depth in Section 5. They comprise dams, seeps and a stream. There are two dams on site, both of which are seasonally inundated (Figure 4.8). Areas of the site are seeps, most likely where the ground water is forced to the surface in wetter months and typically defined by dense stands of *Imperata cylindrica* (Figure 4.9). There is a stream running through the centre of the site which is disturbed, most likely due to cattle crossing (Figure 4.10) and *Gomphocarpus* sp. as a diagnostic species.



Figure 4.8: A dam on the Zaforho site.



Figure 4.9: A seep on the Zaforho site.



Figure 4.10: The stream on the Zaforho site.

4.2 Flora

4.2.1 Species of Conservation Concern (SCC)

Species of Conservation Concern (SCC) are important, as they are endemic, or listed on the RedList, Provincially or Nationally Protected. A few Species of Conservation Concern were recorded from the Zaforho site. Many of these were not flowering at the time of the site visit and it is recommended that a visit be conducted in late spring early summer and then mid-summer to find and identify geophytes that will be flowering at this time. At least two *Aloe* species were found on site, as well as several geophytes that were not flowering and thus could not be fully identified including *Bulbine*, *Hypoxis* and likely a *Brunsvigia* (Figure 4.11).

These species will require permits to remove should any need to be destroyed or relocated for the construction and operation of the proposed facility arise. Thus, should the proposed pig production and vegetable farming facility go ahead, a comprehensive walk-through of the site should be done during summer to identify and map all SCC.

In terms of the Biodiversity Act, the “developer” has a responsibility for:

- The conservation of endangered ecosystems and restriction of activities according to the categorisation of the area (not solely by listed activities as specified in the EIA regulations).
- Promote the application of appropriate environmental management tools in order to ensure integrated environmental management of activities; thereby ensuring that all development within the area are in line with ecological sustainable development and protection of biodiversity.
- Limit further loss of biodiversity and conserve endangered ecosystems.
- A person may not carry out a restricted activity involving a specimen of a listed threatened or protected species without a permit issued in terms of Chapter 7.
- Such activities include any that are “of a nature that may negatively impact on the survival of a listed threatened or protected species”.

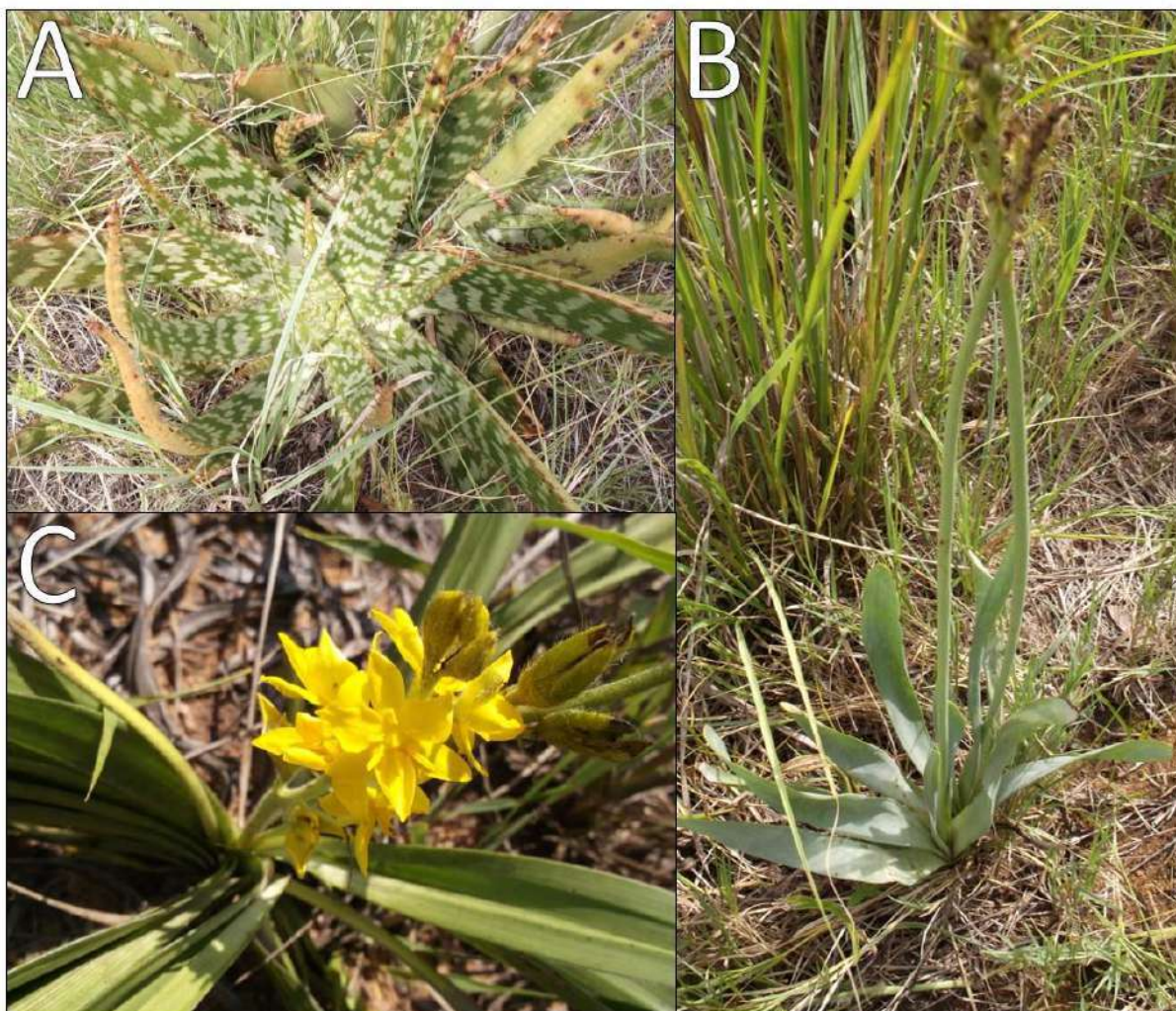


Figure 4.11: Species of Conservation Concern found on the Zaforho site. A: *Aloe* sp., B: *Bulbine* sp. and C: *Hypoxis* sp.

4.2.2 Invasive species

Both the Conservation of Agricultural Resources Act (CARA) and the National Environmental Management: Biodiversity Act (NEMBA) have lists of invasive species and regulations with regards to their control.

NEMBA specific restrictions applicable to the site include the following:

Restricted activities as defined in the Act	Category 1b	Category 2	Category 3
b. Having in possession or exercising physical control over any specimen of a listed invasive species	Exempted	Permit required	Exempted
f. Spreading or allowing the spread of any specimen of a listed invasive species	Prohibited	Permit required	Prohibited

CARA legislation states the following:

Category 1: Invader plants must be removed & destroyed immediately. No trade in these plants.

Category 2: Invader plants may be grown under controlled conditions in permitted zones. No trade in these plants.

Category 3: Invader plants may no longer be propagated or sold. Existing plants do not need to be removed.

Alien species occurring on site included those listed in Table 4.1. Some species can be seen in

Table 4.1: List of alien invasive flora species identified within the Zaforho site.

Species name	Common name	CARA	NEM:BA
<i>Lantana camara</i>	Lantana	1	1b
<i>Cereus jamacara</i>	Queen of the night	1	1b
<i>Harrisia martinii</i>	Moon cactus	1	1b
<i>Campuloclinium macrocephalum</i>	Pomp om weed	1	1b
<i>Verbena bonariensis</i>	Purple top		1b
<i>Eucalyptus grandis</i>	Saligna gum	2	1b

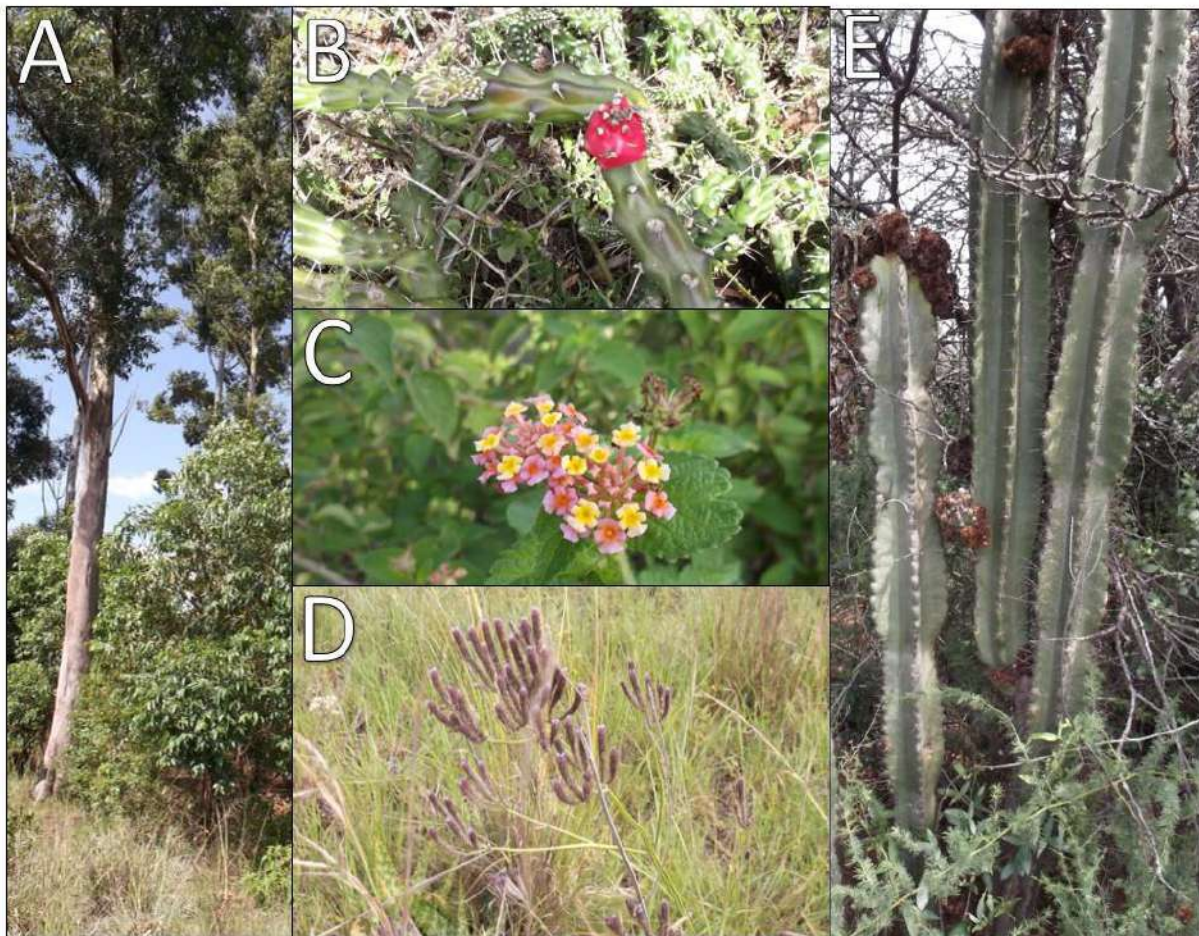


Figure 4.12: Alien invasive found on the Zaforho site. A: *Eucalyptus grandis*, B: *Harrisia martinii*. C: *Lantana camara*, D: *Verbena bonariensis* and E: *Cereus jamacara*.

5 Wetland assessment

5.1 Wetland delineation

5.1.1 Soil indicator

The assessment of the site for wetland areas involved the taking of soil samples along transects across the proposed development site. Soils were examined for the presence of hydric (wetland) properties. Hydric soils are defined as those which show characteristics (redoximorphic features) resulting from prolonged and repeated saturation. Characteristics include the presence of mottling (i.e. bright insoluble iron compounds) a gleyed matrix and/or Mg/Fe concretions. The presence of redoximorphic features are the most important indicator of wetland occurrence, as these soil wetness indicators remain in wetland soils, even if they are degraded or desiccated (DWAf, 2005). It is important to note that the presence or absence of redoximorphic features within the upper 500mm of the soil profile alone is sufficient to identify the soil as being hydric, or non-hydric (Collins, 2005).

The soils of the site include wetland soils of a grey matrix with few high chroma mottles indicating temporary wetness (Figure 5.1). Soils within the stream bed comprise a prominent grey matrix with few mottles indicating the permanent zone of the wetland (Figure 5.2).



Figure 5.1: Soils of the *Imperata cylindrica* stands are grey with few high chroma mottles indicating temporary wetness.



Figure 5.2: Soils of the stream bed indicating a prominent grey matrix with few mottles and thus the permanent zone.

5.1.2 Vegetation indicator

According to DWAF (2005), vegetation is regarded as a key component to be used in the delineation procedure for wetlands. Vegetation also forms a central part of the wetland definition in the National Water Act, Act 36 of 1998. Using vegetation as a primary wetland indicator requires undisturbed conditions (DWAF, 2005). It is thus used in conjunction with soil indicators for wetland delineation.

Seep areas were defined by the presence of monotypic stands of *Imperata cylindrica* (Silver spike). It is often found in moist, poorly drained soils in vleis, marshes, seasonally flooded areas and riverbanks and often in the transitional zone between aquatic and terrestrial habitats (van Ginkel *et al.* 2011). Dams that are more permanently inundated were identified as such through the presence of *Typha capensis* (Bulrush) which grows along watercourses and in marshy areas (van Ginkel *et al.* 2011). The main stream channel was identified through the presence of both *Imperata cylindrica* and *Gomphocarpus fruticosus*, both known for growing in marshy areas. Various *Cyperus* species and water-loving grasses along with *Persecaria serrulata* (Knotweed) which commonly grows in wetlands were present in the seasonal zone of the wetland.

5.1.3 Historical Imagery

The hydrology of the site is extensively modified, with dams altering the flows of hillslope seeps as well as the main channelled valley bottom wetland. Previous land uses including agriculture and livestock farming (grazing) have further resulted in the disturbance of the site. In addition, the current dryness of the region due to recent drought made wetland delineation during this year potentially inaccurate. As a result, the wetland was delineated with the use of soil, flora and topographical indicators, with the addition of historical imagery (from Google Earth) used to map the past wettest years. Historical wetland delineation can be seen in Figures Figure 5.3 to Figure 5.8.



Figure 5.3: Historical imagery (2004) wetland delineation for the Zaforho site.



Figure 5.4: Historical imagery (2008) wetland delineation for the Zaforho site.



Figure 5.5: Historical imagery (2011) wetland delineation for the Zaforho site.



Figure 5.6: Historical imagery (2014) wetland delineation for the Zaforho site.



Figure 5.7: Historical imagery (2016) wetland delineation for the Zaforho site.



Figure 5.8: Historical imagery (2017) wetland delineation for the Zaforho site.

5.1.4 Delineation

Seeps and the stream system were delineated based on topographic setting, vegetative indicators as well as the presence or absence of alluvial soils as described in "A Practical Field Procedure for Identification and Delineation of Wetland and Riparian Areas (DWA 2005) requirements. These criteria were applied to the site, along with the historical imagery available for the site, and a wetland delineation produced (Figure 5.9). The wetland delineation is similar to the map provided by NFEPA for the wetland on site. A comparison can be seen in Figure 5.10.

5.2 Buffers

As the site is already an NFEPA wetland, the standard buffers can be used for this wetland. GDARD described a 50m buffer for wetlands outside an urban area, and the generic buffer for an NFEPA wetland is 100m. In the case of this particular wetland, which qualifies as an NFEPA wetland due to its use as a crane breeding site, the buffer should be extended to 500m (Driver *et al.* 2011).

Further, Driver *et al.* (pg 55, 2011) states: "Cultivation permits should not be granted in wetland FEPAs or their buffers, in the buffers of river FEPAs, or in the wetlands and streams that drain into river FEPAs or the buffers of those wetlands and streams".

Buffers of 50m and 100m are mapped for the site in Figure 5.11.

As the buffer for an NFEPA wetland is 100m, and that required for cranes (for which this wetland is listed) is 500m, the presence of all aspects of this project within the wetland itself, as well as the buffer zone for the wetland, constitutes a Fatal Flaw for the proposed development.

5.3 Present Ecological State

The wetland was then divided into HGM units (Figure 5.12), and each assessed for Present Ecological State (PES) using the Decision Support Protocol for Rapid Assessment of Wetland Ecological Condition (MacFarlane *et al.* 2007). The PES scores for each of the HGM units is presented in Table 5.1. All wetlands on site have a PES of F, indicating that they are highly modified.

Table 5.1: Present Ecological State (PES) of the HGM 1 – channeled valley bottom wetland on the Zaforho site.

Components	Method used for assessment	PES% Score	Ecological Category
Hydrology PES	WET-Health Hydro Module	30 %	E
Geomorphology PES	WET-Health Geomorph Module	89 %	A/B
Vegetation PES	WET-Health Veg Module	8 %	F
Overall Wetland PES	WET-Health default weightings	%	F

Table 5.2: Present Ecological State (PES) of the HGM 2a – seep wetland on the Zaforho site.

Components	Method used for assessment	PES% Score	Ecological Category
Hydrology PES	WET-Health Hydro Module	30 %	E
Geomorphology PES	WET-Health Geomorph Module	83 %	B
Vegetation PES	WET-Health Veg Module	10 %	F

Overall Wetland PES	WET-Health default weightings	%	F
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Table 5.3: Present Ecological State (PES) of the HGM 2b – seep wetland on the Zaforho site.

Components	Method used for assessment	PES% Score	Ecological Category
Hydrology PES	WET-Health Hydro Module	30 %	E
Geomorphology PES	WET-Health Geomorph Module	83 %	B
Vegetation PES	WET-Health Veg Module	10 %	F
Overall Wetland PES	WET-Health default weightings	%	F

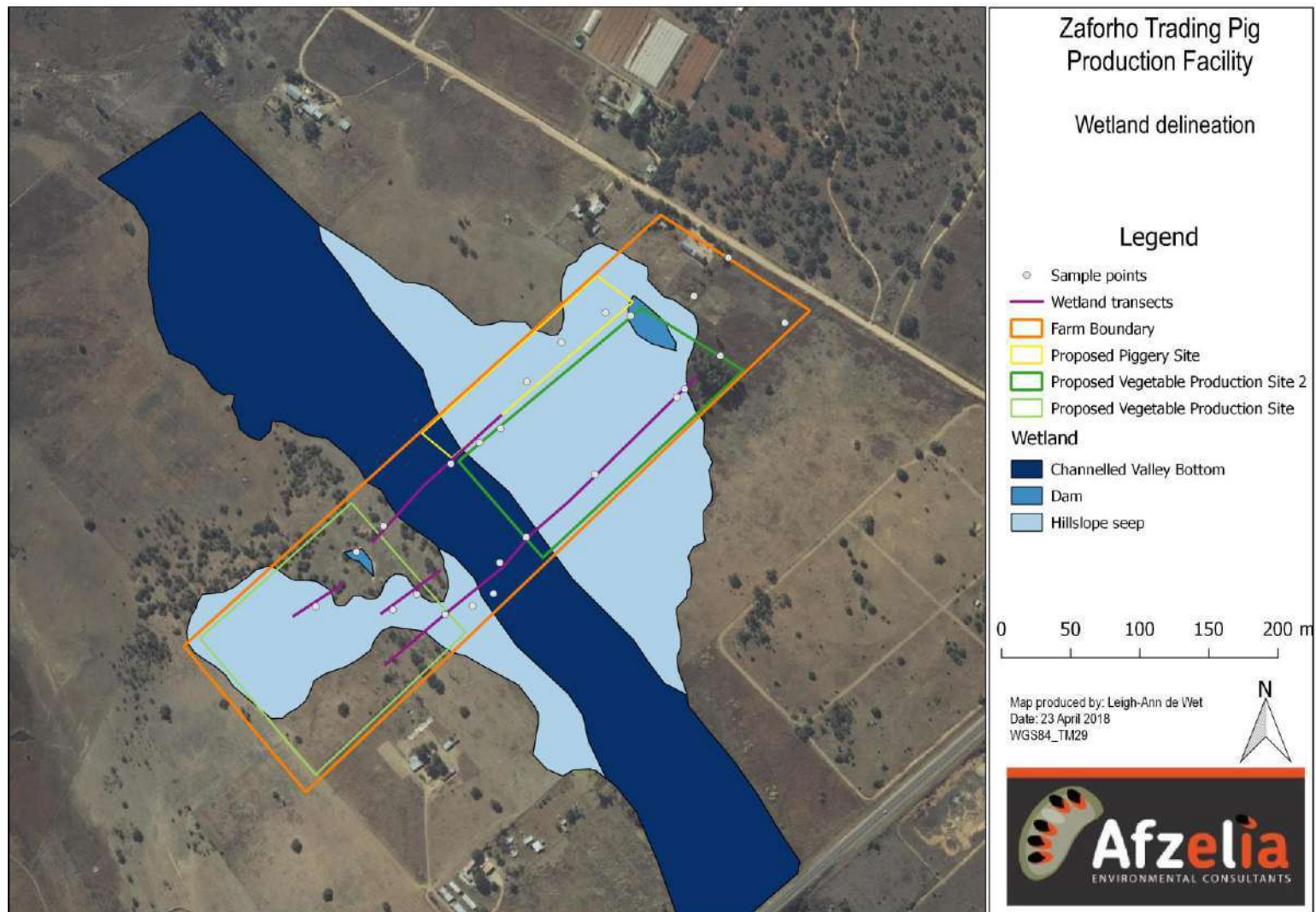


Figure 5.9: Wetland delineation of the Zaforho site.

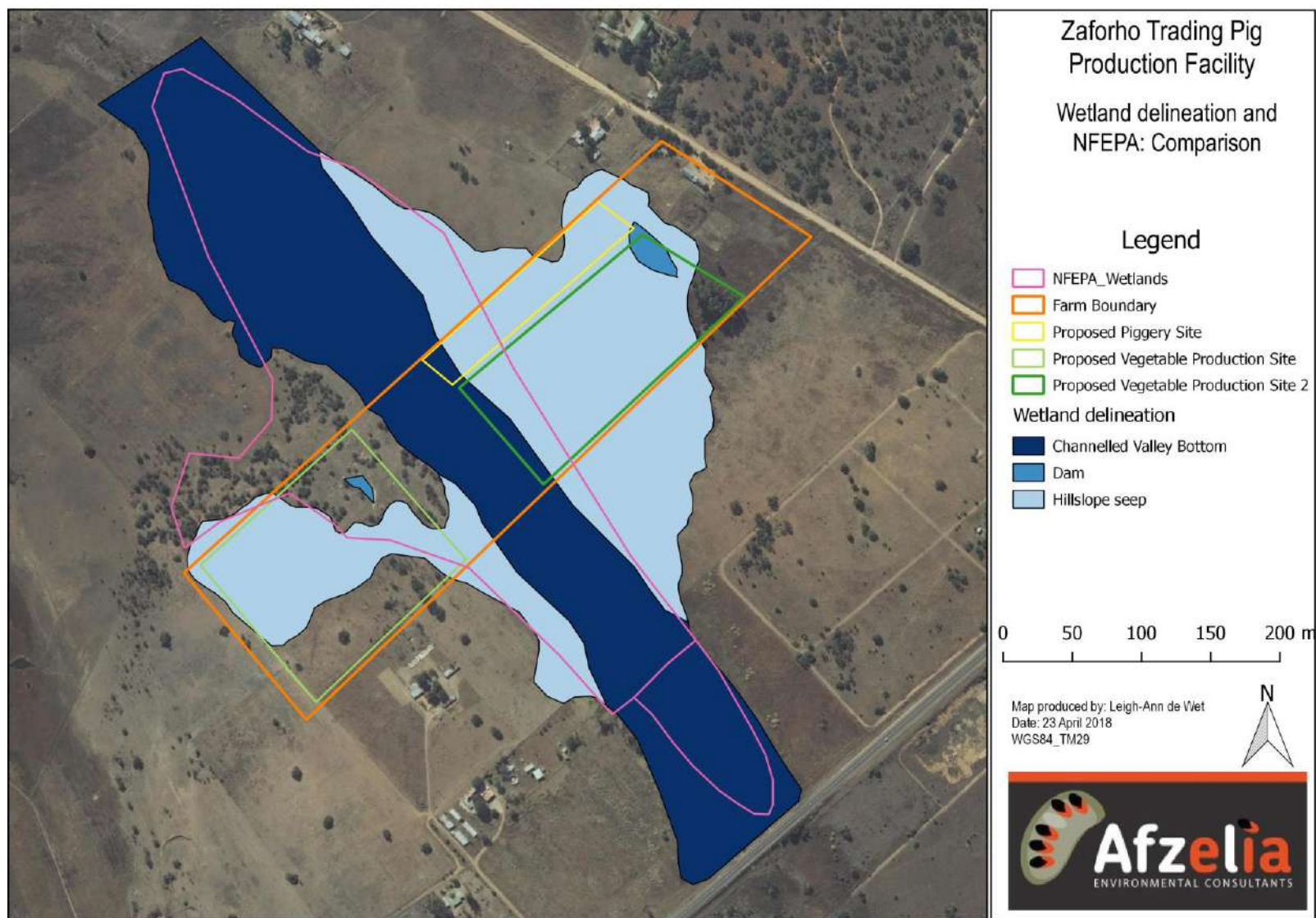


Figure 5.10: Wetland delineation and mapped NFEPA wetland of the Zaforho site.

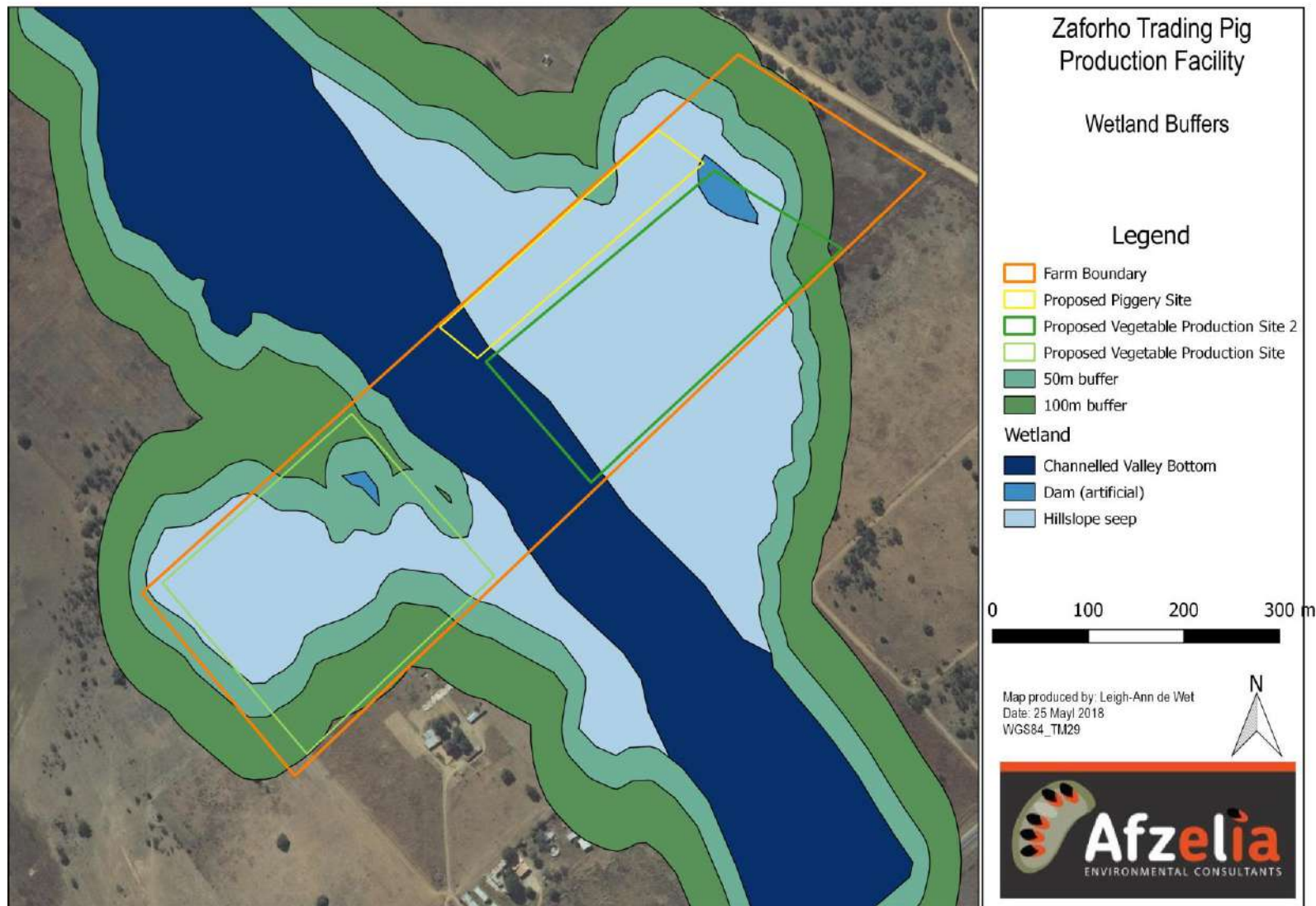


Figure 5.11: Wetland delineation and 50m and 100m buffers for the Zaforho site.

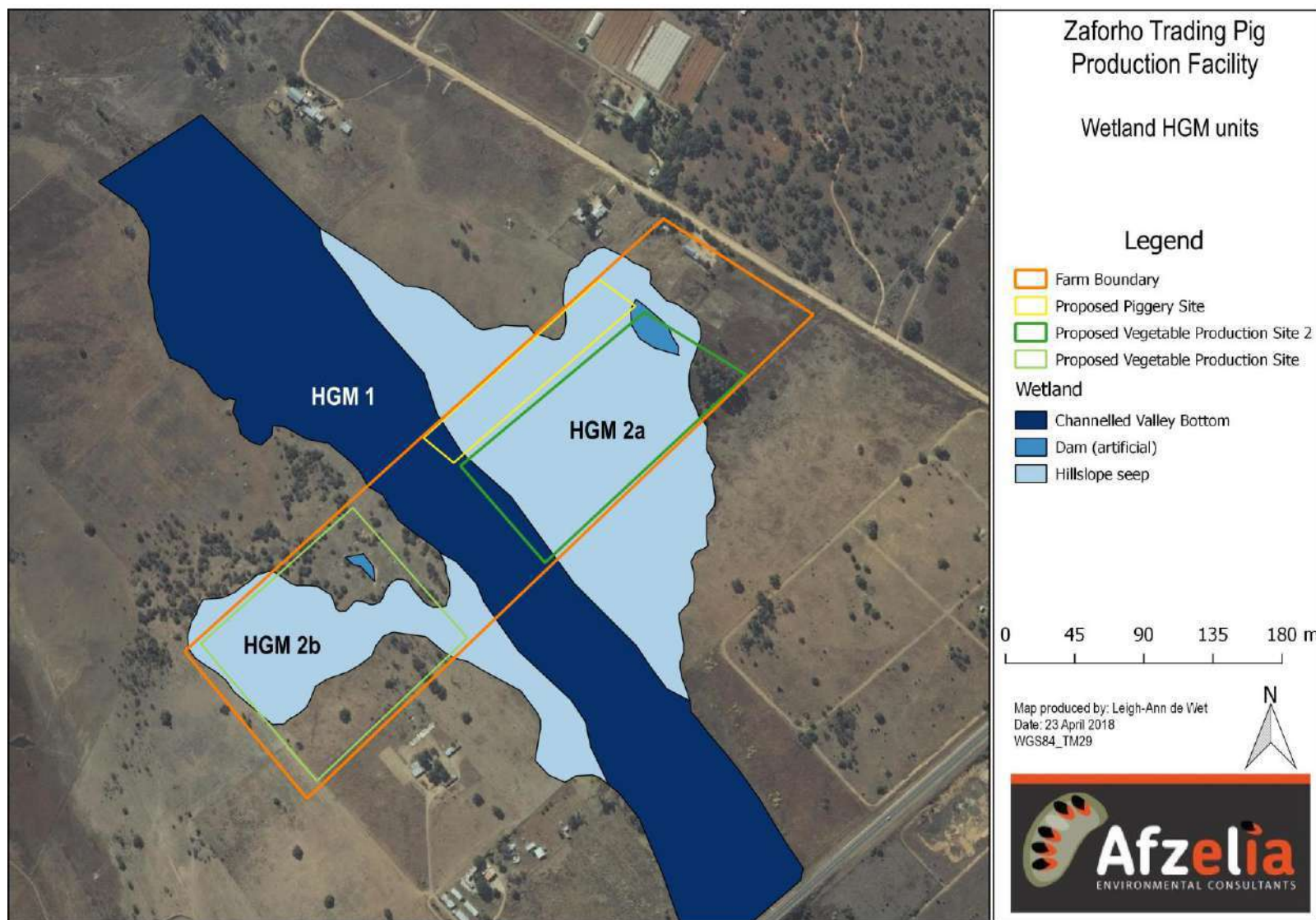


Figure 5.12: Wetland delineation and HGM units.

6 Impact Assessment

The impacts on the terrestrial biodiversity have been rated according to the methodology in Section 2.3. They span three issues and seven impacts, which are outlined in sections 6.1 through 6.3. Mitigation measures are also provided for each of the expected impacts.

Impacts have not been assessed for the wetland as the presence of the site within an NFEPA wetland and its buffer constitutes a Fatal Flaw.

6.1 Issue 1: Loss of Vegetation Communities

Vegetation will be lost as a direct result of the construction phase of the project. As the proposed development covers bushveld, degraded grassland and wetland, these community types will suffer loss. As the majority of the vegetation within the site is degraded and comprises pioneer species and aliens, loss of vegetation as a whole is extensive but not overall a high negative impact.

Recommended mitigation measures include

- Keep the loss of vegetation as close as possible to the footprint of the development, restrict dumping of soil in remaining indigenous areas;
- Restrict the development to areas of lower diversity including the *Acacia* bushveld and degraded grassland, leaving the wetlands and *Terminalia* bushveld intact as far as possible;
- Rehabilitate remaining areas of natural vegetation.

6.1.1 Impact 1: Loss of Degraded Grassland

Degraded grassland is the least sensitive of the vegetation communities found on site. It occurs in areas that have been disturbed and are currently disturbed. Disturbances include dumping, grazing and past cultivation. However, this community type also serves as habitat to some SCC including *Hypoxis* and *Aloe* species. Impact on this community type without mitigation is expected to be local in extent and magnitude over the long term and is definite, with an overall significance of low negative. Application of the mitigation measures will reduce the impact to a very low negative.

Impact	Effect			Probability	Significance
	Extent	Duration	Intensity		
Without mitigation	Local	Long-term	Medium	Definite	Low -
With mitigation	Local	Long term	Medium	Definite	Very low -

6.1.2 Impact 2: Loss of Bushveld

The *Terminalia* bushveld is the most naturally intact vegetation of the site, and much of this will be lost due to the construction of the vegetabel production site 2. However, this type of bushveld occurs over a large area of the region and is not threatened. Loss of the *Acacia* bushveld will also occur, but this community is already substantially disturbed, mainly due to grazing. However, the bushveld does play host to several SCC. Loss of this vegetation community without mitigation is expected to be minor in extent and magnitude over the long term and an overall significance of moderate negative. With application of the mitigation measures this impact can be reduced to low negative.

Impact	Effect			Probability	Significance
	Extent	Duration	Intensity		
Without mitigation	Local	Long-term	High	Definite	Moderate -
With mitigation	Local	Long term	Medium	Definite	Low -

6.1.3 Impact 3: Loss of Wetland Vegetation

The wetlands, though all heavily disturbed, will be affected by the proposed development, with areas of the vegetable farm and pig production facility planned within wetlands on site. Provided the loss of these systems cannot be avoided, mitigation will play a negligible role in reducing this impact. The impact on this vegetation community without mitigation is assessed as local in both extent and high in intensity over the long term. It is definite with an overall significance of high negative.

Impact	Effect			Probability	Significance
	Extent	Duration	Intensity		
Without mitigation	Local	Long-term	High	Definite	High -
With mitigation	Local	Long-term	High	Definite	High -

6.2 Issue 2: Loss of Species of Conservation Concern and Biodiversity

Loss of SCC and biodiversity is species specific and measures the impact of the proposed development on SCC and biodiversity. As the species richness is low for the area impacted, impacts on overall biodiversity are low. There are a number of flora SCC however, scattered throughout the site and these will be directly impacted by the proposed development.

Mitigation measures include:

- Development and application of a rehabilitation plan for remaining natural areas;
- Avoidance of SCC populations where possible;
- Application for permits for the removal of listed plant SCC;
- Removal and replanting/ relocation to a nursery of existing SCC; and
- Planting of additional individuals of specific SCC.

6.2.1 Impact 4: Loss of flora SCC

Loss of the SCC without mitigation will be local in extent, and medium over the long term as well as definite. Overall significance is moderate negative but with application of the mitigation measures, the impact can be reduced to low negative.

Impact	Effect			Probability	Significance
	Extent	Duration	Intensity		
Without mitigation	Local	Long-term	Medium	Definite	Moderate -
With mitigation	Local	Long-term	Low	Definite	Low -

6.2.2 Impact 5: Loss of biodiversity (general)

Loss of biodiversity or species is a low due to the species poor area. Impacts without mitigation are local in extent and medium in intensity over the short term. This impact is probable with an overall significance of low negative. With application of the mitigation measures this impact can be reduced to very low

Impact	Effect			Probability	Significance
	Extent	Duration	Intensity		
Without mitigation	Local	Long-term	Low	Highly probable	Low -
With mitigation	Local	Long-term	Low	Probable	Very Low -

6.3 Issue 3: Loss of Ecosystem Function and Process

Ecosystem function and process are important for terrestrial biodiversity. A development such as the proposed pig production and vegetable farming facility can result in the loss of pollination and seed dispersal over an already fragmented landscape. Invasion by alien flora species can also result in the change of vegetation and the loss of function, especially when a grassland is converted to woodland, resulting in the reduction of available water and the drying up of wetlands and streams. Alien invasives are already problematic and will become more so with disturbance.

Recommended mitigation measures include:

- Development and application of an alien invasive management plan to prevent spread and new invasions by alien invasive plant species;
- Keeping the disturbance footprint as small as possible during construction;
- Rehabilitation should take place as soon as possible after construction is completed.

6.3.1 Impact 6: Fragmentation and edge effects

Due to the already fragmented nature of the site as a result of the surrounding farms and disturbance, impacts will be low. This impact, without mitigation is estimated to be local in extent and low in intensity over the long term and is highly probable. Overall significance is a low negative and can be reduced to very low with mitigation.

Impact	Effect			Probability	Significance
	Extent	Duration	Intensity		
Without mitigation	Local	Long-term	Low	Highly probable	Low -
With mitigation	Local	Long-term	Low	Probable	Very Low -

6.3.2 Impact 7: Invasion of alien species

There is a high risk of existing invasive species spreading as the facility is constructed in addition to new species being introduced through seed dispersal, and on vehicles and personnel. This impact will be local in extent, over the long term and minor in intensity. The impact is definite with an overall significance of moderate negative. With the application of mitigation measures, this impact can be reduced to low negative.

Impact	Effect			Probability	Significance
	Extent	Duration	Magnitude		
Without mitigation	Local	Long-term	Minor	Definite	Moderate -
With mitigation	Local	Medium term	Negligible	Definite	Low -

7 Conclusions and recommendations

7.1 General

Overall, the site comprised three vegetation communities (grassland, bushveld and wetland). Several Species of Conservation Concern were found on site including species of *Aloe* and *Hypoxis*, which were common within the site. Several alien invasive species were recorded from the site and will need to be managed throughout the life of the project. The site is relatively species poor and largely transformed. However, a small area of *Terminalia* bushveld remains largely natural and there are several wetlands including seeps on the site.

The presence of the project within either an NFEPA wetland itself or a 100m buffer of that wetland constitutes a Fatal Flaw for the project.

Impacts associated with the proposed development are presented in Table 7.1.

Table 7.1: Summary of impacts associated with the Zafroho pig production and vegetable farming facility

Impact	With Mitigation	Without mitigation
1: Loss of degraded grassland	Low -	Very low -
2: Loss of bushveld	Moderate -	Low -
3: Loss of wetland vegetation	High -	High -
4: Loss of floral SCC	Moderate -	Low -
5: Loss of biodiversity (general)	Low -	Very low -
6: Fragmentation and edge effects	Low -	Very low -
7: Invasion of alien species	Moderate -	Low -

It is the opinion of the specialist that this project should not go ahead due to its presence within an NFEPA wetland and associated buffer. Despite the degraded nature of the natural vegetation and the wetland HGM units themselves, the listing of the wetland as crane breeding habitat means that it is highly sensitive regardless. This habitat will be completely lost with the construction of the proposed development. As such, the presence of the wetland constitutes a Fatal Flaw for the development.

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**WETLAND DELINEATION AND ASSESSMENT REPORT FOR THE PROPOSED PIG PRODUCTION
FACILITY ON PLOT 78 OF JAKKALSDANS FARM 243 IN CULLINAN, PRETORIA, LOCATED IN
THE CITY OF TSHWANE METROPOLITAN MUNICIPALITY**



TITLE:	WETLAND DELINEATION AND ASSESSMENT REPORT FOR THE PROPOSED PIG PRODUCTION FACILITY ON PLOT 78 OF JAKKALSDANS FARM 243 IN CULLINAN, PRETORIA , LOCATED IN THE CITY OF TSHWANE METROPOLITAN MUNICIPALITY
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APPROVED BY:



.....

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Date: August 2018

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 information available 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.

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EXECUTIVE SUMMARY

1. INTRODUCTION

Sazi Environmental Consulting cc was by appointed Council for Scientific and Industrial Research to undertake a wetland delineation and assessment study for the proposed pig production facility on the 21 hectare farm. Zaforho is a small-scale vegetable production farm located on Plot 78 of Jakkalsdans Farm 243 in Cullinan, Pretoria (Figure 1), within the City of Tshwane Metropolitan municipality. The site has been subjected to agricultural activities, particularly the northern section of the site. There exists basic infrastructure in the form of a farm house and dilapidated staff house. The site was previously utilised for a pig farm, as is evident with the dilapidated piggery structures found north west of the farm. The current operations on site include vegetable production in the north to north-eastern area of the farm.

The field assessment was undertaken on the 18 and 19 June 2018, this report presents the findings of the wetland delineation.

2. TERMS OF REFERENCE

The activities for this assessment include the following:

- Delineation of the wetland hydro geo-morphic (HGM) units on site; and
- Identify potential areas of the site that are least sensitive in terms of wetlands and seeps, and that can potentially be used for: (a) vegetable farming; or b) piggery.

3. METHODOLOGY

Verification of wetland boundaries was undertaken on site according to the Department of Water and Sanitation. The guidelines indicate that wetlands must have one or more of the following attributes:

- Wetland (hydromorphic) soils that display characteristics resulting from prolonged saturation;
- The presence, at least occasionally, of water loving plants (hydrophytes); and
- A high water table that results in saturation at or near surface, leading to anaerobic conditions developing in the top 50 centimetres of the soil.

Wetland indicators that were identified on site included the terrain unit indicator, and soil wetness. These were used to confirm the boundary of the Zaforho wetlands.

4. WETLAND DELINEATION RESULTS

The assessment area falls within the B31B quaternary catchment. The main water resources in the quaternary catchment consist of Wilge, Elands, Ga-Selati, Olifants, Stellpoort, Blyde, Klaserie and Timbavati Rivers, which is supported by surface flow from adjacent non-perennial streams.

5. WETLAND ECOLOGICAL IMPORTANCE AND SENSITIVITY

The Zaforho wetlands was assessed to have MEDIUM ecological functioning. All the HGM units scored relatively low for their ecosystem service provision. The HGM units obtained the following scores based on the WET Health system; Seep 1: C (moderately modified), Channelled valley bottom: D (largely modified), Seep 2: C (moderately modified). The following observations were also made about the wetland:

- There was no presence of Red Data species;
- No populations of unique species were found;
- No available migration/breeding/feeding sites were identified;
- The wetland is not located in a protected area and is not a RAMSAR site;
- No vulnerable vegetation was observed;
- The wetland found on site is not rare; and
- No diversity of habitat types were found.

6. CONCLUSION

The property is 20.7 Hectares in size with 74% being wetland. The wetland consists out of two seeps and a channelled valley bottom wetland. The wetland's conditions range from being moderately modified (C) to largely modified (D). The eco-services that the wetlands provide are respectively low, except the natural resources provided in the form of grazing ground. The wetlands also remove nitrates and toxins whilst also trapping sediments and phosphorus.

The wetlands are suitable for grazing based on seasonal accessibility with small-scale agriculture on the western terrestrial land and the piggery on the eastern terrestrial land. The relevant departments (GDARD, DWS and DAFF) should be consulted

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;	X
b) a declaration that the specialist is independent in a form as may be specified by the competent authority;	X
c) an indication of the scope of, and the purpose for which, the report was prepared;	X
d) the date and season of the site investigation and the relevance of the season to the outcome of the assessment;	X
e) a description of the methodology adopted in preparing the report or carrying out the specialised process;	X
f) the specific identified sensitivity of the site related to the activity and its associated structures and infrastructure;	X
g) an identification of any areas to be avoided, including buffers;	X
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;	X
i) a description of any assumptions made and any uncertainties or gaps in knowledge;	X
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;	X
k) any mitigation measures for inclusion in the EMPr;	X
l) any conditions for inclusion in the environmental authorisation;	X
m) any monitoring requirements for inclusion in the EMPr or environmental authorisation;	
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;	X

o) a description of any consultation process that was undertaken during the course of preparing the specialist report;	
p) a summary and copies of any comments received during any consultation process and where applicable all responses thereto; and	
q) any other information requested by the competent authority.	X

TABLE OF CONTENTS

TABLE OF CONTENTS	viii
1.1 TERMS OF REFERENCE	13
1.2 ASSUMPTIONS AND LIMITATIONS	13
1.3 DEFINITIONS AND LEGAL FRAMEWORK	14
2 APPROACH AND METHODOLOGY	16
2.1 DESKTOP ASSESSMENT	16
2.2 WETLAND DELINEATION AND CLASSIFICATION	16
2.3 EXISTING IMPACTS AND CATCHMENT CONTEXT	17
2.4 FIELD SURVEY	17
2.5 WETLAND HEALTH ASSESSMENT	18
2.6 WETLAND ECOLOGICAL IMPORTANCE AND SENSITIVITY (EIS)	19
3 WETLAND ASSESSMENT RESULTS	21
3.1 DESCRIPTION OF WATER RESOURCES	21
3.2 CLASSIFICATION OF WETLANDS	23
.....	25
3.3 PRESENT ECOLOGICAL STATUS, IMPORTANCE AND SENSITIVITY	33
3.3.1 Seep 1	33
3.3.2 Seep 2	36
3.3.3 Channelled valley bottom	38
4 WETLAND ECOLOGICAL IMPORTANCE AND SENSITIVITY	42
4.1 SENSITIVITY OF THE CVB AND SEEPS	42
4.2 ECOLOGICAL IMPORTANCE	44
4.3 HYDROLOGICAL FUNCTION	44
5 NFEPA WETLANDS	45
6 DISCUSSION AND RECOMMENDATIONS	47
7 IMPACT ASSESSMENT	50
8 CONCLUSION	59
9 REFERENCES	60
10 Appendix 1: Specialist declaration form	62
11 Appendix 2: CV of specialist	64

LIST OF FIGURES

Figure 1: Location of the proposed development site	15
Figure 2: Hydro-geomorphic setting	17
Figure 3: The generic relationship between wetland health and delivery of goods and services (macfarlane, et al., 2009).	20
Figure 4: Water resources within the assessment area	22
Figure 5: Wetland delineation boundary and a 30m buffer	24
Figure 6: Field verification points on and around plot 78 jakkalsdans, moloto	25
Figure 7: Mottling indicative of seasonal waterlogging.....	26
Figure 8: Mottling indicative of seasonally waterlogging.....	26
Figure 9: One of the drains found on site.....	26
Figure 10: Zaforho seep 1 map.....	26
Figure 11: Exposed hard pan.....	27
Figure 12: Evidence of mottling.....	27
Figure 13: Bleached sandy soil with mottling.....	27
Figure 14: Zaforho seep 1 map.....	27
Figure 15: Terrestrial soil.....	28
Figure 16: Terrestrial soil.....	28
Figure 17: Soil from seep 2	28
Figure 18: Zaforho seep 2.....	28
Figure 19: Seasonally waterlogged soil.....	29
Figure 20: Seasonally waterlogged soil.....	29
Figure 21: Temporally waterlogged soil.....	29
Figure 22: Zaforho seep 2 map.....	29
Figure 23: A pan like feature due to a lack of closed contour.....	30
Figure 24: Soil that are too hard to auger.....	30
Figure 25: Mottling indicative of seasonally wet soils.....	30
Figure 26: Zaforho seep 2 map.....	30
Figure 27: A mixture of wet alluvium and eroded sediment.....	31
Figure 28: Clay textured soil with mottling.....	31

Figure 29: A mixture of wet alluvium and eroded sediment.....	31
Figure 30: Zaforho cvb map.....	31
Figure 31: Alluvium and eroded sediment.....	32
Figure 32: Clay textured soil with mottling.....	32
figure 33: Clay textured with mottling.....	32
Figure 34: Zaforho cvb map.....	32
Figure 35: The small dam causing a drying effect	33
Figure 36: The wet-ecoservices tool for seep 1	34
Figure 37: One of many drainage lines observed on site.....	35
Figure 38: The depth of the drainage.....	33
Figure 39: Drainage lines across seep 1	35
Figure 40: Presence of <i>seriphium plomosun</i>	36
Figure 41: Distribution of <i>seriphium plomosun</i>	36
Figure 42: The wet-ecoservices diagram indicating low ecosystem service values for seep 2	37
Figure 43: A cow trying to find grazing pastures in an overgrazed area.....	37
Figure 44: Overgrazed landscape.....	37
Figure 45: A small damming effect caused by.....	37
Figure 46: The constructed dam wall upstream of plot 78, causing a drying effect on the wetland	38
Figure 47: The highlighted area showing the artificial drainage line draining the valley bottom from water entering the seep.....	39
Figure 48: The artificial drainage line draining the valley bottom from water entering the seep	39
Figure 49: The wet-ecoservices diagram indicating low ecosystem service values	40
Figure 50: A man collecting water from a dug well in the middle of the wetland (just outside plot 78).....	40
Figure 51: The dug well in the middle of the wetland (just outside the plot 78)	41
Figure 52: The dry stream in the channelled valley bottom	41
Figure 53: Sensitivity of the area of concern	43
Figure 54: Nfepa wetlands in the study area	46
Figure 55: Zaforho potential areas map	49

LIST OF TABLES

TABLE 1: THE DIFFERENT IMPACT CATEGORIES DERIVED USING WET-HEALTH SYSTEM.....	19
TABLE 2: WETLAND ECOSYSTEM SERVICES (ADAPTED FROM KOTZE ET AL., 2007)	19
TABLE 3: SUMMARY OF WATER RESOURCE S.....	21
TABLE 4: DESCRIPTION OF THE WETLANDS IDENTIFIED ON SITE.....	23
TABLE 5: WET-HEALTH PRESENT ECOLOGICAL STATE SCORES FOR SEEP 2	33
TABLE 6: WET-HEALTH PRESENT ECOLOGICAL STATE SCORES FOR SEEP 2	36
TABLE 7: THE WET-HEALTH PRESENT ECOLOGICAL STATE FOR THE CHANNELLED VALLEY BOTTOM.....	38
TABLE 8: GENERIC HYDROLOGICAL FUNCTIONS PERFORMED BY WETLANDS.....	44
TABLE 9: IMPACT ASSESSMENT	51

LIST OF TERMS AND ABBREVIATIONS

CVB- channeled valley-bottom

Delineation – the technique of establishing the boundary of an aquatic resource such as a wetland or riparian area.

Drain – In the context of wetlands, refers to a natural or artificial feature such as a ditch or trench created for the purpose of removing surface and sub-surface water from an area (commonly used in agriculture).

Ecological Importance – An expression of the importance of an environmental resource for the maintenance of biological diversity and ecological functioning on local and wider scales.

Ecological Sensitivity – A system's ability to resist disturbance and its capability to recover from disturbance once it has occurred.

EIS – Ecological Importance & Sensitivity.

GIS – Geographical Information Systems.

GPS – Global Positioning System.

Gulley (or erosion gulley) - A gully (commonly called a “donga”) is an erosion landform or feature, created by running water eroding sharply into soil. Gullies generally resemble small ditches that can be several meters in depth and width. Gullying or gully erosion is the process by which gullies are formed.

HGM – Hydro-Geomorphic.

NFEPA – National Freshwater Ecosystem Priority Areas, identified to meet national freshwater conservation targets (CSIR, 2010).

PES – Present Ecological State, referring to the current state or condition of an environmental resource in terms of its characteristics and reflecting change from its reference condition.

RESERVE - The quantity and quality of water needed to sustain basic *human needs* and *ecosystems* (e.g. estuaries, rivers, lakes, groundwater and wetlands) to ensure ecologically sustainable development and utilisation of a water resource. The *Ecological Reserve* pertains specifically to aquatic ecosystems.

1 INTRODUCTION

Sazi Environmental Consulting cc was by appointed Council for Scientific and Industrial Research to undertake a wetland delineation and assessment study for the proposed pig production facility on the 21 hectare farm. Zaforho is a small-scale vegetable production farm located on Plot 78 of Jakkalsdans Farm 243 in Cullinan, Pretoria (Figure 1), within the City of Tshwane Metropolitan municipality. The site has been subjected to agricultural activities, particularly the northern section of the site. There exists basic infrastructure in the form of a farm house and dilapidated staff house. The site was previously utilised for a pig farm, as is evident with the dilapidated piggery structures found North West of the farm. The current operations on site include vegetable production in the north to north-eastern area of the farm.

The field assessment was undertaken on the 18 and 19 June 2018, this report presents the findings of the wetland delineation.

1.1 TERMS OF REFERENCE

The activities for this assessment include the following:

- Delineation of the wetland HGM units on site; and
- Identify potential areas of the site that are least sensitive in terms of wetlands and seeps, and that can potentially be used for: (a) vegetable farming; or b) piggery.

1.2 ASSUMPTIONS AND LIMITATIONS

The following assumptions and limitations are applicable to this report:

- Although the wetland assessment study follows the Gauteng Department of Agriculture and Rural Department Requirements for Biodiversity Assessments (Version 3, 2014), only the wetland delineation component of the guidelines formed the scope of this wetland assessment.
- 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.

- 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.
- Fauna and flora assessments undertaken were mainly for the purposes of determining the biodiversity status of the wetland area. Extensive fauna and flora assessment outside of the wetland system did not form part of this report.

1.3 DEFINITIONS AND LEGAL FRAMEWORK

In a South African legal context, the term watercourse is often used rather than the terms wetland, or river. The National Water Act, 1998 (Act No. 36 of 1998) (NWA) includes wetlands and rivers into the definition of the term watercourse (DWAF, 2005).

The NWA, defines a riparian habitat as follows: “Riparian habitat includes the physical structure and associated vegetation of the areas associated with a watercourse, which are commonly characterised by alluvial soils, and which are inundated or flooded to an extent and with a frequency sufficient to support vegetation of species with a composition and physical structure distinct from those of adjacent land areas.”

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

The assessment of the Zafohro wetland was undertaken within the context of the definitions as stated above. The figure below (Figure 1) illustrates the location of the study area.

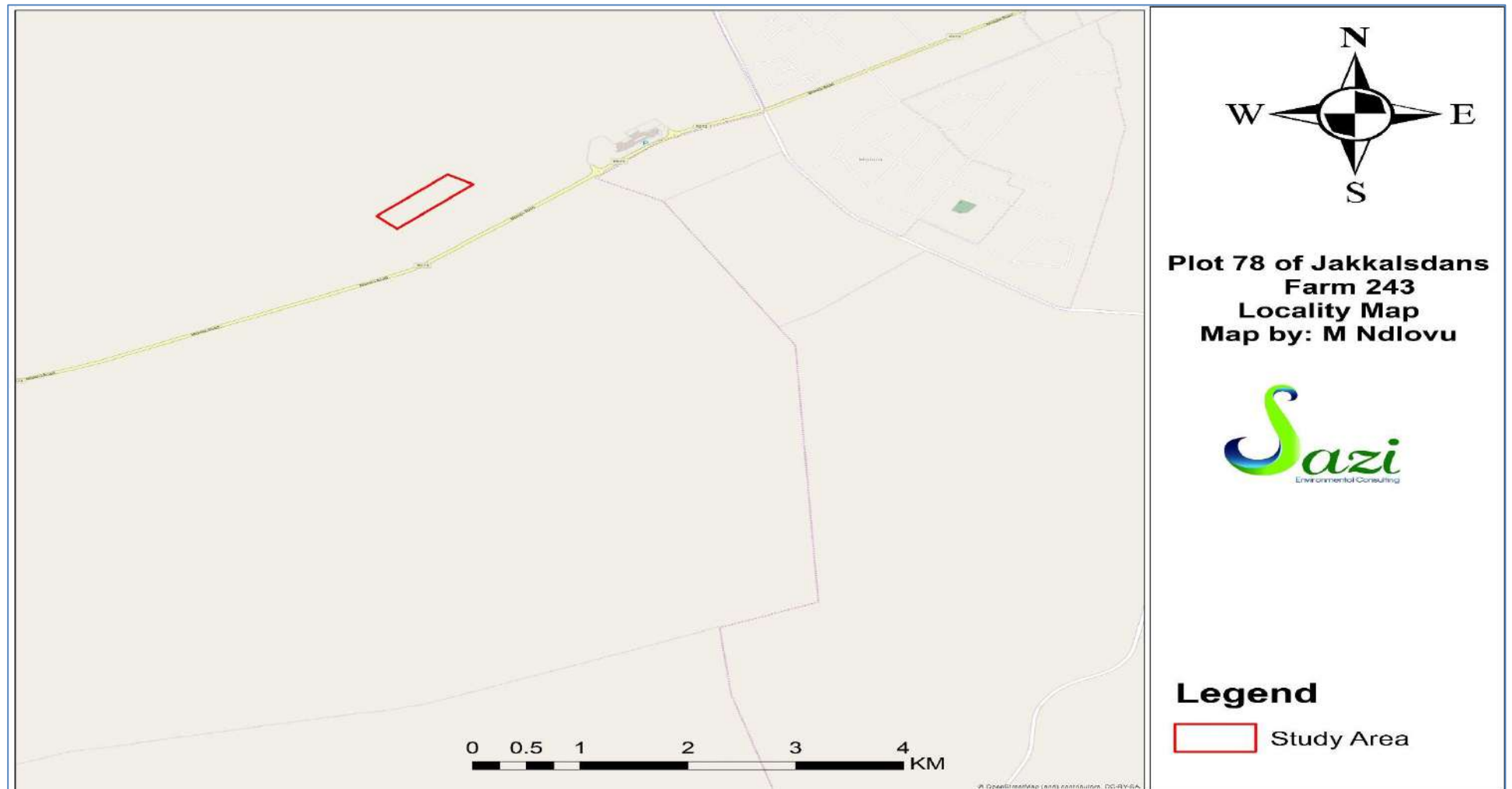


Figure 1: Location of the proposed development site

2 APPROACH AND METHODOLOGY

2.1 DESKTOP ASSESSMENT

The following data sources were used to inform the desktop assessment:

- NFEPA wetland coverage, which shows location of FEPA wetland sites;
- 1:50,000 imagery as well as latest Google Map Imagery for desktop assessment of the site;
- Biodiversity GIS (BGIS) to obtain conservation areas; and
- The topography data was obtained from the Surveyor General's 1:50 000 top sheet data for the region.

2.2 WETLAND DELINEATION AND CLASSIFICATION

Verification of wetland boundaries was undertaken on site according to the Department of Water and Sanitation (DWS, previously known as the Department of Water Affairs and Forestry -DWAF) guideline, 2013: A practical guideline procedure for the identification and delineation of wetlands and riparian zones.

The guidelines indicate that wetlands must have one or more of the following attributes:

- Wetland (hydromorphic) soils that display characteristics resulting from prolonged saturation;
- The presence, at least occasionally, of water loving plants (hydrophytes); and
- A high water table that results in saturation at or near surface, leading to anaerobic conditions developing in the top 50 centimetres of the soil.

Wetland indicators that were identified on site included the terrain unit; soil form; soil wetness and vegetation indicator. These were used to confirm the boundary of the Zaforho wetlands.

The hydro-geomorphic types (HGM) classification was based on geomorphic wetland setting (e.g. hillslope or valley bottom), water source (surface water dominated or sub-surface water dominated) and how water flows through the wetland unit (diffusely or channelled).

Figure 2 below indicates the wetland hydro-geomorphic setting of inland wetlands in South Africa as well as wetland classification applied on wetlands for assessment.

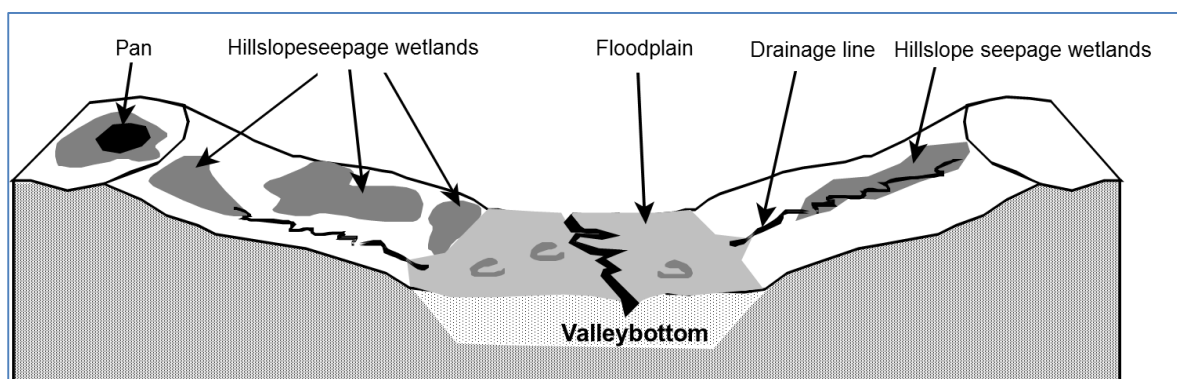


Figure 2: Hydro-geomorphic setting

2.3 EXISTING IMPACTS AND CATCHMENT CONTEXT

Using available information, existing impacts to the wetlands and within the delineated micro-catchment were mapped and described.

2.4 FIELD SURVEY

The areas of interest were traversed and auguring was done to 110 cm or refusal using a hand held soil auger. Specific emphasis was placed on the identification of the following aspects as they aid in the delineation of wetland systems:

- Fe(II)/Fe(III) layered double hydroxides (green rusts) that is indicative of moderate conditions of reductions (Eh values of -0.5 to +0.5 V) and usually encountered in wetland soils;
- The accumulation of ferrihydrate, lepidocrocite, goethite and hematite in vesicular nodules (mottling) owing to the reduction of Fe(III) to Fe(II), under conditions of a fluctuating water table, which leads to the mobilisation of Fe;
- The occurrence of grey colours, especially where mottling is not present, as a further indication of Fe mobilisation and semi-permanent or permanent conditions of water saturation;
- The occurrence of bleached soil horizons that indicate lateral drainage of water;
- The occurrence of gleyed soil horizons that can be indicative of a permanent water table;
- The occurrence of uniform red and yellow colouration that is indicative of well drained areas;
- Signs of Mn mobilisation and/or precipitation as an indication of a fluctuating water table;
- The occurrence of smectite clays that lead to swelling and shrinking characteristics in soil and is conducive to saturated flow in the dry state but not in the wet state;

- Textural changes, and other aspects, in the soil profile that will influence saturated and unsaturated flow of water.

2.5 WETLAND HEALTH ASSESSMENT

For the purpose of this report, the ecological state of a wetland is defined according to the wetland's reference condition, which is the state of the wetland prior to anthropogenic influences. This is in line with the ecosystem integrity definition of Anderson (1991) where the reference condition is an un-impacted condition in which ecosystems show little or no influence of human actions. The assessment is based on the approach where the impacts that underpin wetland ecosystems are quantified.

An assessment tool known as WET-Health (Macfarlane, et al., 2009) was used for the present ecological state (PES) assessment. WET-Health examines the present ecological status "Health" of a wetland by determining the degree of deviation from the natural reference condition for three components, namely: hydrology, geomorphology and vegetation (Kotze, et al., 2012). The hydrological component examines the quantity and timing of water inputs and the pattern of water flow through the wetland, geomorphology examines sedimentary inputs and outputs and geomorphic indicators of these, while vegetation examines the relative abundance of plant functional groups (Kotze, et al., 2012).

These three components are assessed separately in order to avoid double-counting, although it is recognized that they are closely inter-linked in that geomorphological integrity affects hydrological integrity, and both affect vegetation, which may, in turn, have feedback effects on the wetland system (Kotze, et al., 2012). Once classified, according to the wetland's HGM unit, the ecological condition of the wetland is determined by separately assessing the spatial extent, intensity and magnitude of human modifications on each HGM unit (Macfarlane, et al., 2009).

The spatial extent refers to the proportion of the wetland and/or its catchment affected by a given activity. The intensity refers to the degree to which wetland characteristics have been altered within the affected area and is informed by a number of predetermined criteria which are rated and aggregated in an algorithm to obtain an intensity score. A procedure is then followed whereby the results from different modules can be integrated into a single score that can be used to categorise the overall present ecological condition of a wetland (Macfarlane, et al., 2009).

Impact category	Description	Impact score range	Present State category
None	Unmodified, natural	0-0.9	A
Small	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.	1-1.9	B
Moderate	Moderately modified. A moderate change in ecosystem processes and loss of natural habitats has taken place but the natural habitat remains predominantly intact.	2-3.9	C
Large	Largely modified. A large change in ecosystem processes and loss of natural habitat and biota and has occurred.	4-5.9	D
Serious	The change in ecosystem processes and loss of natural habitat and biota is great but some remaining natural habitat features are still recognizable.	6-7.9	E
Critical	Modifications have reached a critical level and the ecosystem processes have been modified completely with an almost complete loss of natural habitat and biota.	8-10	F

Table 1: The different impact categories derived using WET-Health system

An overall wetland health score is calculated by weighting the scores obtained for each module and combining them to give an overall combined score using the following formula:

$$\text{Overall health rating} = [(\text{Hydrology} \times 3) + (\text{Geomorphology} \times 2) + (\text{Vegetation} \times 2)] / 7$$

2.6 WETLAND ECOLOGICAL IMPORTANCE AND SENSITIVITY (EIS)

This study also made use of the WET-EcoServices tool in order to determine the ecosystem services that a wetland supplies to society (Kotze et al., 2007). These benefits are derived from outputs that can be consumed directly, indirect uses which arise from the functions or attributes occurring within the ecosystem, or possible future direct outputs or indirect uses' (Howe et al., 1991).

WET-EcoServices has been designed to cater for South Africa; specifically rural communities that have a high dependence on natural resources. Due to differences in the pattern of water flow through different hydro-geomorphic (HGM) type, WET-Eco Services also requires that the wetland is divided into discrete HGM units. Ecosystem services for each HGM unit are therefore assessed separately. Table 2 lists possible ecosystem services for wetlands

Table 2: Wetland ecosystem services (adapted from Kotze et al., 2007)

Ecosystem services supplied by wetlands	
Direct Benefits	Indirect benefits
Provision of water for human use	Flood attenuation
Provision of harvestable resources	Streamflow regulation
Provision of cultivated foods	Sediment trapping
Cultural heritage	Phosphate assimilation
Tourism and recreation	Nitrate assimilation
	Toxicant assimilation
	Erosion control
	Carbon storage

Wetland “health” and wetland ecosystem services have a generic relationship, where a wetland that is near its pristine, unimpacted state, should provide a higher amount of ecosystem services compared to a wetland that has been heavily degraded and therefore has lost its ability to provide these ecosystem services. The tools are therefore meant to complement each other.

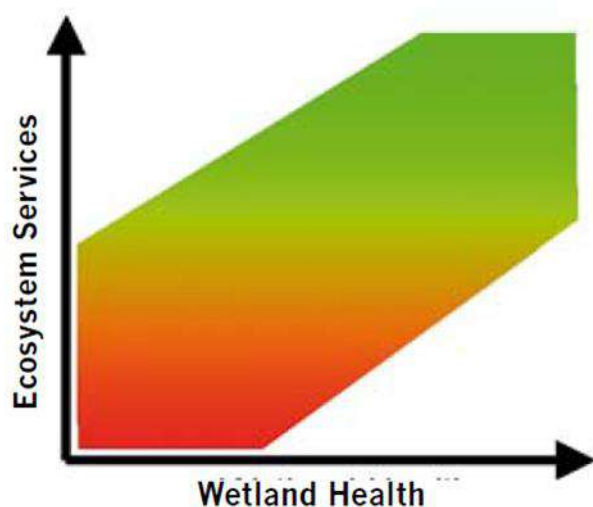


Figure 3: The generic relationship between wetland health and delivery of goods and services (Macfarlane, et al., 2009).

3 WETLAND ASSESSMENT RESULTS

3.1 DESCRIPTION OF WATER RESOURCES

The site falls within the B31B quaternary catchment (Table 1) of the Olifants Water Management Area (DWS 2012, <https://www.dwa.gov.za/>). The Olifants water management area falls into three provinces; Gauteng, Mpumalanga and Limpopo (DWA 2012). Main tributaries include the Wilge, Elands, Ga-Selati, Olifants, Stellpoort, Blyde, Klaserie and Timbavati Rivers (DWA 2012).

Table 3: Summary of water resource s

DESCRIPTION	QUATERNARY CATCHMENT	MAIN RIVERS
Zafohro valley bottom wetland Zafohro seep 1 wetland Zafohro seep 2 wetland	B31B	Wilge, Elands, Ga-Selati, Klein Olifants, Stellpoort, Blyde, Klaserie and Timbavati

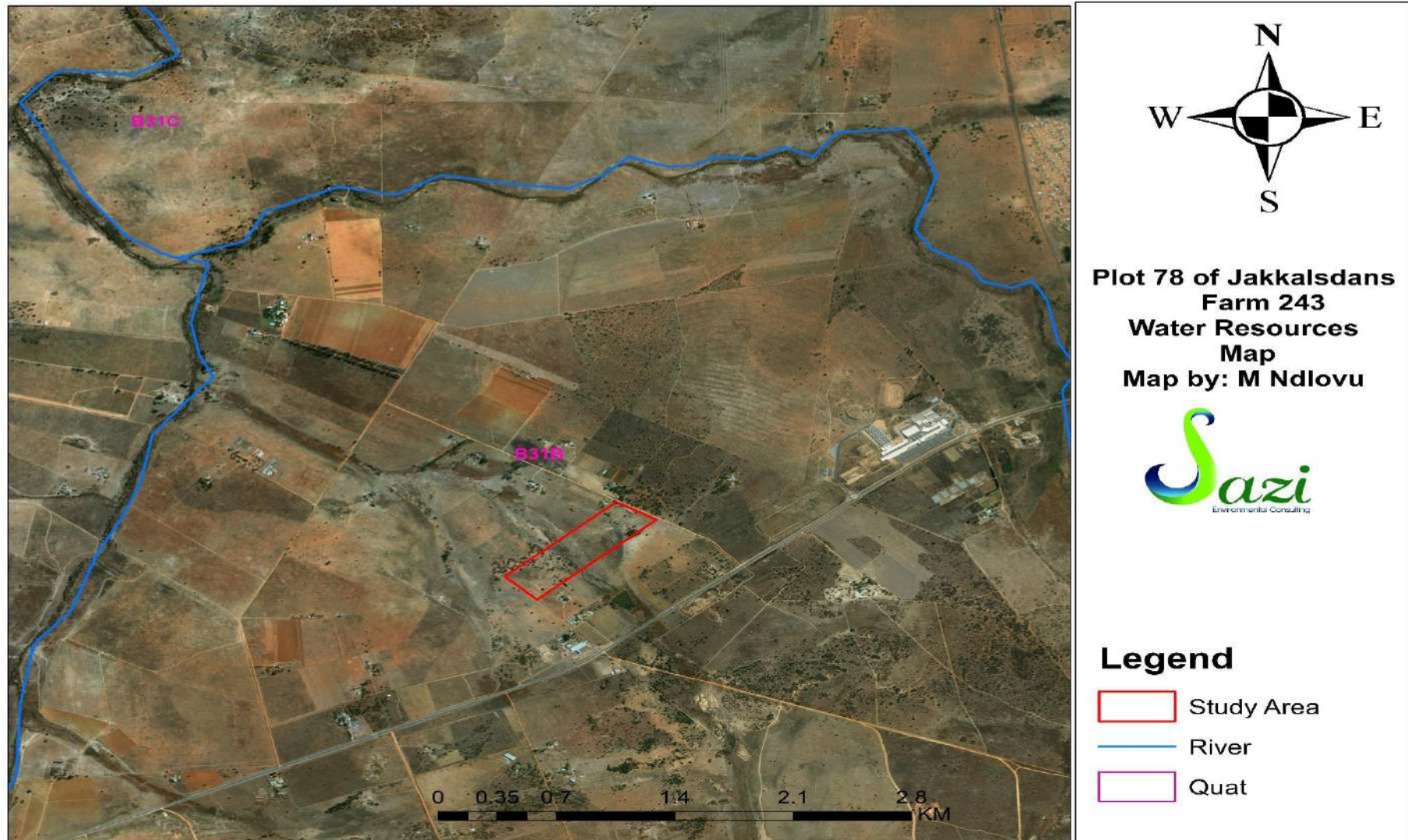


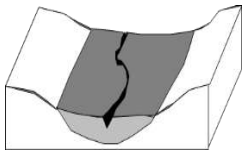
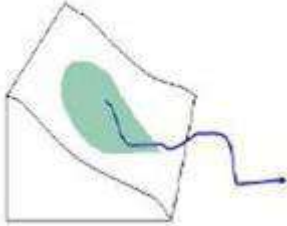
Figure 4: Water resources within the assessment area

3.2 CLASSIFICATION OF WETLANDS

The wetland identified within 500m of the project site consisted of a channelled valley bottom wetland and two seepage wetland which is associated with a non-perennial river. Table 2 below describes the characteristics of a channelled valley bottom and seepage wetland. The boundary of the wetlands is shown in Figure 4.

The development is within the urban edge, and as such, the recommended buffer zone is 30m from the edge of the wetland, as stipulated by GDARD requirements. From a wetland conservation perspective, it is anticipated that no major ecological functions will be interrupted beyond the 30m buffer area. The extent of the buffer zone is illustrated in Figure 4.

Table 4: Description of the wetlands identified on site

WETLAND TYPE	DESCRIPTION
Channelled Valley Bottom (CVB) 	<p>Linear fluvial, net depositional valley bottom surfaces which have a straight channel with flow on a permanent or seasonal basis. Episodic low is thought to be unlikely in this wetland setting. The straight channel tends to flow parallel with the direction of the valley (i.e. there is no meandering), and no oxbows or cut-off meanders are present in these wetland systems. The valley floor is, however, a depositional environment such that the channel flows through fluvially-deposited sediment. These systems tend to be found in the upper catchment areas.</p>
Hillslope seepage 	<p>Hillslope colluvial inputs mainly subsurface. Output is via a channel.</p>

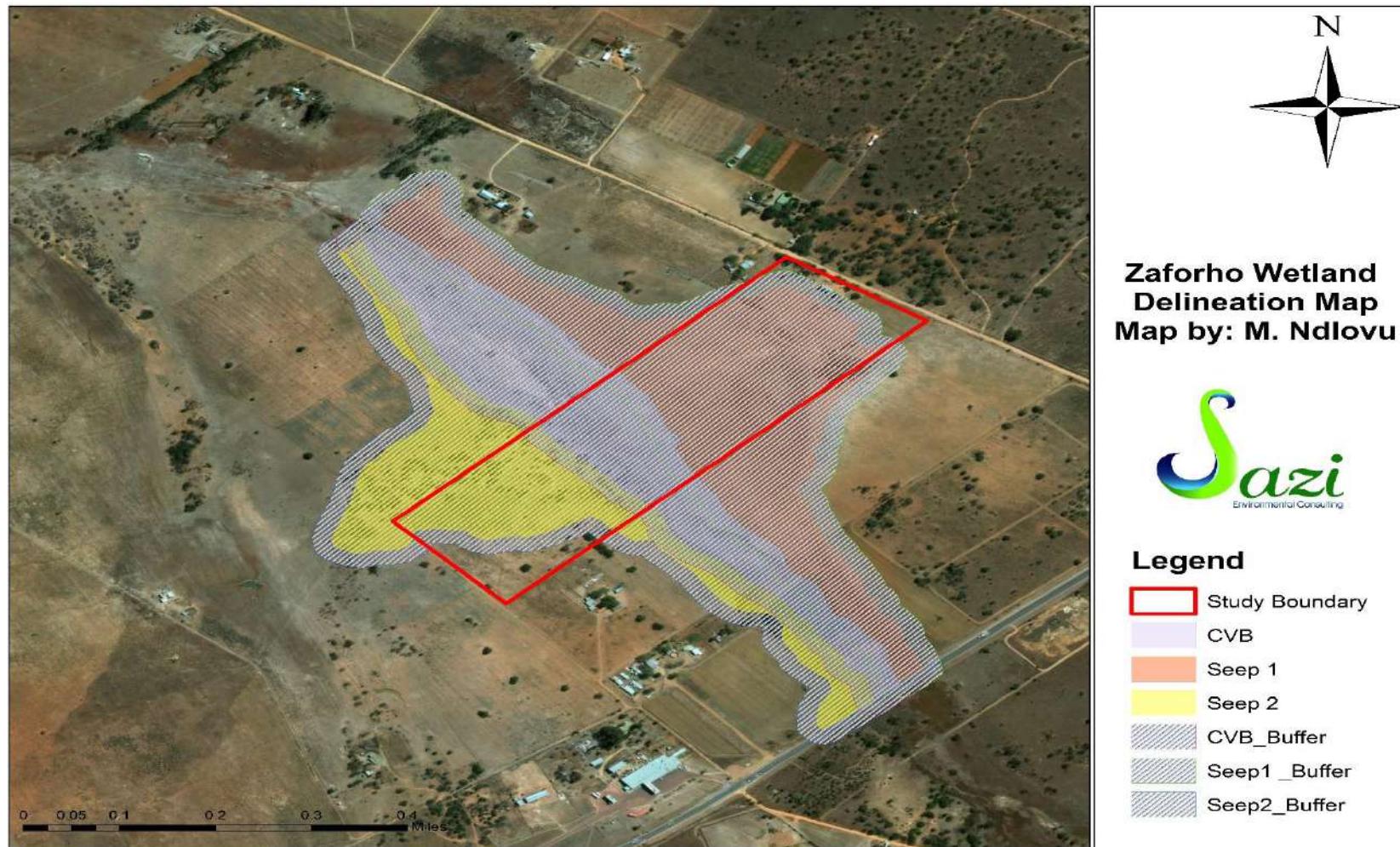


Figure 5: Wetland delineation boundary and a 30m buffer

25 | Page

Seep 1



Figure 7: Mottling indicative of seasonal waterlogging



Figure 8: Mottling indicative of seasonally waterlogging



Figure 9: One of the drains found on site

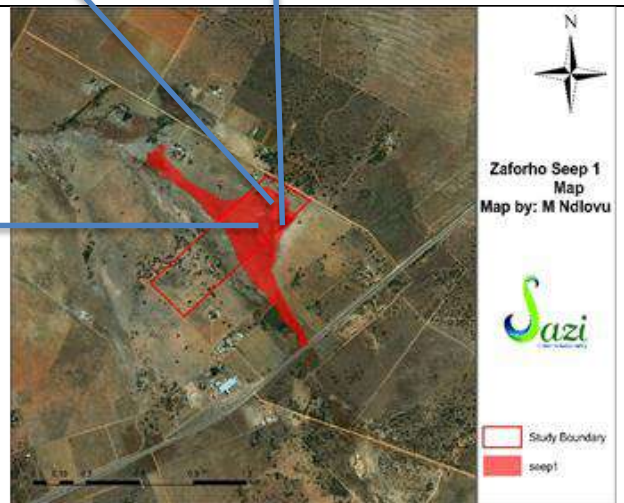


Figure 10: Zaforho Seep 1 Map



Figure 11: Exposed hard pan



Figure 12: Evidence of mottling



Figure 13: Bleached sandy soil with mottling

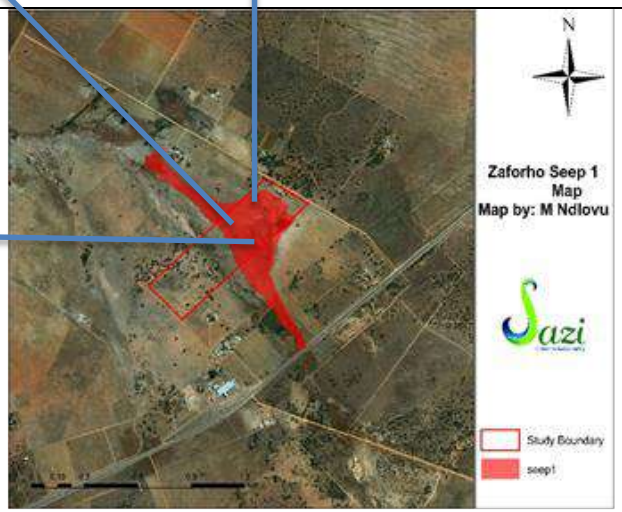


Figure 14: Zaforho Seep 1 Map

Seep 2



Figure 15: Terrestrial soil



Figure 16: Terrestrial soil



Figure 17: Soil from seep 2

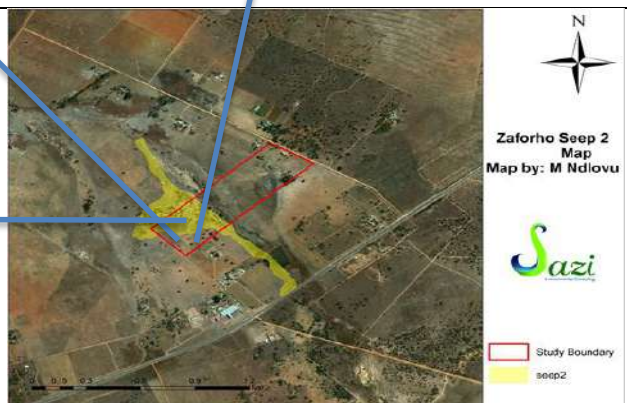


Figure 18: Zaforho Seep 2



Figure 19: Seasonally waterlogged soil



Figure 20: Seasonally waterlogged soil



Figure 21: Temporally waterlogged soil

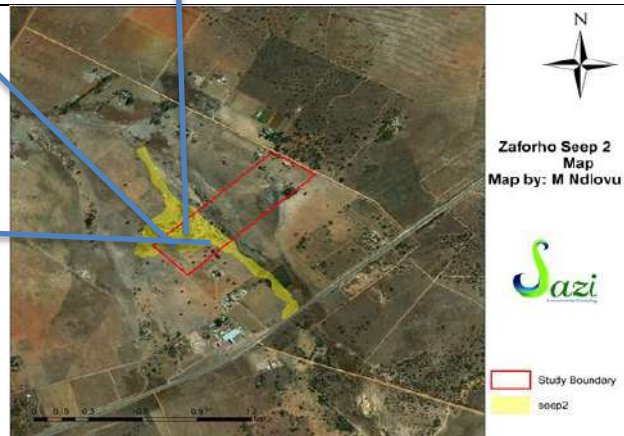


Figure 22: Zaforho Seep 2 Map



Figure 23: A pan like feature Due to a lack of closed contour and its landscape position the feature was included in the seep HGM unit



Figure 24: Soil that are too hard to auger



Figure 25: Mottling indicative of seasonally wet soils

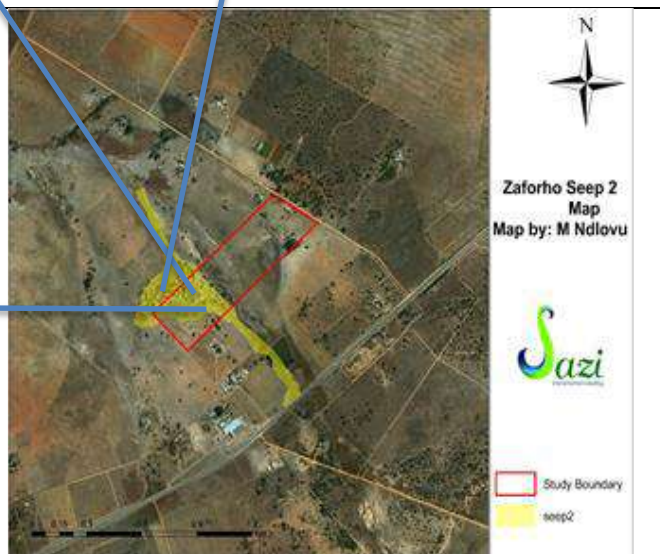


Figure 26: Zaforho Seep 2 Map

Channelled valley bottom



Figure 27: A mixture of wet alluvium and eroded sediment



Figure 28: Clay textured soil with mottling



Figure 29: A mixture of wet alluvium and eroded sediment

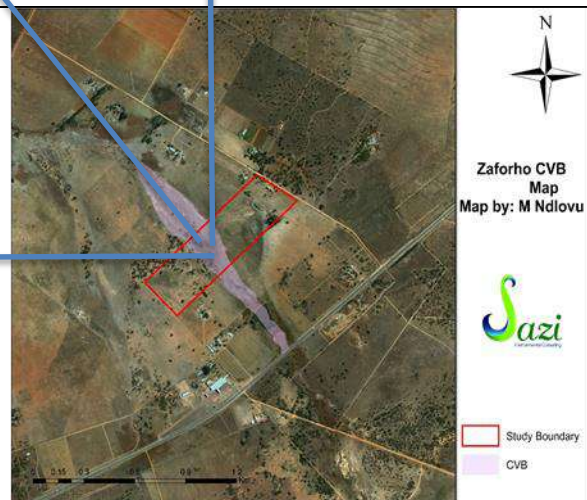


Figure 30: Zaforho CVB Map



Figure 31: Alluvium and eroded sediment



Figure 32: Clay textured soil with mottling



Figure 33: Clay textured with mottling

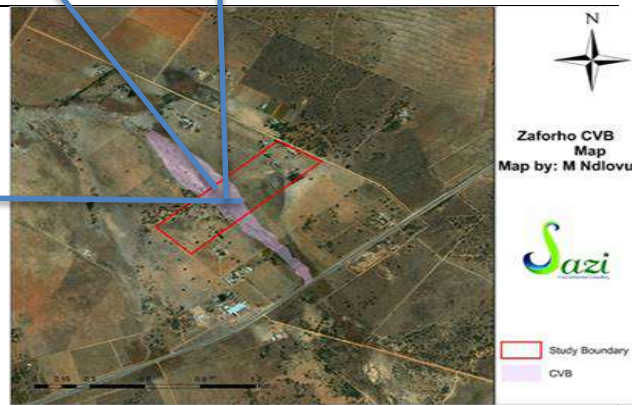


Figure 34: Zaforho CVB Map

3.3 PRESENT ECOLOGICAL STATUS, IMPORTANCE AND SENSITIVITY

3.3.1 Seep 1

Table 5: WET-Health present ecological state scores for seep 2

	Hydrology Impact Score	Geomorphology Impact Score	Vegetation Impact Score
Area weighted impact score	5	3	2.9
PES Category	D (large modification)	C (moderate modification)	C (moderate modification)
Overall Impact Score	3.8		
Total PES Category	C (Moderate modification)		

The eastern seep is impacted by a small dam as well as numerous drains. The elevated dam wall (see figure 25) hinders water (surface and interflow) from moving towards the valley, thus drying out a part of the seepage zone. This is the cause for the southern part of this HGM not showing many signs of wetland vegetation; however, the soils still show signs of wetness through mottling and a predominant soft plinthic soil Horizon.

The HGM is also characterised by a very high density of artificial drainage lines (see figure 29). These drainage lines serve to conduit water out of the wetland. Headcut erosion has also started to occur within these drainage lines. The vegetation also shows signs of disturbance, probably due to overgrazing. This is also evident through exposed Hard plinthite (hardpan) on certain parts of the HGM unit (see figure 32).



Figure 35: The small dam causing a drying effect

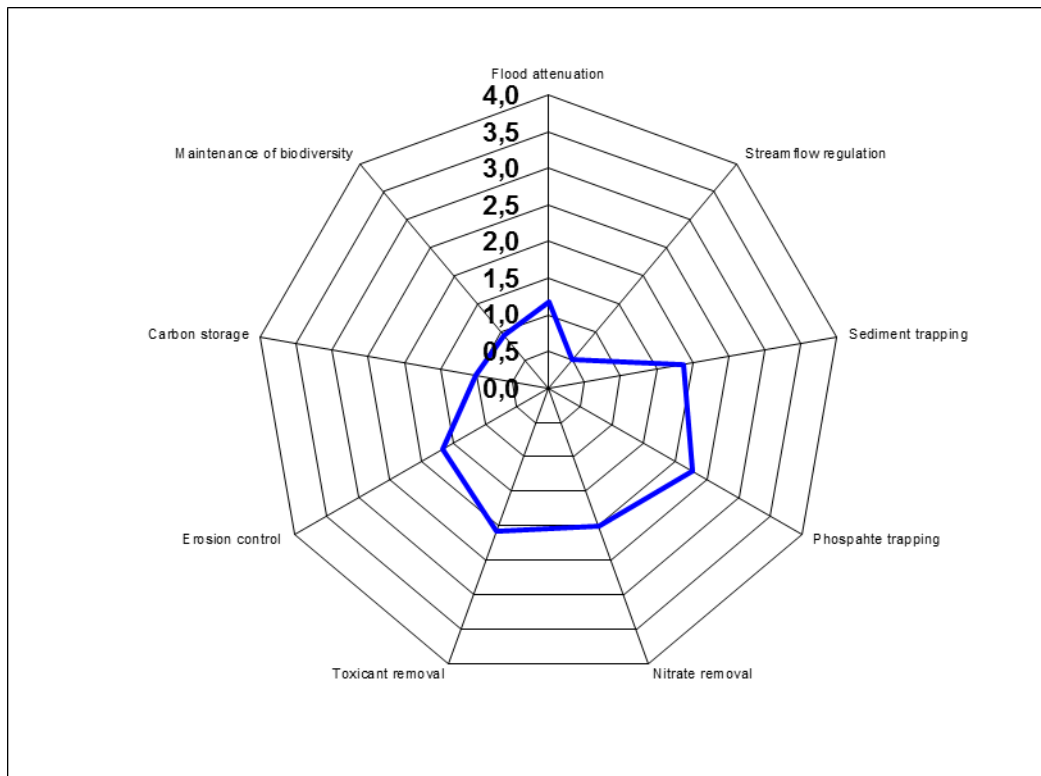


Figure 36: The WET-Ecoservices tool for Seep 1

Indicating that the Eastern seep scored very low in terms of the ecosystem services that it provides. Its only ecosystem service of note is its ability to remove sediments and pollutants, particularly nitrates and phosphates.



Figure 37: One of many drainage lines observed on site



Figure 38: The depth of the drainage Lines (1-1.2m)



Figure 39: Drainage lines across seep 1

3.3.2 Seep 2

Table 6: WET-Health present ecological state scores for seep 2

	Hydrology Impact Score	Geomorphology Impact Score	Vegetation Impact Score
Area weighted impact score	2	3	5.5
PES Category	B (small modification)	B (moderate modification)	D (large modification)
Overall Impact Score	3.3		
Total PES Category	C (Moderate modification)		

Most of the HGM unit is abandoned agricultural land. The lower parts (22%) of the unit (towards the valley bottom) have been subjected to intense sheet erosion causing numerous hard patches and as a consequence will contribute to increased flood peaks. A lot of the HGM is covered with *Seriphium plumosum* (bankrotsbos) that is indicative of disturbance, particularly over grazing.

It is important to note for this HGM that certain parts of it exhibit pan-like features, however these features do not have closed contours and have been subject to intense grazing. It is for this reason that it has been classified along with the western seep unit.



Figure 40: Presence of *Seriphium plumosum*
Indicating severe overgrazing



Figure 41: Distribution of *Seriphium plumosum*
indicating severe overgrazing

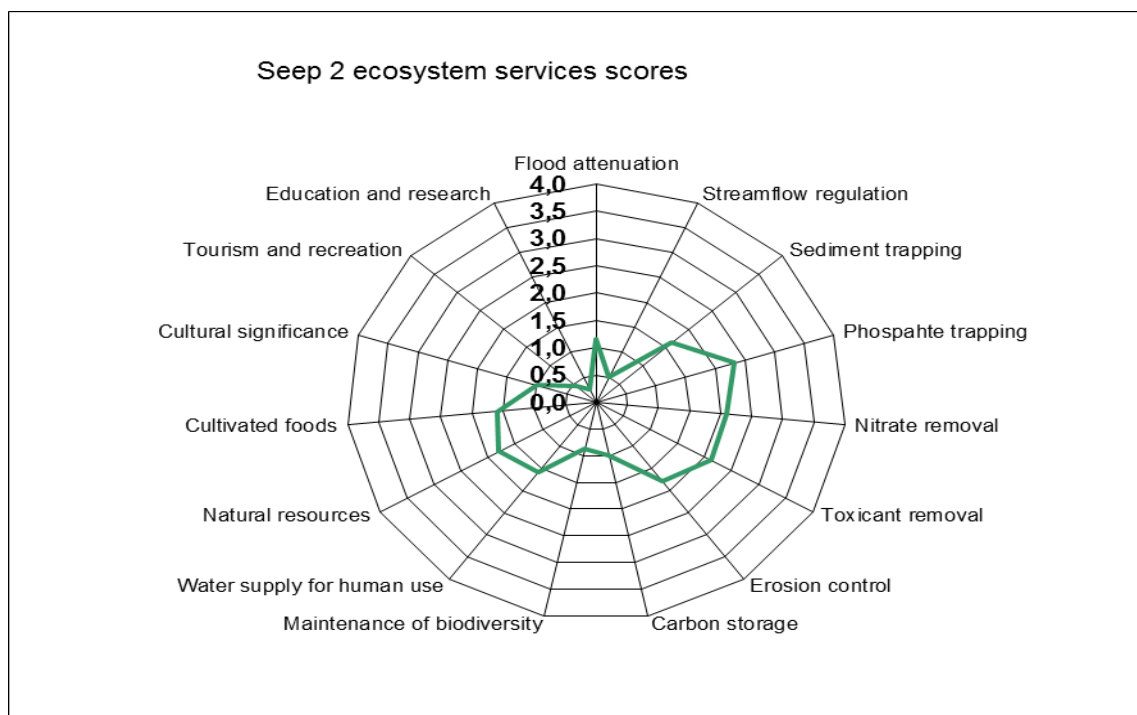


Figure 42: The WET-EcoServices diagram indicating low ecosystem service values for Seep 2

This HGM provides very little services. Due to the nature of the catchment (primarily rural agriculture), the HGM does score a little higher for phosphate trapping and toxicant removal. The HGM also provides grazing ground for cattle.



Figure 43: A cow trying to find grazing pastures in an overgrazed area.



Figure 44: Overgrazed landscape



Figure 45: A small damming effect caused by a road crossing

3.3.3 Channelled valley bottom

Table 7: The WET-Health present ecological state for the channelled valley bottom

	Hydrology Impact Score	Geomorphology Impact Score	Vegetation Impact Score
Area weighted impact score	7	6	2.9
PES Category	E (Serious modification)	E (Serious modification)	C (moderate modification)
Overall Impact Score	5.5		
Total PES Category	D (Large modification)		

The channelled valley bottom has also been critically altered. The dam wall towards the south west of the wetland (closer to the R573), greatly reduces water from the stream entering the wetland and as a result there are dry patches along the stream. There is also an artificial drainage line where the western seep meets the valley bottom. This inhibits the water from the seep entering the valley bottom and the respective stream. The fill from digging the drainage line was also dumped in the valley bottom wetland, thereby altering the topography and flow of water.



Figure 46: The constructed dam wall upstream of plot 78, causing a drying effect on the wetland



Figure 47: The highlighted area showing the artificial drainage line draining the valley bottom from water entering the seep



Figure 48: The artificial drainage line draining the valley bottom from water entering the seep

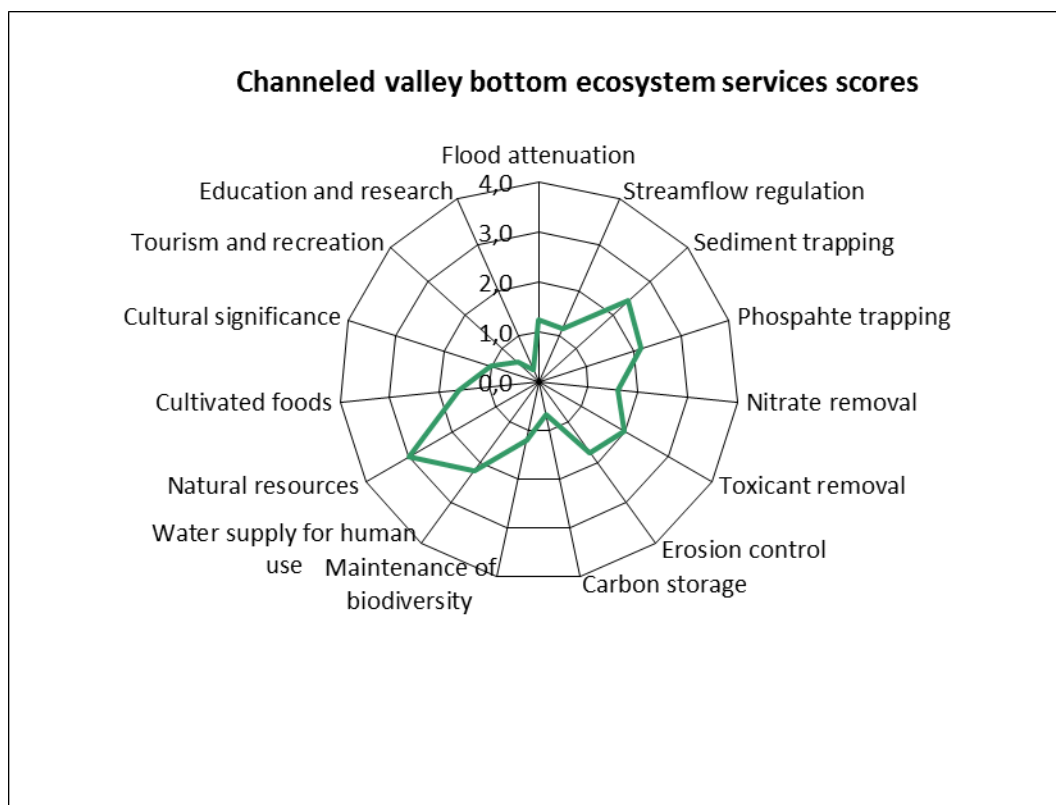


Figure 49: The WET-EcoServices diagram indicating low ecosystem service values

Indicating that this is the highest scoring HGM in terms of wetland ecosystem services. The main service that this wetland provides is water for rural households as well as water and grazing land for cattle.



Figure 50: A man collecting water from a dug well in the middle of the wetland (just outside plot 78)



Figure 51: The dug well in the middle of the wetland (just outside the plot 78)



Figure 52: The dry stream in the channelled valley bottom

4 WETLAND ECOLOGICAL IMPORTANCE AND SENSITIVITY

According to Kotze, et al, (2008), wetlands perform certain functions based on their HGM unit type and the importance of a wetland unit is linked to its ecosystem services. According to Davies and Day, (1998), some of the wetland functions include the following:

- stream flow regulation;
- flood attenuation;
- groundwater recharge;
- water purification;
- sediment trapping;
- harvesting of natural resources;
- tourism and recreation;
- livestock, and crop farming.

Some of the functions in addition to Davies and Day (2008) include: Provision of water for human use, cultural significance, erosion control, and biodiversity maintenance.

4.1 SENSITIVITY OF THE CVB AND SEEPS

The wetland area is regarded as highly sensitive (Figure 7) as they are regarded as a critical part of our natural environment, provide habitat for fauna and flora, therefore contain a wide diversity of life, and serve as a corridor.

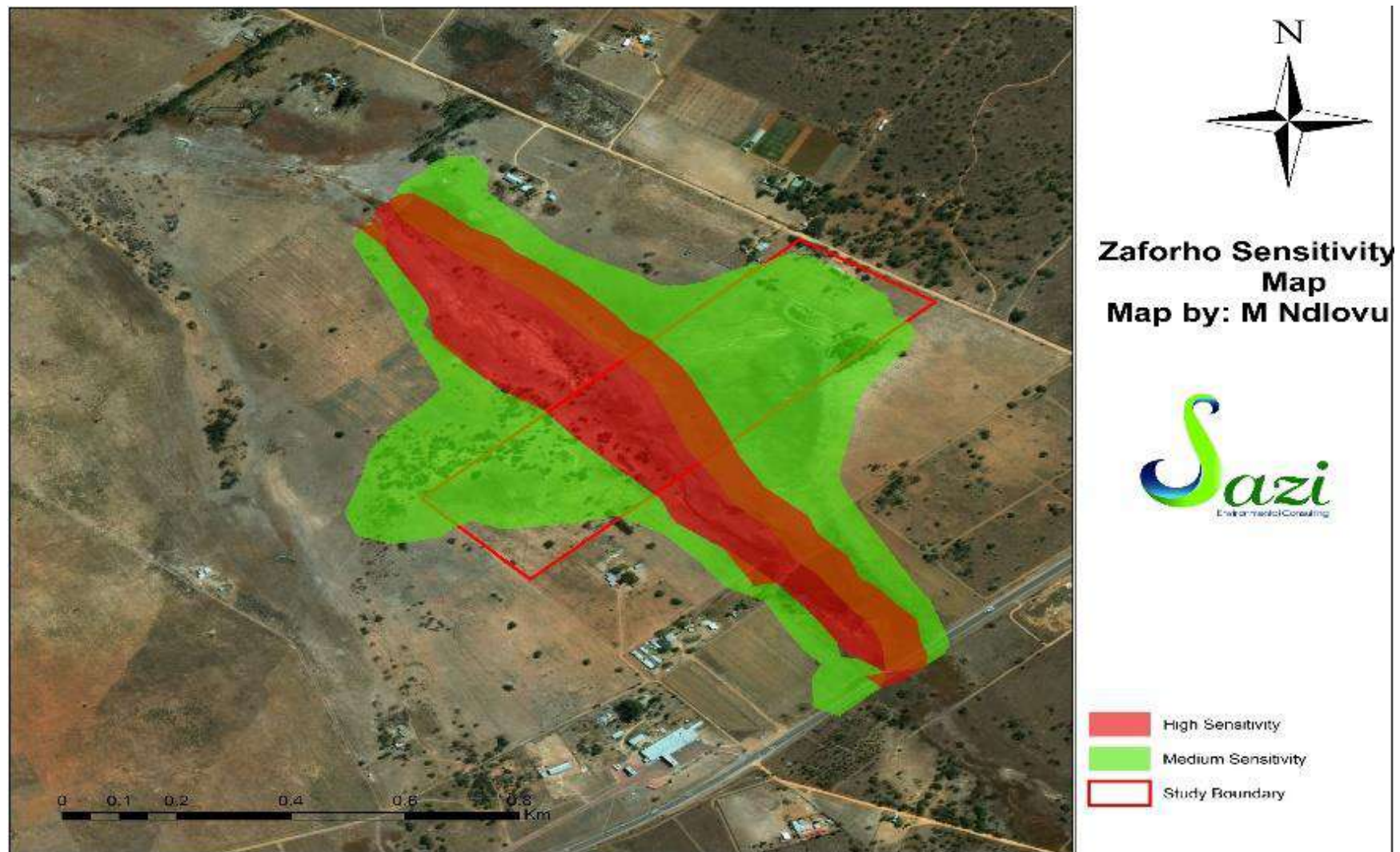


Figure 53: Sensitivity of the area of concern

4.2 ECOLOGICAL IMPORTANCE

The following observations were also made about the wetland:

- There was no presence of Red Data species;
- No populations of unique species were found;
- No available migration/breeding/feeding sites were identified;
- The wetland is not located in a protected area and is not a RAMSAR site;
- No vulnerable vegetation was observed;
- The wetland found on site is not rare; and
- No diversity of habitat types were found.

4.3 HYDROLOGICAL FUNCTION

The hydrological function of the channelled valley bottom wetland type is described on the table below. These wetlands types are thought to have a high erosion control function and limited water quality enhancement ability (Table 4). The wetland on site is still important as it is likely to perform some hydrological functions that include flood attenuation, erosion control, and stream flow augmentation.

Table 8: Generic hydrological functions performed by wetlands

WETLAND HYDRO- GEOMORPHIC TYPE	Source of water maintaining the wetland ¹		HYDROLOGICAL FUNCTIONS POTENTIALLY PERFORMED BY THE WETLAND								
			Flood attenuation		Stream flow augmentation		Erosion control	Potential for water quality enhancement			
	Surface	Sub-surface						Sediment trapping	Phosphate removal	Nitrates	Toxic ants
			Early wet season	Late wet season	Early wet season	Late wet season					
1. Valley bottom - channelled	*	*	+	0	0	0	++	+	+	+	+

2. Seepage	0	*	+	0	+	+	++	0	0	++	++
---------------	---	---	---	---	---	---	----	---	---	----	----

Water source: 0 Contribution usually small

* Important contribution

Rating:

0 Function unlikely to be performed to any significant extent

+

Function likely to be present at least to some degree

++ Function very likely to be present (and often performed to a high level).

5 NFEPA WETLANDS

The National Freshwater Ecosystem Priority Areas (NFEPA) strategic spatial priorities for conserving the country's freshwater ecosystems and supporting sustainable use of water resources were considered for this wetland assessment. **The identification of wetland and aquatic NFEPA's takes place on a large scale and as a result, not all wetland units present on a site are always identified nor are all wetlands identified by NFEPA available on site.** During the desktop assessment of the NFEPA atlas, various wetland types (HGM Units) were identified. The figure below depicts the wetland types identified on site by the NFEPA database in relation to those identified in this report.



Figure 54: NFEPA wetlands in the study area

6 DISCUSSION AND RECOMMENDATIONS

This study included a wetland delineation and an assessment of the wetlands present ecological state and ecosystem importance and sensitivity. It was found that the study site contained three hydrogeomorphic (HGM) units; two seep wetlands as well as a channelled valley bottom wetland.

The respective HGM units obtained the following score based on the WET-Health system:

1. Seep 1: C (moderately modified)
2. Channelled valley bottom: D (largely modified)
3. Seep 2: C (moderately modified)

Seep 1 which although has a small dam and numerous artificial drainage lines, is only moderately modified due to the main water source of the seep coming from a North Easterly direction. The trajectory of change for all the hydrogeomorphic units, if left as is, is that they will deteriorate due to the overgrazing that they are subjected to. Seep 2 is heavily infested with *Seriphium plumosum* (*bankrotsbos*), which shows signs of disturbance, which can be attributed to overgrazing. The channelled valley bottom wetland is largely modified due to a dam wall 200m downstream of the R573 (upstream of plot 78) as well as artificial drainage lines within the wetland. All the HGM units scored relatively low for their ecosystem service provision, except for the natural resources that provide in the form of grazing land for cattle and the removal of phosphates and nitrated. The other notable service was the channelled valley bottom that provides water for surrounding households.

Due to the sandy soils of the study site which are highly dispersive, the land has the potential for high levels of erosion. It is therefore imperative to stay outside the buffer zones of the wetland. The only activity that could be sustainable in the wetland is livestock grazing such as cattle. However, the cattle need to be rotated in established camps in order to avoid overgrazing. Cattle should also not be allowed to graze the saturated sections of the wetland during the summer (wet months) in order to avoid trampling.

From the information that the author of this report was given, it was explained that the landowner wishes to use the land to establish small-scale agriculture as well as a piggery. It is therefore recommended that the available land upslope of the western seep be used for small-scale agriculture, and the area behind the eastern seep be used for the piggery.

The reason for this recommendation is that the area upslope of the eastern seep has a greater hydraulic conductivity to the wetland than the western area. It is imperative that the piggery follow and acknowledge contraction and operational guidelines to prevent pollution of the wetland, as well

as surface and groundwater. Amongst others; the floors of the piggery should be impermeable, waste-water should be stored in a clay-lined impermeable waste dam and dung should be stored outside the wetland in a storage facility that will not allow leaching into groundwater nor allow runoff towards the wetland.

The small-scale agriculture on the western area upslope of the seep will have less impact on the wetland due to this area not being as connected to the wetland as what the eastern part is. The buffer area can likely be reduced here.

It is also recommended that if the landowner wished to establish a road to get from one side of the wetland to the other, then the landowner should follow the procedure outlined in the National Water Act, specifically section 21 C and I.



Figure 55: Zaforho Potential Areas Map

The western terrestrial land should be used for small scale agriculture and the eastern terrestrial land for the piggery, provided that the necessary mitigation measures have been put in place

7 IMPACT ASSESSMENT

An impact assessment was undertaken and mitigation measures prescribed for the proposed development.

The expected impacts associated with the wetland due to the proposed development are summarised as follows:

ZAFORHO WETLAND DELINEATION: FINAL REPORT

Table 9: Impact Assessment

Aspect/ Impact pathway	Nature of potential impact/risk	Status	Spatial Extent	Duration	Consequence	Probability	Reversibility of impact	Irreplaceability of receiving environment/resource	Potential mitigation measures	Significance of impact/risk Consequence X probability		Ranking of impact/risk	Confidence level
										Without mitigation /management	With mitigation /management (residual risk/impact)		
CONSTRUCTION PHASE													
Constructi on related activities	Loss and disturbance of wetland habitat	Negative	Site	Medium Term	Moderate	Likely	Modera te	Low	i. Avoid additional wetland loss by limiting construction/excavation activities to as small an area as possible. ii. Mark wetland areas with ‘No-Go’ signage. iii. Clearly demarcate the required servitudes in the field and limit all activities to the demarcated areas. iv. Include environmental awareness aspects into the site induction program to ensure all staff are aware of the location and importance of wetland habitats on site. v. Establish emergency response measures and a clearly defined chain of communication to rapidly deal with any unforeseen impacts to wetlands, e.g. spills. vi. Development should be undertaken outside of the 30m buffer zone of the wetland edge.	Moderate	Low	4	Medium

									<p>vii. No stockpiling of material may take place within the wetland areas and buffer zones.</p> <p>viii. Temporary construction camps and infrastructure should be located away from the wetland edge and its buffer zone.</p> <p>ix. Regular cleaning up of the wetland areas should be undertaken to remove litter.</p>				
<p>1) Clearing of vegetation for construction related activities</p> <p>2) Disposal and storage of construction material on vegetation</p>	Natural vegetation destruction	Negative	Site	Medium term	Moderate	Very Likely	Moderate	Moderate	<p>i. Highlight all prohibited activities to workers through training and notices.</p> <p>ii. No landscaping should be performed around the facilities. Natural vegetation must be allowed to recover in areas of disturbance. If recovery is slow, then a seed mix for the area (using indigenous grass species) should be sourced and planted</p>	Moderate	Low	4	Medium

Constructi on related activities	Increased sediment transport into wetland	Negative	Site	Medium term	Moderate	Very likely	Modera te	Mode rate	<p>i. Design and implement a storm water management plan that aims to minimise the concentration of flow and increase in flow velocity, as well as minimising sediment transport off site.</p> <p>ii. Phase vegetation clearing activities as far as possible to limit the area exposed at any one time.</p> <p>iii. Where practically possible, the major earthworks should be undertaken during the dry season (roughly from April to August) to limit erosion due to rainfall runoff</p>	Moderate	Low	4	Medium
Constructi on related activities	Altered flow characterist ics within wetland	Negative	Site	Medium term	Moderate	Very likely	Modera te	Mode rate	<p>i. Design and implement a storm water management plan that aims to minimise the concentration of flow and increase in flow velocity, as well as minimising sediment transport off site.</p>	Moderate	Low	4	Medium

From impermeable surfaces associated with the proposed construction of piggery infrastructure and especially that of the waste management site;	Increased sediment transport into the wetland	Negative	Site	Short term	Moderate	Likely	Low	Low	i. The boundaries of the establishment areas are to remain as small as possible, be clearly defined and it should be ensured that all activities remain within defined footprint areas.	Low	Low	4	Medium
Construction related activities	Water quality deterioration within wetland	Negative	Local	Medium term	Moderate	Likely	Low	Moderate	i. Store and handle potentially polluting substances and waste in designated, banded facilities. ii. Waste should be regularly removed from the construction site by suitably equipped and qualified operators and disposed of in approved facilities. iii. Locate temporary waste and hazardous substance storage facilities a minimum of 30m from any wetland edge. iv. Keep sufficient quantities of spill clean-up materials on site.	Moderate	Low	4	Medium

Constructi on related activities	Additional sediment load in wetland area	Negative	Site	Medium	Moderate	Very likely	Moderate	Low	<p>i. During the construction phase in development area, there is a possibility of generating sediment plumes within the work area. Sediment released from a clearance site into the wetland area can cause an increase in both turbidity and bed load sediment. Increase sediment load in wetlands cloud the water and prevents light penetration and thus a having a negative impact on the local flora and fauna.</p>	Moderate	Low	4	Medium
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Earthworks associated with construction of the proposed infrastructure,	Altered topography resulting in areas of artificial ponding in turn leading to altered habitat.	Negative	Site	Medium term	Moderate	Likely	Low	Low	<p>ii. All freshwater resource areas should be designated and clearly marked as No-Go areas and be off limits to all unauthorised vehicles and personnel. Vehicle should be restricted to travelling only on designated roadways to prevent compaction of soils, loss of vegetation and increased erosion and to limit the ecological footprint of the infrastructure construction activities.</p> <p>iii. Ensure that the functionality of the permanent, seasonal and temporary zones of the freshwater features is maintained through provision of measures to ensure that soil wetting conditions are maintained and the freshwater features functions are reinstated</p>	Low	Low	4	Medium
OPERATION PHASE													

Odour associated with the piggery, oxidation dams and composting	Potential odour (air pollution)	Negative	Site	Long term	Substantial	Very Likely	Low	Low	i. No waterlogging of compost to avoid creating anaerobic conditions leading to odours ii. Ensure that excrement, carcasses, feed, and other operational waste and hazardous materials are appropriately and effectively contained and disposed of without detriment to the air quality of the receiving environment	High	Low	3	Medium
Continuous operational movement of personnel	Alien vegetation encroachment	Negative	site	Long term	Substantial	Very likely	Moderate	Moderate	i. Remove remaining and emerging alien and invasive flora. ii. Any alien debris could be donated to a local community.	High	Low	3	Medium
DECOMMISSIONING AND CLOSING PHASE													
Increase in dust and erosion from demolishing and rehabilitation activities	Air pollution and land disturbance	Negative	Site	Short Term	Moderate	Likely	Moderate	Moderate	i. Erosion protection measures must be implemented on the site to reduce erosion and sedimentation of the receiving Environment. ii. Adequate dust control strategies should be applied to minimise dust deposition.	Low	Low	4	Medium

Environm ental Contamin ation from, pig excremen t, carcasses and feed, other operation al waste, chemical leaks, spills and emissions , and litter		Negative	Site	Long term	Moderate	Very Likely	Modera te	Mode rate	<p>iii. Devise effective and environmentally-friendly means of managing all waste on site, where this can be disposed of using an appropriate licensed facility.</p> <p>iv. Leftover animal feed, excrement, carcasses, dirty water, building rubble and any other waste should be prohibited from entering the surrounding environment.</p> <p>v. Regularly check vehicles, machinery and equipment operating on site to ensure that none have leaks or cause spills of oil, diesel, grease or hydraulic fluid. Should a hydrocarbon or other chemical spill occur, clean up procedures must be undertaken a.s.a.p., in line with best practice.</p>	High	Low	4	Medium
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8 CONCLUSION

The property is 20.7 Hectares in size with 74% being wetland. The wetland consists out of two seeps and a channelled valley bottom wetland. The wetland's conditions range from being moderately modified (C) to largely modified (D). The eco-services that the wetlands provide are respectively low, except the natural resources provided in the form of grazing ground. The wetlands also remove nitrates and toxins whilst also trapping sediments and phosphorus.

The wetlands are suitable for grazing based on seasonal accessibility with small-scale agriculture on the western terrestrial land and the piggery on the eastern terrestrial land. The relevant departments (GDARD, DWS and DAFF) should be consulted

9 REFERENCES

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Operational Guideline: Integrated Water and Waste Management Plan for the preparation of the Water Quality Management Technical Document to support the Application for Licences for Mining and Industries in Terms of the Requirements of the National Water Act, 1998 (Act 36 of 1998).

10 Appendix 1: Specialist declaration form



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:	DEA/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, 2014; and
- (2) National Environmental Management Act: Waste Act, 2008 (Act No. 59 of 2008) and Government Notice 921, 2013

PROJECT TITLE

WETLAND DELINEATION AND ASSESSMENT REPORT FOR THE PROPOSED PIG PRODUCTION FACILITY ON PLOT 78 OF JAKKALSDANS FARM 243 IN CULLINAN, PRETORIA, LOCATED IN THE CITY OF TSHWANE METROPOLITAN MUNICIPALITY

Specialist:
Contact person:
Postal address:
Postal code:
Telephone:
E-mail:
Professional
affiliation(s) (if any)

Minenhle Ndlovu
Minenhle Ndlovu
2 Morris Street West, Woodmead Ext 1, Sandton
2191
010 442 4795
MNdlovu@sazienviromental.co.za
AIAISA

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

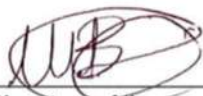
CSIR
Babalwa Mqokeli
P.O. Box 17001, Congella, Durban
4013
031 2422 330
BMqokeli@csir.co.za

4.2 The specialist appointed in terms of the Regulations_

I, Minenhle Ndlovu _____, 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 48 and is punishable in terms of section 24F of the Act.



Signature of the specialist:

Sazi Environmental Consulting

Name of company (if applicable):

10 September 2018

Date:

11 Appendix 2: CV of specialist

**Minenhle
Ndlovu**



**ID-8905220603080
Female, South African
Cell-079 485 7923**

Profile Summary

Minenhle Ndlovu is a skilled professional environmental management and conservation professional with well-developed social research expertise gained in conducting innovative research on social and ecological science for effective decision making, inform policy, create awareness in protecting biodiversity assets and natural resource management research at Sazi Environmental Consulting and Ezemvelo KZN Wildlife, KwaZulu-Natal. Has previously served as a tutor, demonstrator and supplementary instruction leader for GIS and remote sensing (2nd and 3 year classes) for 5 years at the University of KwaZulu Natal's School of Geography and Environmental Science in Howard College and participated in various projects focusing on socio-economic consideration in communities' use, management and conservation of natural resources as well developing in KwaZulu -Natal South Coast. She has developed dynamic competencies in research design, data collection, data analysis, tendering, administrative skills, GIS technology deployment, project management, reporting, monitoring and evaluation and stakeholder engagement.

Tertiary Education:

Qualification: Masters in Geography and Environmental Management

Institute: University of KwaZulu-Natal

Year: 2016

Qualification: B SocSc (Honours) Geography and Environmental Management

Institute: University of KwaZulu-Natal

Year: 2012

Qualification: B SocSc Geography and Environmental Management

Institute: University of KwaZulu-Natal

Year: 2011

Qualification: Matric

Institute: Inanda Seminary

Year: 2005

Skills and Strengths

- Computer Literate: MS Office Package (Word; Excel; Power point; MS Projects)

**Minenhle
Ndlovu**

ID-8905220603080

Female, South African

Cell-079 485 7923



- Data collection and analysis skills
- Qualitative and quantitative research skills
- Project Management skills
- Administrative skills
- Report Writing skills

Employment History

Company	Position	Duration	Duties
SAZI Environmental Consulting	Environmental Consultant	July 2017- Till present	GIS Mapping, Database Management, Public Participation; Wetland Delineation and Assessment; Water Use Licence Application and Water Use Licence Audits; Environmental Impact Assessments; Environmental Education Officer
Socio-ecological Science Researcher	KZN Wildlife	April 2016- May 2017	Develop research proposals and plans; administer, co-ordinate and conduct research projects; provide specialist advice and information on social ecological issues to EKZNW staff and stakeholders; analyse data and report on results (internal reports, scientific papers); identify alternative livelihoods community projects; implement community projects; conduct periodic assessment of community conservation efforts/programs; attend and participate in relevant scientific conferences and symposia and serve on national and international specialist and working groups; give formal presentations at scientific conferences, symposia or workshops.
Supplementary Instruction Leader: GIS and Remote Sensing, Biophysical Environment of Southern Africa, Human Environments	University of KwaZulu-Natal	February 2014- November 2015	Facilitate study groups; assist SI coordinator with paperwork; attend and participate in SI Leader group meetings as scheduled; provide additional SI sessions as necessary (e.g. prior to test and exams).

**Minenhle
Ndlovu**

**ID-8905220603080
Female, South African
Cell-079 485 7923**



Tutor and Demonstrator	University of KwaZulu-Natal	February 2011- November 2015	To assist/give guidance to students during practical exercises; provide feedback on student performance and any issues arising during demonstration, to the lecturer of that course; assist with marking student tests, tutorials and practical exercises set by the lecturer of that particular course; ensure that equipment is functional and/or material for demonstrations, exercises etc is prepared before the start of the session; conduct consultation with students.
------------------------	-----------------------------	------------------------------	---

**Minenhle
Ndlovu**

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Project	Year	Responsibilities	Contact Details
WULA for Ingudlane Lodge, Endumeni Local Municipality	2018	EAP and project manager	Company: Dreykon Trust Contact: Thomas Bezuidenhout Tel: 082 876 4942
WULA for Groblers Bridge/Belt Bridge/Pafuri Port	2018	EAP and project manager	Company: Mangethe Group Contact: Sihle Zwane Tel: 073 417 8813
Invasive species monitoring, control and eradication plan for the city of Johannesburg metropolitan municipality, Gauteng	2017-2018	Literature review Develop communication plan Data Collection Report compilation Report review Develop AIS database Create GIS maps	Company: Lebone Engineering Contact: Kelvin Radebe Tel: 082 850 6893
Environmental Impact Assessment for Durban Deep Primary School Project	2018	Inception meeting and report Public Participation Process Initial application process Scoping Compilation of EIA Report and Environmental management plan	Company: SECO Projects Contact person: Jabulile Mbatha Tel: 084 793 9221
Basic Assessment Report for Reiger Park Primary School Asbestos Replacement Project		Inception meeting and report Public Participation Process Initial application process Advert placement BID docs Compilation of BAR	Company: Nzingwe Consulting Contact person: James Mulindisi Tel: 074 350 3066
Basic Assessment for Proposed augmentation and maintenance of the Randwater K2 and K3 pipeline within the Ekurhuleni Metropolitan Municipality, Gauteng province:	2018	Inception meeting and report Public Participation Process Initial application process Advert placement	Company: Rand Water Contact: Nomkhosi Mohlahlo Tel: 011 724 9191

**Minenhle
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Female, South African
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		BID docs Compilation of BAR Wetland assessment Ecological assessment	
Brakpan automotive hub wetland and ecological assessments	2018	Ecological assessment Wetland assessment and delineation Map creation	Company: Vungundze Projects Contact: Thokozane Masilela Tel: 072 495 0097
Soshanguve SS Ext 7 & 8 Township Development, Aquatic Assessment Study	2018	Inception meeting Creating maps	Company: Lambeu Consulting and Training Centre Contact: Mashudu Siphugu Tel: 011 068 6527
Ekurhuleni screening report(Esselen Park and Lindelani Village Clinic)	2018	Creating maps	Company: Complete Cycle Contact: Sibusiso Hadebe Tel: 065 9111527
Tembisa Treatment Center screening study	2018	Desktop study Fieldwork Report writing	Company: Complete Cycle Contact: Sibusiso Hadebe Tel: 065 9111527
Tembisa Treatment Center screening study	2018	Desktop study Fieldwork Report writing	Company: Complete Cycle Contact: Sibusiso Hadebe Tel: 065 9111527
The proposed Lanseria business park on the remaining extent of portion 13 (a portion of portion 10) of the farm Lindley 528 JQ, located in the city of Johannesburg municipality	2017	Collecting biodiversity assessment data Assisting in collecting wetland delineation and assessment data Creating maps	Company: Arengo 6 Contact: Kagiso Mohammed Tel: 011 834 4913
Biodiversity action plan for Anglo American Amandebuilt section, Thabazimbi Municipality, Limpopo province	2017	Collecting data Creating maps	Company: of Phuka tsa Nong Contact: Kelebogile Mogajane Tel: 0615438112

**Minenhle
Ndlovu**

ID-8905220603080

Female, South African

Cell-079 485 7923



Ecological assessment report for Rooderpoortjie 326 JS open cast mining, Witbank, Mpumalanga	2017	Collecting data Creating maps	Company: Ngwanya Mining
The proposed Adamayview outfall sewer pipeline upgrade for the city of Matlosana Municipality, North West	2017	Creating maps	Company: Lambeu Consulting and Training Centre Contact: Mashudu Siphugu Tel: 011 069 6527
Wetland and biodiversity screening report for the proposed Infill residential developments in Eldorado park, Soweto.	2017	Creating maps	Company: Arengo 6 Built Environment Consultants Contact: Kagiso Mohlamme Tel: 081 035 4976
Environmental scoping report of upgrading of existing gravel roads, MF55 street and MF50 street in, Madadeni Section F, Newcastle.	2017	Creating maps	Company: Sydwait Contact : Dumisani Nxumalo Tel: 076 342 5797
Foskor-Spencer Wetland Assessment and Delineation Study	2017	Creating maps Review and editing	Company: DIGES Contact: Brenda Makanza Tel: 082 0756685

REFERENCES

Mr Joe Lehlohonolo Phadima

Organization: Ezemvelo KZN Wildlife

Tel: 082 727 8761

Miss Phindile Xulu

Organization: Ezemvelo KZN Wildlife

Cell: 079 8873 798

Mr Musawenkosi Khanyile

Organisation: University of KwaZulu-Natal

Telephone: 072 634 7039

Jason Paul LeRoux
ID-93081505054082
Male, South African
Cell-079 875 6876



Profile Summary

Jason LeRoux is a skilled professional wetland specialist with 2-3 years working experience in the field of Environmental management. Jason holds an undergraduate degree in Geography, an Honors degree in Geography and Environmental management and is currently pursuing an Master's degree in Environmental Management.

Jason experienced in Wetland delineation and assessment, PES and EIS, GIS mapping and Ecological assessment to some extent. Currently he is part of a water research commission project that is currently underway. The project compares the hydrogeomorphic processes in two headwater catchments (Kgaswane and Malalotja Nature reserve), and also analyses the new WET-Health Geomorphology module.

Tertiary Education:

Qualification: MSc in Environmental Management

Institute: University of Pretoria

Year: 2017-current

Qualification: B Sc (Honours) Geography and Environmental Management

Institute: University of Pretoria

Year: 2016

Qualification: B Sc Geography

Institute: University of Pretoria

Year: 2015

Other courses

- Wetland delineation and management short course
- ISO14001 - Lead auditors course
- FSC - Forest Management Auditing Principles

Affiliations

- International Mire Conservation Group
- South African Wetland Society
- South African Association of Geomorphologists

Skills and Strengths

Jason Paul LeRoux
ID-93081505054082
Male, South African
Cell-079 875 6876



- Wetland delineation - Soil classification - Peat descriptions - vegetation identification
- Wetland assessment- Present ecological state -Ecological Importance and Sensitivity
- Wetland mapping
- ☐ ArcGIS
- ☐ Data handling
- ☐ QGIS
- ☐ Microsoft Office
- ☐ Report writing
- ☐ Lecturing and teaching

Employment History

Company	Position	Duration	Duties
SAZI Environmental Consulting	Wetland specialist	2017-Till present	GIS Mapping, Database Management, Wetland Delineation and Assessment: Water Use Licence Application and Water Use Licence Audits;
University of Pretoria	Assistant Lecturer	2015-2017	Consultation, presentation of tutorials and marking of tests and exams

Jason Paul LeRoux
ID-93081505054082
Male, South African
Cell-079 875 6876



Conference Presentations

- **2018-** International Mire Conservation Group Field Congress and Symposium **Title:** The Malalotja Peatland- The road map to restoration of an ancient mire
- **2018-** South African Wetland Indaba **Title:** The wetland characteristics of Swaziland/eSwatini 2017- Conference of the South African Association of Geomorphologists **Title:** A wetland mapping technique for Swaziland
- **2017-** South African Wetland Indaba **Title:** The wetland distribution of Swaziland
- **2016-** South African Association of Geographers **Title:** The spatial variability of burglaries in the gated communities of Tshwane

REFERENCES

Ms Nonkanyiso Zungu

Organization: Sazi Environmental Consulting
Tel: 084 800 0187

Dr Piet-Louis Grundling

Organization: University of Pretoria
Cell: 072 793 8248

Ms Minenhle Ndlovu

Organisation: Sazi Environmental Consulting
Telephone: 079 485 7923



m: 084 800 0187

e: nzungu@sazienviromental.co.za

a: 2 Morris Street West, Woodmead Ext 1, Sandton, 2191



Basic Assessment for the Zaforho Tracing's proposed development of a pig and vegetable production facility on Plot 78 of Jakkalsdans Farm 243 in Cullinan, Pretoria

APPENDIX H: ENVIRONMENTAL MANAGEMENT PROGRAMME



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SECTION F: APPENDICES

Basic Assessment for the Zaforho Tracing's proposed development of a pig and vegetable production facility on Plot 78 of Jakkalsdams Farm 243 in Cullinan, Pretoria.

contents

1	INTRODUCTION	2
1.1	Purpose of the Environmental Management Programme	2
1.2	Contents of the EMPr	2
1.3	Environmental Assessment Practitioner	4
2	PROJECT BACKGROUND	5
2.1	Project Activities	5
2.2	Listed Activities	5
3	DESCRIPTION OF APPLICABLE LEGISLATION, POLICIES AND GUIDELINES.	11
4	ENVIRONMENTAL MANAGEMENT STRUCTURE	12
4.1	Roles and Responsibilities	12
5	ENVIRONMENTAL MANAGEMENT PLAN	15
6	STORM WATER MANAGEMENT PLAN	35
7	WASTE MANAGEMENT PLAN	42
8	BIOSECURITY PLAN	46
9	ENVIRONMENTAL AWARENESS AND TRAINING PLAN	47
10	EXTRACT FROM SOUTH AFRICAN PORK PRODUCERS' ORGANISATION (SAPPO) BEST PRACTICE STANDARDS	48



SECTION F: APPENDICES

Basic Assessment for the Zaforho Tracing's proposed development of a pig and vegetable production facility on Plot 78 of Jakkalsdans Farm 243 in Cullinan, Pretoria.

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 Zaforho Tracing's proposed piggery and vegetable production facility. 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 submitted to the Gauteng Department of Agriculture and Rural Development (GDARD) as part of the Application for Environmental Authorisation for Zaforho Tracing's proposed pig and vegetable production on Plot 78 of Jakkalsdans Farm 243 near Cullinan, Pretoria.

This EMPr is considered as a document that can be updated as new information becomes available during the construction, operational and decommissioning phases, if applicable, of the proposed development. Mitigation measures 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 the Zaforho Tracing's proposed development of a pig and vegetable production facility on Plot 78 of Jakkalsdans Farm 243 in Cullinan, Pretoria.

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 982 of 4 December 2014	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

SECTION F: APPENDICES

Basic Assessment for the Zavorho Tracing's proposed development of a pig and vegetable production facility on Plot 78 of Jakkalsdams Farm 243 in Cullinan, Pretoria.

Requirements according to Appendix 4 of GNR 982 of 4 December 2014	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 17001, Congella, Durban 4013
Email	bmqokeli@csir.co.za
Telephone No.	031 242 2330
Fax	031 261 8172
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) • 3 years' experience conducting Environmental Assessments

The Council for Scientific and Industrial Research (CSIR) 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.

SECTION F: APPENDICES

Basic Assessment for the Zavorho Tracing's proposed development of a pig and vegetable production facility on Plot 78 of Jakkalsdans Farm 243 in Cullinan, Pretoria.

2 PROJECT BACKGROUND

2.1 Project Activities

Zavorho is a small-scale vegetable production farm located on Plot 78 of Jakkalsdans Farm 243 in Cullinan, Pretoria (Figure 2-1). The business proposed the development of a Pig production facility and vegetable farming on the 21 hectare farm. The Pig farming division of the enterprise would utilise an area of approximately 1 hectare with a throughput of 1 000 pigs, as well as 2 x slurry dam. The proposed vegetable production will consist of an area of approximately 3 hectares. The current operations include vegetable production. The current vegetable production supplies SPAR with vegetables, and aims to support Dew Crisp with the proposed vegetable production expansion. The proposed piggery development targets to supply major supermarkets and butcheries such as Karan Beef. Zavorho's proposed piggery and vegetable production will add great socio-economic value to the agricultural 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.

The proposed infrastructure of the piggery upon completion will entail the following:

- 1 x Boar house
- 1 x Farrowing house
- 1 x Weaner house
- 1 x Grower house
- 1 x 50 m³ Waste dam
- 1 x 30 m³ Waste dam

Housing units will consist of a combination of slated and concrete floors. Floors will be cleaned by using a pressure cleaner and the waste together with the cleaning water will flow into a waste dam/lagoon. A Solid Waste Separator will separate the wastewater into a liquid and solid fraction. This will allow for improvement in the wastewater quality. The solid waste will be composted for two to three weeks and thereafter used as fertiliser. Composting is seen as an environmentally acceptable method of waste treatment. Treating the waste reduces its odour and vector attraction. A fraction of the wastewater will be disinfected and recycled for cleaning purposes of the pig housing units, and the remaining liquid will be temporarily held in a plastic lined holding dam from where it will be collected by a tanker for use on agricultural land.

Pig production will include the following operational process:

- Young sows will be purchased during the course of the year to allow for breeding to occur consecutively throughout the year. 30 week old sows will then be placed with the boars for breeding.
- Breeding sows will then be moved to the Farrowing house, and fed on a balanced feed.
- After delivery, piglets are weaned at 28 days to be housed at the Weaner house, and the sow goes back to the boar house to start the cycle.
- 10 weeks old weaners are then transferred to the Grower house, where they are kept until they reach a marketable size. Once the pig reaches a live weight of approximately 100 kilograms, then it is ready to be sold, that is it has reached its marketable size. These will then be sold to abattoirs and/or butcheries in the local area.

2.2 Listed Activities

As part of the proposed piggery development and vegetable production 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, and in terms of the National Environmental Waste Act (NEM:WA) Regulations GNR 921 of 29 November

SECTION F: APPENDICES

Basic Assessment for the Zaforho Tracing's proposed development of a pig and vegetable production facility on Plot 78 of Jakkalsdans Farm 243 in Cullinan, Pretoria.

2013 there under will take place. Relevant listed activities triggered by the proposed activities are described as follows:

Listed Activity as described in GNR 326 of 7 April 2017	Description of Project Activity that triggers Listed Activity
GNR. 327 Activity 4 <i>The development and related operation of facilities for the concentration of animals in densities that exceed-</i> <i>(ii) 8 square meters per small stock unit and;</i> <i>b. more than 250 pigs per facility excluding piglets that are not yet weaned;</i>	<p>The proposed project entails the construction of a piggery facility consisting of 4 housing units. When combined, the piggery will accommodate a maximum of 1000 pigs.</p>
GN R327: Activity 12 <i>The development of –</i> <i>(ii) infrastructure or structures with a physical footprint of 100 square metres or more; where such development occurs-</i> <i>(a) within a watercourse;</i> <i>(c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse;</i>	<p>The development footprint of the proposed piggery is approximately 1 hectare . Based on the findings of the Ecological and Wetland Assessment, as well as the Wetland Delineation and Assessment, the project site includes a channeled valley bottom wetland that traverses the site, as well as two wetland seeps. Sections of the development footprint, including the areas recommended by the Wetland Delineation and Assessment Specialist, will infringe upon the recommended wetland seep buffers.</p>
GNR.327 Activity 27 <i>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> <i>(i) the undertaking of a linear activity; or</i> <i>(ii) maintenance purposes undertaken in accordance with a maintenance management plan.</i>	<p>The proposed development will include clearing of land of approximately 1 hectare for the construction of a piggery facility and approximately 3 hectares for vegetable production, resulting in a combined development footprint of 4 hectares.</p>
GNR. 324 Activity 12 <i>The clearance of an area of 300 square metres or more of indigenous vegetation except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan.</i> c. Gauteng <i>ii. Within Critical Biodiversity Areas or Ecological Support Areas identified in the Gauteng Conservation Plan or bioregional plans;</i>	<p>The proposed project site is not part of any Critical Biodiversity Areas (CBA). However the site includes an Ecological Support Area (ESA) which is formed by the stream running through the site.</p>
GNR. 324 Activity 14 <i>The development of:</i> <i>(ii) infrastructure or structures with a physical footprint of 10 square metres or more; where such development occurs-</i> <i>(a) within a watercourse;</i> <i>(c) if no development setback has been adopted, within 32 metres of a watercourse, measured from the edge of a watercourse;</i>	<p>The development footprint of the proposed piggery is approximately 1 hectare. Based on the findings of the Ecological and Wetland Assessment, as well as the Wetland Delineation and Assessment, the project site includes a channeled valley bottom wetland that traverses the site, as well as two wetland seeps. Sections of the development footprint, including the areas recommended by the Wetland Delineation Assessment Specialist, will infringe upon the</p>

SECTION F: APPENDICES

Basic Assessment for the Zaforho Tracing's proposed development of a pig and vegetable production facility on Plot 78 of Jakkalsdans Farm 243 in Cullinan, Pretoria.

	recommended 50 m wetland seep buffers and may thus occur within 32 m of the watercourse.
GNR. 921 Category A (1) <i>The storage of general waste in lagoons.</i>	The proposed development will entail the construction of 2 x waste dams for the containment of piggery waste.
GNR. 921 Category A (12) <i>The construction of a facility for a waste management activity listed in Category A of this Schedule (not in isolation to associated waste management activity).</i>	The proposed development will entail the construction of 2 x waste dams for the containment of piggery waste.

SECTION F: APPENDICES

Basic Assessment for the Zaforho Tracing's proposed development of a pig and vegetable production facility on Plot 78 of Jakkalsdans Farm 243 in Cullinan, Pretoria.

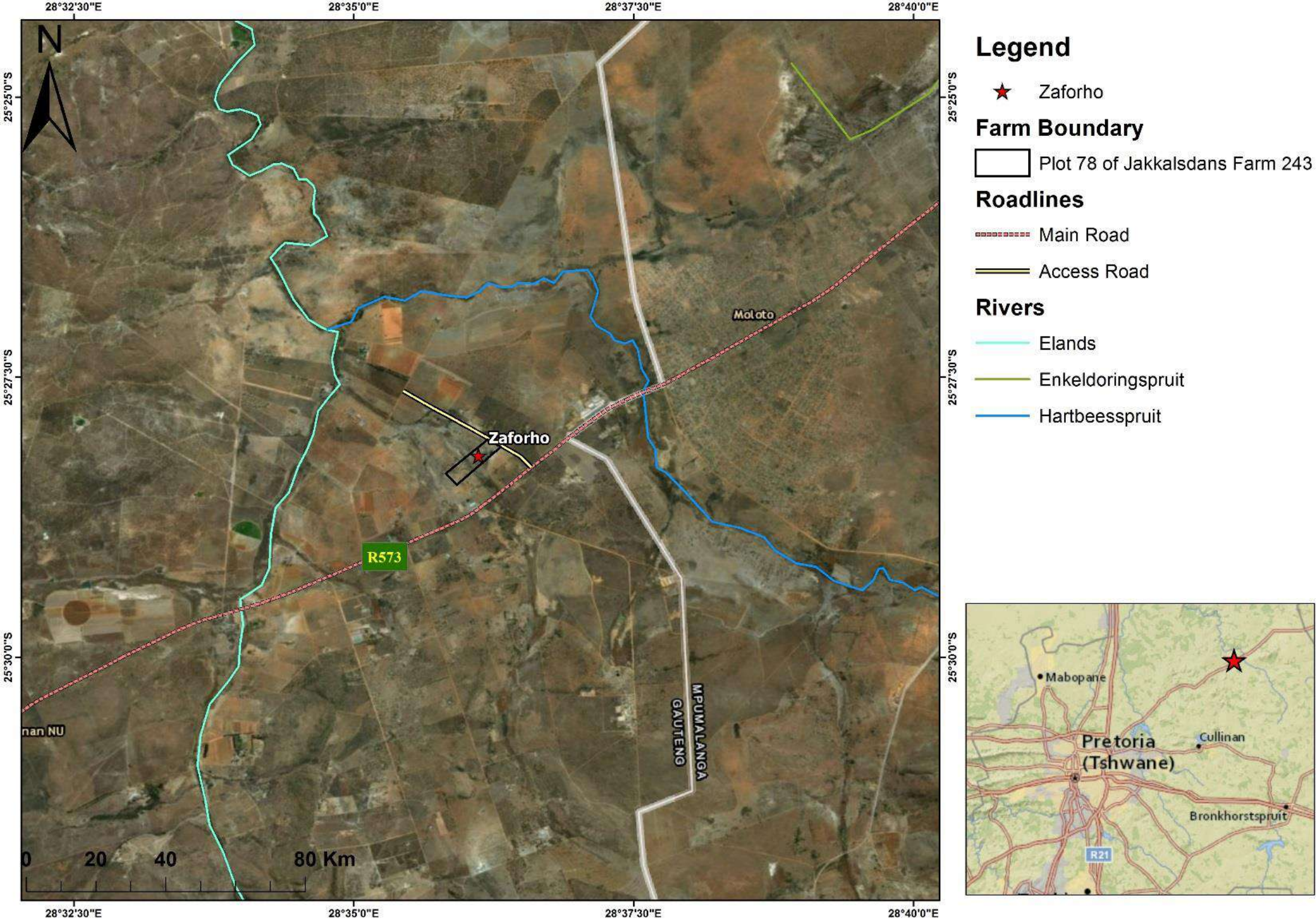


Figure 2-1: Zaforho Tracing Site Location on on Plot 78 of Jakkalsdans Farm 243 in Cullinan, Pretoria.

SECTION F: APPENDICES

Basic Assessment for the Zaforho Tracing's proposed development of a pig and vegetable production facility on Plot 78 of Jakkalsdans Farm 243 in Cullinan, Pretoria.

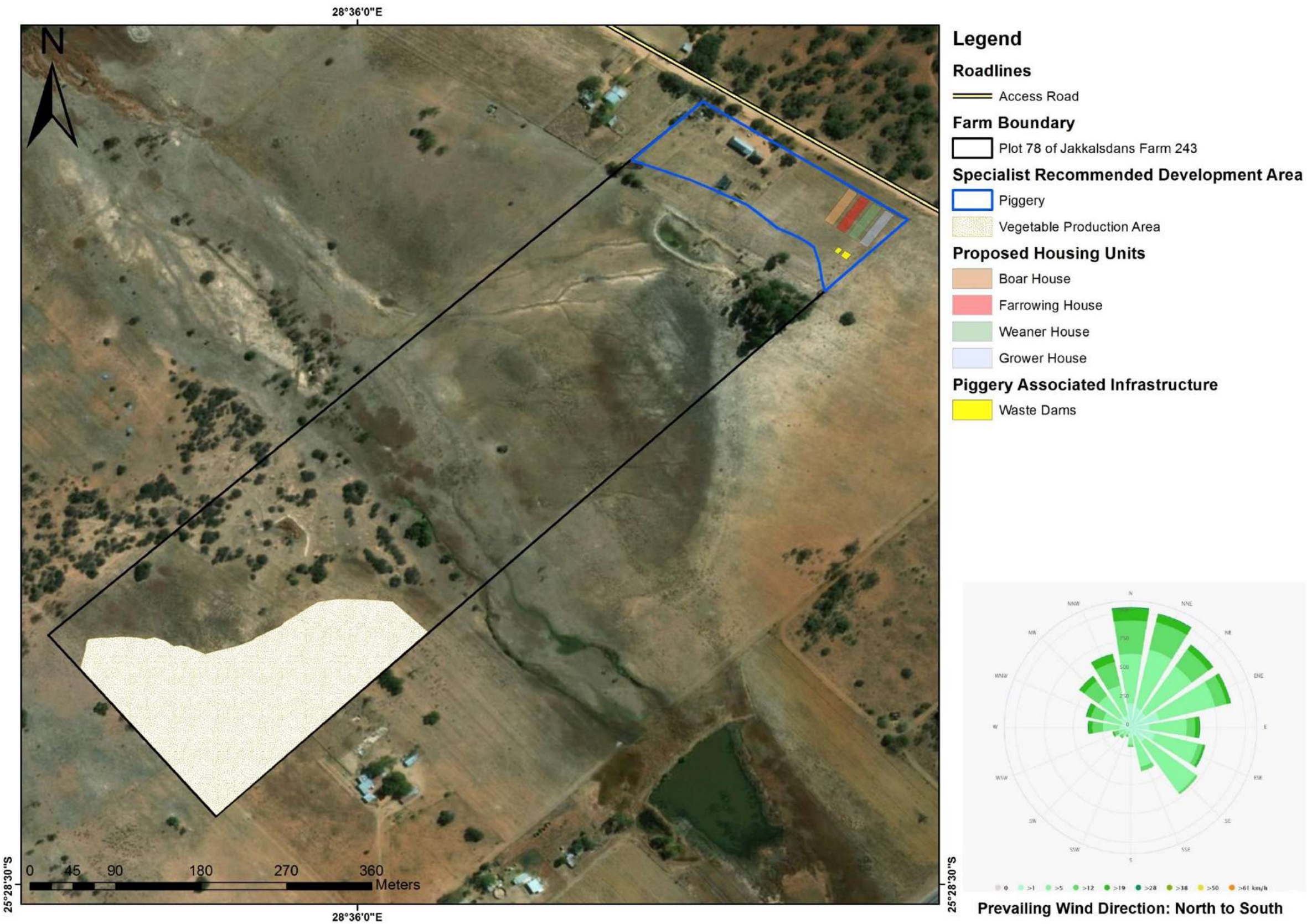


Figure 2-2: Zaforho Site Layout of proposed Piggery infrastructure and Vegetable production.

SECTION F: APPENDICES

Basic Assessment for the Zaforho Tracing's proposed development of a pig and vegetable production facility on Plot 78 of Jakkalsdans Farm 243 in Cullinan, Pretoria.

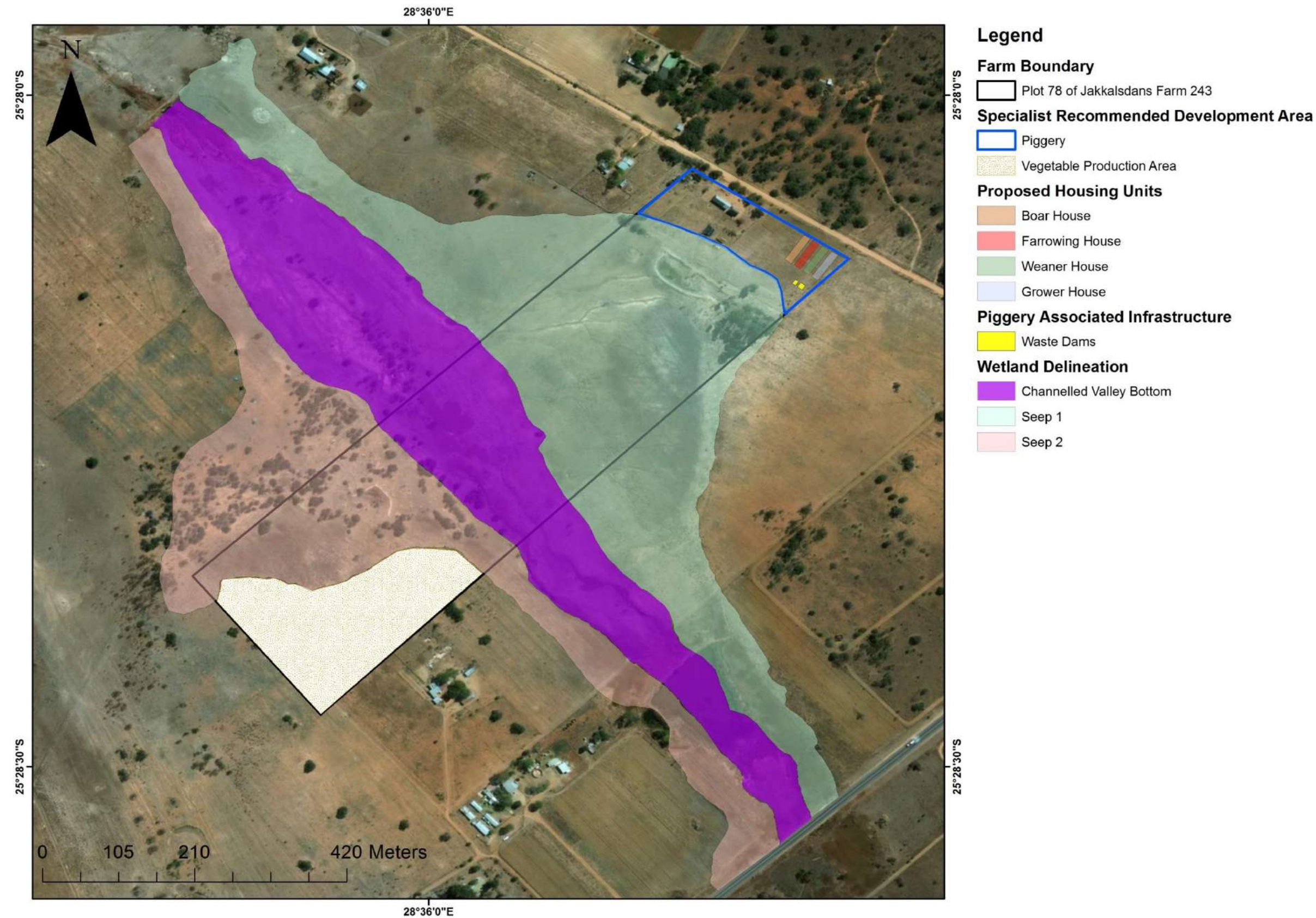


Figure 2-3: Zaforho Site Layout of proposed Piggery infrastructure and Vegetable production, including sensitivities.

SECTION H: APPENDICES

Basic Assessment for the Zaforho Tracing's proposed development of a pig and vegetable production facility on Plot 78 of Jakkalsdans Farm 243 in Cullinan, Pretoria.

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 326 of NEMA EIA Regulations, 7 April 2017	To promote integrated environmental management, contents of this BAR adhere to the requirements of the EIA Regulations. Appendix H includes the Environmental Management Programme that the project will adhere to if authorisation is received.
National Environmental Management: Waste Act (NEM:WA) GNR 921, 29 November 2013	An application for a Waste Management Licence will be submitted in terms of NEM:WA as the proposed activity pertains to the following activities included in the Act: Category A (1): The storage of general waste in lagoons. Category A (12): The construction of a facility for a waste management activity listed in Category A of this Schedule (not in isolation to associated waste management activity).
National Water Act, 1998 (Act 36 of 1998)	An application for the determination of the need for a Water Use Licence Application (WULA) is being lodged.
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. <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: 12276) in terms of the National Heritage Resources Act, 1999 (Act No. 25 of 1999) as amended. The status on the application is that the project is closed (approved).
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

SECTION H: APPENDICES

Basic Assessment for the Zaforho Tracing's proposed development of a pig and vegetable production facility on Plot 78 of Jakkalsdans Farm 243 in Cullinan, Pretoria.

Legislation, policy of guideline	Description of compliance
	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 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 pigs 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 to prevent the spread of diseases resulting from the piggery. 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.

4 ENVIRONMENTAL MANAGEMENT STRUCTURE

Zaforho Tracing'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 piggery expansion are as follows:

Zaforho Tracing 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. Zaforho 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 (ECO), Environmental Health and Safety (EHS) Officer, and Construction Manager.

Environmental Control Officer

SECTION H: APPENDICES

Basic Assessment for the Zaforho Tracing's proposed development of a pig and vegetable production facility on Plot 78 of Jakkalsdans Farm 243 in Cullinan, Pretoria.

The 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 regular basis, prepare and submit written reports to Management and the Competent Environmental Authority (GDARD) as required.

Environmental Health & Safety 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 Zaforho.

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 and TNPA 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 receiving Environmental Authorisation (EA) and proceeding to the construction phase.

Construction Manager

SECTION H: APPENDICES

Basic Assessment for the Zaforho Tracing's proposed development of a pig and vegetable production facility on Plot 78 of Jakkalsdans Farm 243 in Cullinan, Pretoria.

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.
- 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 EA and proceeding to the construction phase.

SECTION H: APPENDICES

Basic Assessment for the Zaforho Tracing's proposed development of a pig and vegetable production facility on Plot 78 of Jakkalsdans Farm 243 in Cullinan, Pretoria.

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 piggery. The table below lists potential impacts and mitigation measures recommended for the proposed Zaforho piggery and agricultural development at the different phases.

Table 5-1: Impact management plan for the proposed Zaforho piggery and vegetable production facility

Impact Description	Environmental Objective	Management/Mitigation Measures	Monitoring Compliance & Reporting	Monitoring Frequency	Responsibility
Design and Planning Phase					
5.1 Loss of vegetation communities and faunal habitat as a result of poor planning and design.	To prevent further 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 within the recommended development layout footprint. 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. Identify and mark indigenous trees on the ground. Those that are small and cannot be avoided should be transplanted elsewhere on site. Plan for the rehabilitation of remaining areas of natural vegetation. 	<ul style="list-style-type: none"> Zaforho Management to ensure development layout adheres to the proposed mitigation measures of this EMPr 	During the design phase	Management
5.2 Loss of Conservation Important (CI) or medicinally important flora, in accordance with law and best	To protect plants of conservation concern.	<ul style="list-style-type: none"> Development planning to be restricted to already disturbed or transformed areas as far as possible, as per the recommended site layout. 	<ul style="list-style-type: none"> Zaforho Management to verify implementation of 	During design	Management Botanist/Horticulturist

SECTION H: APPENDICES

Basic Assessment for the Zaforho Tracing's proposed development of a pig and vegetable production facility on Plot 78 of Jakkalsdams Farm 243 in Cullinan, Pretoria.

Impact Description	Environmental Objective	Management/Mitigation Measures	Monitoring Compliance & Reporting	Monitoring Frequency	Responsibility
Design and Planning Phase					
practice, and encourage rehabilitation.		<ul style="list-style-type: none"> If removing CI species, such as the two <i>Aloe</i> species occurring on site and the <i>Bulbine</i>, <i>Hypoxis</i> and likely <i>Brunsvigia</i> species that could potentially occur on site, permits for their removal must be submitted. Prior to construction any CI and medicinally important floral specimens that may occur within the site layout footprint (areas zoned for the piggery, effluent dam, or vegetable production) should be collected and replanted in the surrounding areas. 	the mitigation measures proposed in this EMPr.		
5.3 Loss of wetlands.	The avoidance of wetland loss is a priority.	<ul style="list-style-type: none"> Development planning to re-align area set aside for piggery development and vegetable production to avoid the wetland areas as per the Wetland Delineation and Assessment specialists' recommendation. Re-align the proposed piggery development to the area behind the eastern seep and re-align the proposed vegetable production footprint to the land upslope of the western seep. The recommended layout footprint is included in Appendix A of this BA Report, as well as in the Wetland Delineation and Assessment Report included in Appendix G of this BA Report. No construction should be planned within the sensitive environment (wetlands). 	<ul style="list-style-type: none"> Zaforho Management to ensure development layout verifies the proposed mitigation measures of this EMPr. 	During design	Management
5.4 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. 	<ul style="list-style-type: none"> Zaforho Management to verify implementation of 	Ongoing	Management ECO

SECTION H: APPENDICES

Basic Assessment for the Zaforho Tracing's proposed development of a pig and vegetable production facility on Plot 78 of Jakkalsdans Farm 243 in Cullinan, Pretoria.

Impact Description	Environmental Objective	Management/Mitigation Measures	Monitoring Compliance & Reporting	Monitoring Frequency	Responsibility
Design and Planning Phase					
		<ul style="list-style-type: none"> • Alien invasive species identified on site should be removed (prioritising Category 1 species) 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 must require a permit. • Prohibit the introduction of domestic animals such as dogs and cats. 	the mitigation measures proposed in this EMPr.		Construction manager
5.5 Impact on water quality (surface and ground water) and downstream aquatic ecology from ineffective containment of the piggery wastewater and other waste and hazardous material.	To prevent deterioration of water quality and downstream aquatic ecology, and ensure effective design of waste and wastewater management system.	<ul style="list-style-type: none"> • It is essential to ensure that the pig houses and associated drains and waste dams 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 primary aim should be to avoid contamination of the wetlands. • Ensure that the gutter conveying pig effluent is closed i.e. piped to the waste dam to prevent spillage and contact with wildlife. • Incorporate effective storm water management design aspects into the infrastructure plan so as to prevent impacts of flooding. • Determine wastewater use practices, in terms of fertilisation, in accordance with the recommendations of the National Water Act, 	<ul style="list-style-type: none"> • Zaforho to apply for a Water Use Licence (WULA) with reference to the proposed use of groundwater and process for waste water. • Zaforho Management to ensure development layout and plan verifies the proposed mitigation measures of this EMPr. 	During design and planning	Management ECO

SECTION H: APPENDICES

Basic Assessment for the Zaforho Tracing's proposed development of a pig and vegetable production facility on Plot 78 of Jakkalsdans Farm 243 in Cullinan, Pretoria.

Impact Description	Environmental Objective	Management/Mitigation Measures	Monitoring Compliance & Reporting	Monitoring Frequency	Responsibility
Design and Planning Phase					
		<p>Section 21 (e). The use of waste water for agricultural purposes is applicable to the Department of Water Affairs' recognition of waste water as a valuable resource for use as a fertilizer.</p> <ul style="list-style-type: none"> 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. Any pollution incident(s) originating from the proposed project shall be reported to the Provincial Head of the DWS within 24 hours. 			
5.6 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 facility. 	<ul style="list-style-type: none"> Zaforho to ensure that this is taken into consideration during the planning and design of the piggery. 	During design and planning	Management Designing engineer

SECTION H: APPENDICES

Basic Assessment for the Zaforho Tracing's proposed development of a pig and vegetable production facility on Plot 78 of Jakkalsdans Farm 243 in Cullinan, Pretoria.

Impact Description	Environmental Objective	Management/Mitigation Measures	Monitoring Compliance & Reporting	Monitoring Frequency	Responsibility
Construction Phase					
5.7 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 denude area with indigenous flora as soon as possible. Implement erosion protection measures on site to reduce erosion and sedimentation of nearby wetlands and streams. Measures could include bunding around soil stockpiles, and vegetation of areas not to be developed. 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). 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. 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 EMP are implemented and submit a report thereof on a monthly basis. 	Daily throughout construction phase.	Management / Contractor / EHS Officer ECO

SECTION H: APPENDICES

Basic Assessment for the Zaforho Tracing's proposed development of a pig and vegetable production facility on Plot 78 of Jakkalsdans Farm 243 in Cullinan, Pretoria.

5.8 Sensory disturbance of fauna.	To minimise the effect of sensory disturbances on fauna.	<ul style="list-style-type: none"> • Limit construction activities to day time hours. • Minimize or eliminate security and construction lighting, to reduce the disturbance of nocturnal fauna. • All outside lighting should be directed away from sensitive areas. • Commence (and preferably complete) construction during winter, when the risk of disturbing active (including breeding and migratory) animals, should be least. 	<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 EMP are implemented and submit a report thereof on a monthly basis. 	Daily during the construction phase.	Contractor/ Management
5.9 Degradation of ambient air quality as a result of dust other emissions generated.	To minimise the impact on the ambient air quality as a result of construction activities and increased traffic to and from the site.	<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. • 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. 	<ul style="list-style-type: none"> • Air emissions to be monitored throughout the construction phase. • Ensure regular maintenance of construction vehicles to allow for 'cleaner' emissions from these vehicles, including equipment maintenance. 	Daily during the construction phase.	Contractor Management

SECTION H: APPENDICES

Basic Assessment for the Zavorho Tracing's proposed development of a pig and vegetable production facility on Plot 78 of Jakkalsdams Farm 243 in Cullinan, Pretoria.

5.10 Loss and displacement of fauna on site, destruction of burrowing/fossorial fauna 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 scheduled site inspections. 	<p>Prior to construction.</p> <p>Ongoing throughout construction phase.</p>	<p>ECO</p> <p>Management Contractor / EHS Officer</p>
5.11 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. Construction activities should be restricted to clearly demarcated areas. No sound amplification equipment to be used on site, except in emergency situations. 	<ul style="list-style-type: none"> ECO to ensure compliance and reporting thereof. 	<p>Ongoing throughout the construction phase.</p>	<p>Contractor</p> <p>Management</p> <p>ECO</p>

SECTION H: APPENDICES

Basic Assessment for the Zaforho Tracing's proposed development of a pig and vegetable production facility on Plot 78 of Jakkalsdans Farm 243 in Cullinan, Pretoria.

		<ul style="list-style-type: none"> 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. 			
5.12 Loss of vegetation and faunal habitat as a result of poor planning and design	To prevent further 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 within the recommended development layout footprint. 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. Identify and mark indigenous trees on the ground. Those that are small and cannot be avoided should be transplanted elsewhere on site. Rehabilitate remaining areas of natural vegetation. 	<ul style="list-style-type: none"> Zaforho Management to ensure development layout verifies the proposed mitigation measures of this EMPr 	During design.	Management ECO
5.13 Loss of wetlands.	The avoidance of wetland loss is a priority.	<ul style="list-style-type: none"> Construction to take place in the re-aligned area set aside for the development to avoid the wetland area, as per the specialists' recommendation. No construction should be planned within the sensitive environment (wetlands). 	<ul style="list-style-type: none"> Zaforho Management to ensure development layout verifies the proposed mitigation measures of this EMPr. 	Ongoing throughout construction phase.	Management Contractor ECO
5.14 The introduction and spread of alien invasive species.	To prevent the spreading and	<ul style="list-style-type: none"> Ensure that alien invasive species are identified on site. 	<ul style="list-style-type: none"> Zaforho Management to verify 	All phases.	Management

SECTION H: APPENDICES

Basic Assessment for the Zaforho Tracing's proposed development of a pig and vegetable production facility on Plot 78 of Jakkalsdans Farm 243 in Cullinan, Pretoria.

	increase of alien invasive species.	<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 must require a permit. Prohibit the introduction of domestic animals such as dogs and cats. 	implementation of the mitigation measures proposed in this EMPr.		Contractor /Construction crew ECO
5.15 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. Regular maintenance and monitoring of equipment should be done to avoid leakage and spillages. In the event of an incident, spillages must be cleaned immediately. Establish appropriate emergency procedures for accidental contamination of the surroundings. 	<ul style="list-style-type: none"> Ensure construction plan verifies the proposed mitigation measures of this EMPr. To be monitored during scheduled site inspections. 	Ongoing throughout construction phase.	Management Contractor/ Construction crew

SECTION H: APPENDICES

Basic Assessment for the Zaforho Tracing's proposed development of a pig and vegetable production facility on Plot 78 of Jakkalsdans Farm 243 in Cullinan, Pretoria.

		<ul style="list-style-type: none"> Mixing of cement or concrete must not take place on the soil surface, to be undertaken on designated areas. Fluids must be stored and handled properly in a concrete or cement lined surface with berm walls to avoid any seepage into the groundwater resources and also ensure that the design of the storage area is such that any leakages or spillages can be contained. 			
5.16 Soil and water pollution as a result of poor waste management.	To prevent soil and water resources pollution.	<ul style="list-style-type: none"> Construction waste must be disposed of at a licensed landfill site. Waste containers must be available on site at all times. A waste management plan must be adopted and implemented. This plan should consider the type of waste, storage, disposal method and facility as well as methods to reduce waste on site. Ensure compliance with waste management legislation. 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. Control of illegal activities (such as illegal dumping) which negatively impact on vulnerable vegetation should be prioritized. 	<ul style="list-style-type: none"> Management and ECO to ensure compilation and implementation of waste management plan and ensure implementation and adherence thereof, including mitigation measures proposed in this EMPr 	During design and planning, and construction.	Management/ Contractor/ ECO

SECTION H: APPENDICES

Basic Assessment for the Zavorho Tracing's proposed development of a pig and vegetable production facility on Plot 78 of Jakkalsdams Farm 243 in Cullinan, Pretoria.

5.17. 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
5.18. 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. Strict site access control must be maintained at the construction site. 	<ul style="list-style-type: none"> To be monitored daily. 	Ongoing throughout the construction activities.	Contractor
5.19 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
5.20 Diversion and impendence of surface water flows and increased potential for 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
5.21 Contamination of stormwater as result of chemicals, cement, waste etc.	To prevent stormwater contamination which could	<ul style="list-style-type: none"> Stormwater must be diverted around areas of cement mixing, chemical/fuel handling and storage and waste containment areas. 	<ul style="list-style-type: none"> Check compliance with specified conditions of the Stormwater 	Weekly	ECO

SECTION H: APPENDICES

Basic Assessment for the Zaforho Tracing's proposed development of a pig and vegetable production facility on Plot 78 of Jakkalsdans Farm 243 in Cullinan, Pretoria.

	subsequently impact natural areas and freshwater ecosystems.	<ul style="list-style-type: none"> 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. Hazardous waste (i.e. fuels, paints and solvents) 'should be disposed of at waste disposal site permitted to handle such waste materials. Prior to the commencement of the activities, a signed copy of service level agreement must be submitted to the DWS to demonstrate that provision will be made to render such service. 	<p>Management Plan and Method Statement.</p> <ul style="list-style-type: none"> The proper storm water management practices should be implemented and inspected regularly to ensure proper functioning of the stormwater structures. 		
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Impact Description	Environmental Objective	Management/Mitigation Measures	Monitoring Compliance & Reporting	Monitoring Frequency	Responsibility
Operational Phase					
5.22 Impact on water quality (surface and ground water) and downstream aquatic ecology from ineffective containment of the facility's wastewater.	To prevent the pollution of the aquatic system.	<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. Pig housing must have slatted floors which collect waste and conduct it through enclosed concrete canals. Pig waste must be stored in an enclosed concrete waste storage. 	<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

SECTION H: APPENDICES

Basic Assessment for the Zaforho Tracing's proposed development of a pig and vegetable production facility on Plot 78 of Jakkalsdans Farm 243 in Cullinan, Pretoria.

Impact Description	Environmental Objective	Management/Mitigation Measures	Monitoring Compliance & Reporting	Monitoring Frequency	Responsibility
Operational Phase					
		<ul style="list-style-type: none"> 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. The application of the liquid waste onto the agricultural field must adhere to the Water Act legislation and Water Use Licence permit. The use of solid waste as compost on the agricultural field must adhere to Waste Act and Waste Management Licence terms. Hazardous 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. 			
5.23 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 to prevent attraction of pests and disposal of waste in a permitted disposal site. Minimise the production of waste. 	<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. 	Daily during operation.	ECO Management

SECTION H: APPENDICES

Basic Assessment for the Zavorho Tracing's proposed development of a pig and vegetable production facility on Plot 78 of Jakkalsdams Farm 243 in Cullinan, Pretoria.

Impact Description	Environmental Objective	Management/Mitigation Measures	Monitoring Compliance & Reporting	Monitoring Frequency	Responsibility
Operational Phase					
		<ul style="list-style-type: none"> Waste should be recycled or re-used where possible, and sold/given to interested contractors. 			
5.24 Impact on ambient air quality from piggery emissions and odour.	To minimise air emissions that may cause a nuisance to the surrounding area.	<ul style="list-style-type: none"> Ensure that the housing units are cleaned regularly to avoid foul smell that can impact on neighbours, regularly flush housing units. Implement best practices in terms of waste regulation of the dam and practice good housekeeping of the pig housing units. Avoiding unnecessary build-up of waste in the housing units and dams. Ensure sufficient ventilation of the housing units. Subject the pig solid waste to the aerobic process to reduce its odour. 	<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 pig mortalities. 	Daily site inspections during the operational life of the piggery.	Management EHS Officer
5.25 Impact of dust and vehicle emissions generated during use of the gravel road when transporting pigs and vegetables 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 piggery 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

SECTION H: APPENDICES

Basic Assessment for the Zavorho Tracing's proposed development of a pig and vegetable production facility on Plot 78 of Jakkalsdams Farm 243 in Cullinan, Pretoria.

Impact Description	Environmental Objective	Management/Mitigation Measures	Monitoring Compliance & Reporting	Monitoring Frequency	Responsibility
Operational Phase					
5.26 Noise disturbances as a result of operational activities and squealing from pigs	To minimise noise generation on site.	<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. 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. Excessive noise from the pigs can be caused when the pigs are disturbed, and as such unnecessary disturbance of the pigs should be avoided. 	<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.	Management/Facility Manager ECO
5.27 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 EMP are implemented and submit a report thereof on a monthly basis. 	Once prior to operation. Daily during the operation phase.	EHS Officer Management

SECTION H: APPENDICES

Basic Assessment for the Zaforho Tracing's proposed development of a pig and vegetable production facility on Plot 78 of Jakkalsdans Farm 243 in Cullinan, Pretoria.

Impact Description	Environmental Objective	Management/Mitigation Measures	Monitoring Compliance & Reporting	Monitoring Frequency	Responsibility
Operational Phase					
5.28 Impact on Biosecurity and transmission of diseases.	<p>To prevent the attraction of pests and animals carrying infectious diseases.</p> <p>To ensure the containment of disease outbreaks.</p>	<ul style="list-style-type: none"> Regularly clean the piggery to minimise influx of pests. Pig mortalities must be identified and removed immediately from the piggery. Training of workers to effectively handle sick and dead animals. Restrict piggery access and use disinfectant sprays on vehicles and personnel entering the site. Feeding areas must be regularly cleaned to prevent the attraction of flies. Piggery must have security fencing around it to prevent access of other animals such as dogs. Emergency procedures that aim to address the potential for disease outbreaks must be developed and implemented where applicable. 	<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
5.29 Impact on sensitive areas such as the wetland.	To minimise the impact on sensitive sites.	<ul style="list-style-type: none"> Limit human activity on areas that are close to sensitive sites. Piggery activities must not be undertaken in sensitive areas. 	<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

SECTION H: APPENDICES

Basic Assessment for the Zaforho Tracing's proposed development of a pig and vegetable production facility on Plot 78 of Jakkalsdans Farm 243 in Cullinan, Pretoria.

Impact Description	Environmental Objective	Management/Mitigation Measures	Monitoring Compliance & Reporting	Monitoring Frequency	Responsibility
Operational Phase					
5.30 Impact on natural vegetation during operational activities.	To minimise the disturbance and destruction of natural vegetation on site.	<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
5.31 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. 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 must require a permit. Prohibit the introduction of domestic animals such as dogs and cats. 	<ul style="list-style-type: none"> Zaforho Management to verify implementation of the mitigation measures proposed in this EMPr. 	Daily	Management
5.32 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"> Zaforho Management to ensure development layout and plan verifies the proposed mitigation measures of this EMPr. 	Ongoing throughout operational phase.	Management Contractor

SECTION H: APPENDICES

Basic Assessment for the Zaforho Tracing's proposed development of a pig and vegetable production facility on Plot 78 of Jakkalsdans Farm 243 in Cullinan, Pretoria.

Impact Description	Environmental Objective	Management/Mitigation Measures	Monitoring Compliance & Reporting	Monitoring Frequency	Responsibility
Operational Phase					
		<ul style="list-style-type: none"> A disposal method for waste must be submitted to the Department of Water and Sanitation. 			
5.33 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). 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
5.34 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
5.35 Loss of Conservation Important (CI) or medicinally important flora due to harvesting.	To protect plants of conservation concern.	<ul style="list-style-type: none"> Harvesting of indigenous flora for medicine, fire wood, building materials, and other purposes must be prohibited. Education of the Farm Management and team required prior to operation and with yearly refresher talks. 	<ul style="list-style-type: none"> Zaforho Management to verify implementation of the mitigation measures proposed in this EMPr. 	When necessary during operation.	Management
5.36 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. This activity will make use of renewable energy for its activities. 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"> Leaking water storage structures must be reported immediately. 	Daily during operation.	Management

SECTION H: APPENDICES

Basic Assessment for the Zaforho Tracing's proposed development of a pig and vegetable production facility on Plot 78 of Jakkalsdans Farm 243 in Cullinan, Pretoria.

Impact Description	Environmental Objective	Management/Mitigation Measures	Monitoring Compliance & Reporting	Monitoring Frequency	Responsibility
Operational Phase					
5.37 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. Zaforho 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
5.38 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
5.39 Stormwater discharge into the surrounding environment during operations.	To minimise the contamination of stormwater which could subsequently impact the surrounding ecosystems.	<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 	Once-off prior to the commencement of the operational phase.	Management

SECTION H: APPENDICES

Basic Assessment for the Zavorho Tracing's proposed development of a pig and vegetable production facility on Plot 78 of Jakkalsdams Farm 243 in Cullinan, Pretoria.

Impact Description	Environmental Objective	Management/Mitigation Measures	Monitoring Compliance & Reporting	Monitoring Frequency	Responsibility
Operational Phase					
	To protect soil resources and prevent soil erosion.		<p>has been compiled prior to the commencement of the operational phase.</p> <ul style="list-style-type: none"> Undertake regular monitoring and inspections, and record non-compliance. 	Weekly or Monthly.	
5.40 Soil and water resources pollution as a result of poor waste water management and pig mortality management.	To manage wastewater and to prevent the pollution of soil and water resources.	<ul style="list-style-type: none"> All wastewater application on land must be in accordance with the Department of Water and Sanitation's guidelines in terms of wastewater use. The depth to aquifer must be more than 5m for dewatered sludge application and must be more than 10m for liquid sludge application. The distance from surface water or borehole must be more than 400m. Mortalities must be stored in an enclosed area prior to being taken to the mortality pit. The mortality pit must be regularly monitored and maintained, avoiding exceeding the capacity of the pit. 	<ul style="list-style-type: none"> Undertake regular monitoring and inspections to verify implementation of the proposed mitigation measures, and record non-compliance. 	During the operational phase.	Management ECO
5.41 Security and safety impacts.	Minimise the potential for crime incidences.	<ul style="list-style-type: none"> Zavorho 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. 	<ul style="list-style-type: none"> Zavorho Management to verify implementation of the mitigation measures proposed in this EMPr. 	Ongoing	Management/ Officer EHS

SECTION H: APPENDICES

Basic Assessment for the Zaforho Tracing's proposed development of a pig and vegetable production facility on Plot 78 of Jakkalsdans Farm 243 in Cullinan, Pretoria.

Impact Description	Environmental Objective	Management/Mitigation Measures	Monitoring Compliance & Reporting	Monitoring Frequency	Responsibility
Operational Phase					
		<ul style="list-style-type: none"> 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. 			

Note from the CSIR: Decommissioning and/or closure phase is not expected to occur for the proposed piggery. Should there be plans to close down the piggery; a closure plan will be submitted to the competent authority for approval.

6 STORM WATER MANAGEMENT PLAN

Impact	Mitigation/Management Objectives	Mitigation/Management Actions	Monitoring Compliance & Reporting	Monitoring Frequency	Responsibility
Design and Planning Phase					
1. Impact of the project if a detailed storm water management plan is not correctly prepared.	To limit the effect of uncontrolled storm water run-off from	<ul style="list-style-type: none"> Establishment of stormwater management infrastructure. Prepare a detailed stormwater management plan outlining appropriate treatment measures 	<ul style="list-style-type: none"> Check compliance with specified conditions. Ensure that this is taken into 	<ul style="list-style-type: none"> Once-off during design followed by 	<ul style="list-style-type: none"> Contractor ECO

SECTION H: APPENDICES

Basic Assessment for the Zaforho Tracing's proposed development of a pig and vegetable production facility on Plot 78 of Jakkalsdans Farm 243 in Cullinan, Pretoria.

Impact	Mitigation/Management Objectives	Mitigation/Management Actions	Monitoring Compliance & Reporting	Monitoring Frequency	Responsibility
	developed areas onto natural areas.	<p>to address runoff from disturbed portions of the site, such that they do not:</p> <ul style="list-style-type: none"> result in concentrated flows into natural watercourses i.e. provision should be made for temporary or permanent measures that allow for attenuation, control of velocities and capturing of sediment upstream of natural water courses; result in any necessity for concrete or other lining of natural water courses to protect them from concentrated flows of the development; divert flows out of their natural flow pathways, thus depriving downstream watercourses of water. 	<p>consideration during the planning and design phase by reviewing signed minutes of meetings or signed reports.</p>	<p>regular control</p> <ul style="list-style-type: none"> During the design phase 	
Construction Phase					
2. Diversion and impedance surface water flows – changes to the	Prevent interference		<ul style="list-style-type: none"> Compile a Method Statement for 	<ul style="list-style-type: none"> Prior to the 	<ul style="list-style-type: none"> Contractor ECO

SECTION H: APPENDICES

Basic Assessment for the Zaforho Tracing's proposed development of a pig and vegetable production facility on Plot 78 of Jakkalsdans Farm 243 in Cullinan, Pretoria.

Impact	Mitigation/Management Objectives	Mitigation/Management Actions	Monitoring Compliance & Reporting	Monitoring Frequency	Responsibility
<p>hydrological regime and increased potential for erosion.</p> <p>Diversion and increased velocity of surface water flows – reduction in permeable surfaces.</p>	<p>with natural run-off patterns, diverting flows and increasing the velocity of surface water flows.</p>	<ul style="list-style-type: none"> The appointed Contractor should compile a Method Statement for Stormwater Management during the construction phase. Erosion and sedimentation into water bodies must be minimised through the effective stabilisation (gabions and Reno mattresses or similar) and the re-vegetation of any disturbed riverbanks. Place energy dissipation structures in a manner that allows the management of flows prior to being discharged into the natural environment, thus not only preventing erosion, but supporting the maintenance of natural base flows within these systems i.e. hydrological regime (water quantity and quality) is maintained. Reinforce soil slopes to minimise erosion during rehabilitation (as needed, and once construction in a specific area has ceased). Perform periodic inspections and maintenance of soil erosion measures and stormwater control structures. 	<p>Stormwater Management during the construction phase.</p> <ul style="list-style-type: none"> Inspect and verify if a Method Statement for Stormwater Management has been compiled by the Contractor via audits prior to the commencement of the construction phase. Check compliance with specified conditions of the Stormwater Management Plan and Method Statement. Check compliance with specified conditions of the Stormwater Management Plan and Method Statement. Monitor activities and record and report non-compliance. 	<p>construction phase.</p> <ul style="list-style-type: none"> Once-off prior to the commencement of the construction phase. Weekly or Bi-weekly Weekly or bi-weekly As needed during the construction phase As needed during the construction phase 	<ul style="list-style-type: none"> ECO ECO ECO ECO

SECTION H: APPENDICES

Basic Assessment for the Zaforho Tracing's proposed development of a pig and vegetable production facility on Plot 78 of Jakkalsdans Farm 243 in Cullinan, Pretoria.

Impact	Mitigation/Management Objectives	Mitigation/Management Actions	Monitoring Compliance & Reporting	Monitoring Frequency	Responsibility
			<ul style="list-style-type: none">• Monitor activities and record and report non-compliance.		

SECTION H: APPENDICES

Basic Assessment for the Zavorho Tracing's proposed development of a pig and vegetable production facility on Plot 78 of Jakkalsdams Farm 243 in Cullinan, Pretoria.

<p>3. Pollution of the surrounding environment as a result of the contamination of stormwater. Contamination could result from the spillage of chemicals, oils, fuels, sewage, solid waste, litter etc.</p>	<p>To prevent contaminated stormwater from entering into and adversely impacting on freshwater ecosystems and reducing the water quality.</p> <p>To reduce sedimentation of nearby water systems.</p> <p>To apply best practice principles in managing risks to storm water pollution.</p>	<ul style="list-style-type: none"> • The appointed Contractor should compile a Method Statement for Stormwater Management during the construction phase. • 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 stored safely on site and in bunded areas. Fuel and chemical storage containers must be inspected to ensure that any leaks are detected early. • All stockpiles must be protected from erosion and stored on flat areas where run-off will be minimised. Erosion and sedimentation into water bodies must be minimised through effective stabilisation. No stockpiling should take place within a watercourse. • Stockpiles must be located away from river channels i.e. greater than 32 m. • Littering and contamination of water resources during construction must be prevented by effective construction camp management. • Emergency plans must be in place to deal with potential spillages (especially those leading to any watercourses). • Erosion and sedimentation into water bodies must be minimised through the effective stabilisation (gabions and Reno mattresses or similar) and the re-vegetation of any disturbed riverbanks. • Ensure that the temporary site camp and ablution facilities are established at least 32 m away from the banks of the major drainage lines. 	<ul style="list-style-type: none"> • Compile a Method Statement for Stormwater Management during the construction phase. • Inspect and verify if a Method Statement for Stormwater Management has been compiled by the Contractor via audits prior to the commencement of the construction phase. • Monitor the storage and handling of dangerous goods and hazardous materials on site via site audits and record non-compliance and incidents. Monitor if spillages have taken place and if they are removed correctly. • Monitor the excavations and stockpiling process throughout the construction phase via visual site inspections. Record 	<ul style="list-style-type: none"> • Prior to the construction phase. • Once-off prior to the commencement of the construction phase. • Weekly • Daily • Weekly • Weekly or Bi-weekly • Weekly or Bi-weekly • Once-off prior to construction and as required during the construction phase. 	<ul style="list-style-type: none"> • Contractor • ECO • ECO • ECO • Contractor and ECO • ECO • ECO • ECO
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SECTION H: APPENDICES

Basic Assessment for the Zaforho Tracing's proposed development of a pig and vegetable production facility on Plot 78 of Jakkalsdans Farm 243 in Cullinan, Pretoria.

Impact	Mitigation/Management Objectives	Mitigation/Management Actions	Monitoring Compliance & Reporting	Monitoring Frequency	Responsibility
		<ul style="list-style-type: none"> Ensure that there is no ad-hoc crossing of channels by vehicles during the construction phase. Access routes across the site should be strictly demarcated and selected with a view to minimise impacts on drainage lines. Ensure that no waste materials or sediments are left in the surrounding drainage lines (as a result of the construction). Regular inspections of stormwater infrastructure should be undertaken to ensure that it is kept clear of all debris and weeds. 	<ul style="list-style-type: none"> non-compliance and incidents. Monitor via site audits and record non-compliance and incidents (i.e. by implementing walk through inspections). Check compliance with specified conditions of the Stormwater Management Plan and Method Statement. Check compliance with specified conditions of the Stormwater Management Plan and Method Statement. Monitor the placement of the site camp via visual inspections, and record and report any non-compliance. 		

SECTION H: APPENDICES

Basic Assessment for the Zaforho Tracing's proposed development of a pig and vegetable production facility on Plot 78 of Jakkalsdans Farm 243 in Cullinan, Pretoria.

Impact	Mitigation/Management Objectives	Mitigation/Management Actions	Monitoring Compliance & Reporting	Monitoring Frequency	Responsibility
			<ul style="list-style-type: none"> • Check compliance with specified conditions of the Stormwater Management Plan and Method Statement. • Check compliance with specified conditions of the Stormwater Management Plan and Method Statement. • Monitor via site audits and record non-compliance and incidents (i.e. by implementing walk through inspections). 	<ul style="list-style-type: none"> • Weekly or Bi-weekly • Weekly or Bi-weekly • Weekly 	<ul style="list-style-type: none"> • ECO • ECO • Contractor and ECO

SECTION H: APPENDICES

Basic Assessment for the Zaforho Tracing's proposed development of a pig and vegetable production facility on Plot 78 of Jakkalsdans Farm 243 in Cullinan, Pretoria.

7 WASTE MANAGEMENT PLAN

Impact	Mitigation/Management Objectives	Mitigation/Management Actions	Monitoring Compliance & Reporting	Monitoring Frequency	Responsibility
Design and Planning Phase					
1. Impact of the project if a detailed waste management plan is not correctly prepared.	To prevent environmental contamination through effective and thorough planning and design.	<ul style="list-style-type: none"> Waste management must ensure that the construction and operation of the piggery will not impact on the wetland areas. The waste management facility should be effectively designed and installed to ensure that the piggery waste is effectively removed and transported to the waste dams. The design of the waste dams must be submitted to the Department of Water and Sanitation for approval prior to any commencement of the project activities. Project engineers should compile a method statement, outlining the construction methodologies. Mitigation measures should be included in this method statement that must be approved by the ECO and be available on site. 	<ul style="list-style-type: none"> Inspect and verify implementation of the suggested measures in this EMP. Ensure that this is taken into consideration during the planning and design phase, and Zaforho Management to ensure development occurs as per the approved design and layout plan. 	<ul style="list-style-type: none"> Once-off during design followed by regular control During the design phase 	<ul style="list-style-type: none"> Zaforho Management Contractor ECO
Construction Phase					

SECTION H: APPENDICES

Basic Assessment for the Zaforho Tracing's proposed development of a pig and vegetable production facility on Plot 78 of Jakkalsdams Farm 243 in Cullinan, Pretoria.

Impact	Mitigation/Management Objectives	Mitigation/Management Actions	Monitoring Compliance & Reporting	Monitoring Frequency	Responsibility
2. Pollution of the surrounding environment from the spillage of chemicals, oils, fuels, sewage, solid waste, litter etc.	To prevent groundwater contamination and/or water quality reduction as a result of contaminant seepage.	<ul style="list-style-type: none"> The waste and wastewater management system must be constructed in a manner that ensures that the piggery waste is effectively removed from the houses. The waste dams must be lined with impermeable substances (e.g. concrete) in accordance with advice from suitably qualified agricultural experts and international best practice norms. The primary aim should be to avoid contamination of the wetlands. 	<ul style="list-style-type: none"> Zaforho Management to ensure development layout and plan verifies the proposed mitigation measures of this EMPr. Ensure construction plan verifies the proposed mitigation measures of this EMPr. 	<ul style="list-style-type: none"> During the planning and construction of the facility structures. 	<ul style="list-style-type: none"> Zaforho Management and/or Design Engineer Contractor
Operational Phase					
3. Soil, surface water and groundwater pollution from the ineffective containment of the piggery waster and the irresponsible application of wastewater sludge to land.	To manage wastewater and to prevent pollution of the environment.	<ul style="list-style-type: none"> All wastewater application on land must be in accordance with the Department of Water and Sanitation's guidelines in terms of wastewater use and must must adhere to the Water Act legislation and Water Use Licence permit. The use of solid waste as compost on the agricultural field must adhere to Waste Act and Waste Management Licence terms. Overflow of the waste management system must be prevented. All waste produced to be disposed of in permitted designated waste disposal site. Waste must be stored in designated areas for storage. 	<ul style="list-style-type: none"> Zaforho Management must verify implementation of the proposed mitigation measures of this EMPr. Monitor activities and record and report non-compliance. 	<ul style="list-style-type: none"> Ongoing 	<ul style="list-style-type: none"> Zaforho Management ECO

SECTION H: APPENDICES

Basic Assessment for the Zaforho Tracing's proposed development of a pig and vegetable production facility on Plot 78 of Jakkalsdans Farm 243 in Cullinan, Pretoria.

Impact	Mitigation/Management Objectives	Mitigation/Management Actions	Monitoring Compliance & Reporting	Monitoring Frequency	Responsibility
		<ul style="list-style-type: none">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.Hazardous waste must be stored in suitable containers and disposed of accordingly.			

SECTION H: APPENDICES

Basic Assessment for the Zaforho Tracing's proposed development of a pig and vegetable production facility on Plot 78 of Jakkalsdans Farm 243 in Cullinan, Pretoria.

Impact	Mitigation/Management Objectives	Mitigation/Management Actions	Monitoring Compliance & Reporting	Monitoring Frequency	Responsibility
4. Degradation of ambient air quality and nuisance due to odour generation from the piggery, ammonia emissions, its wastewater management practices and mortality management	To minimise odour generation and emissions that may cause a nuisance to the environment.	<ul style="list-style-type: none"> • Cover the waste dams to reduce the odour. • Piggery must be kept clean as far as possible to minimise odour emissions, regularly flush housing units. • Implement best practices in terms of waste regulation of the dam and practice good housekeeping of the pig housing units. Avoiding unnecessary build-up of waste in the housing units and dams. • Ensure sufficient ventilation of the housing units. • Subject the pig solid waste to the aerobic process to reduce its odour. No waterlogging of compost to avoid creating anaerobic conditions leading to odours. • Ensure that excrement, carcasses, feed, and other operational waste and hazardous materials are appropriately and effectively contained and disposed of without detriment to the air quality of the receiving environment. 	<ul style="list-style-type: none"> • ECO to verify implementation of the mitigation measures proposed in this EMP. ECO to submit monthly compliance reports to the competent authority. • Conduct regular site inspections and report any non-compliance. Issues must be addressed immediately. • A complaints register must be kept on the farm to record any odour complaints that may arise. 	<ul style="list-style-type: none"> • Ongoing 	<ul style="list-style-type: none"> • Zaforho Management • ECO

SECTION H: APPENDICES

Basic Assessment for the Zaforho Tracing's proposed development of a pig and vegetable production facility on Plot 78 of Jakkalsdans Farm 243 in Cullinan, Pretoria.

8 BIOSECURITY PLAN

The potential for disease outbreaks in animal farming is always there as infectious diseases are easily transmitted. Strict biosecurity measures are essential to ensure that diseases are not brought to the site and/or transmitted from the site. The following measures are suggested for the piggery facility to prevent the attraction of pests and animals carrying infectious diseases, and to ensure that people accessing the site do not contract any diseases:

- Restrict access to the facility and use disinfectant sprays on vehicles and personnel entering and exiting the site.
- Monitor and control diseases on a daily basis. Apply a dynamic biosecurity measure that includes a vaccination programme.
- Regularly clean the facility to minimise influx of pests. Feeding areas must be regularly cleaned to prevent the attraction of flies.
- Waste water (water used to clean the facility and from the disinfection area) must be channeled to a septic tank on site and nowhere else.
- Pig mortalities must be identified and removed immediately from the facility.
- Training of workers to effectively handle sick and dead animals.
- Facility must have security fencing around it to prevent access of other animals such as dogs.
- Adequate sanitation facilities must be provided for all staff.
- The facility must have sanitisers, and ensure clean hands at all times to prevent the spread of bacteria.
- Inform neighbours when serious problems arise at the proposed development and the mitigation measures thereof.
- A state veterinarian must be consulted in the event of any disease outbreaks to prescribe a procedure to deal with contaminated pigs.

SECTION H: APPENDICES

Basic Assessment for the Zaforho Tracing's proposed development of a pig and vegetable production facility on Plot 78 of Jakkalsdans Farm 243 in Cullinan, Pretoria.

9 ENVIRONMENTAL AWARENESS AND TRAINING PLAN

Zaforho Management has to appoint an independent Environmental Control Officer 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 EMP 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, such as effluence, associated with the piggery 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 piggery, at least once a year, or as new information becomes available.

SECTION H: APPENDICES

Basic Assessment for the Zaforho Tracing's proposed development of a pig and vegetable production facility on Plot 78 of Jakkalsdams Farm 243 in Cullinan, Pretoria.

10 EXTRACT FROM SOUTH AFRICAN PORK PRODUCERS' ORGANISATION (SAPPO) BEST PRACTICE STANDARDS

SAPPO Training Course

Housing for small Piggeries 2

Why house pigs at all? Because:-

- It makes for better biosecurity
- It reduces parasites – mange, worms, ticks
- It allows controlled feeding
- It makes treatment easier
- It reduces theft

1

Housing for small Piggeries

Welfare aspects:
Keeping dry sows outside is often successful, provided there is plenty of space and good shelter for all.

Free range systems sound fine , but:-

- There is little disease control
- Free access to toxic plants, human excreta
- Bullying is not eliminated
- Rough stony ground, dirty wallows, Ascaris eggs
- Feeding is not controlled

2

Housing for small piggeries

Intensive housing is not all bad:-

- Individuals can be observed, treated, fed, protected individually;
- Record-keeping is much easier, so production is easily measured;
- Space is more economically used;
- All-in all-out systems become possible

3

Housing for small piggeries

Is there a practical, affordable compromise?

Consider the pig's housing needs, such as:-

- Protection from bad weather
- Protection from direct sun, and extreme temperatures
- Protection from each other
- Protection from thirst, hunger, pain, fear, injury
- Protection from mishandling by cruel or careless people

4

Housing for small piggeries

Whatever housing system is used, it can be made to work, provided that good farming practice is understood and applied.

- Be receptive to the messages that pigs are sending out all the time;
- Be aware of the pigs' needs;
- Be informed about what remedy to apply;
- Have the resources to carry out the necessary correction

5

Housing for small piggeries

Specifications for the construction of pig pens:

- It must be pig-proof;
- It should have a hard drained cleanable floor;
- It must have clear areas for sleeping, eating, dunging;
- Water must be provided in secure, clean containers in every pen: drinking nipples are best;
- Different age groups need separate pens;
- Face the pens away from the worst weather and cold winds;
- Ensure good light and ventilation

6

SECTION H: APPENDICES

Basic Assessment for the Zaforho Tracing's proposed development of a pig and vegetable production facility on Plot 78 of Jakkalsdams Farm 243 in Cullinan, Pretoria.

Housing for small piggeries

- **Some dimensions: (see sketches on p19)**
- **An all- purpose pen can be—**
- 4m by 3m i.e. 12 square metres,
- Roof will be 3m x 3m or 3m x 4m in area, sloping from back to front; height 2.5m at back, 1.65 in front;
- Where sows and piglets share the same pen, a creep area across the rear of 1m x 3m keeps sow from creep feed and piglet sleeping area;
- Floor slopes 1% to gate and drain – outside and to a pond or soak-away.

7

This all-purpose pen will accommodate any of the following:-

- 1 or 2 sows with litters (this pen will have a creep area);
 - 2 or 3 litters of weaned pigs up to 10 weeks old;
 - 4 dry sows or gilts;
 - 1 boar with a couple of sows;
 - 15 grower pigs up to 70kg live mass; or
 - 12 baconers up to 90 - 95 kg live mass
- Note: a general rule for space per pig is to allow at least 1sq m per 100 kg of live pig in closed pens; boars and sows need double or more .

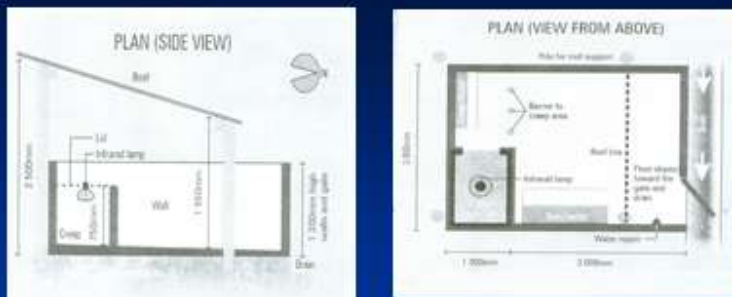
8

Housing for small piggeries

There are cheaper alternatives that are quite acceptable; using locally available materials and ingenuity can go a long way, provided that the basic specs are met.

The following pictures show some examples of inexpensive housing that has been built with an understanding of the needs of pigs of all ages; there are also some that do not meet requirements.

9



An inexpensive all-purpose pen as sketched here has been used successfully for small commercial piggeries



One version with walls – poles or pipes or even old pallets will be fine and improve control between adjacent pens.

10

SECTION F: APPENDICES

Basic Assessment for the Zaforho Tracing's proposed development of a pig and vegetable production facility on Plot 78 of Jakkalsdans Farm 243 in Cullinan, Pretoria.

BASIC ASSESSMENT REPORT

APPENDIX I: CURRICULUM VITAE of the PROJECT TEAM

CONTENTS

Annexure I: Babalwa Mqokeli (Project Manager)	2
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SECTION F: APPENDICES

Basic Assessment for the proposed development of a chicken layer facility for New Age Chicken Supply Primary Co-operative on Holding 75 Endicott near Springs in Gauteng.

Annexure I: Babalwa Mqokeli (Project Manager)



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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 3 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	Basic Assessment for the proposed development of a Solar PV Facility (Vryburg Solar 1) and associated electrical infrastructure, Vryburg, NW	Project member and GIS	Private energy company
In progress	Basic Assessment for the proposed development of a Solar PV Facility (Vryburg Solar 2) and associated electrical infrastructure, Vryburg, NW	Project member and GIS	Private energy company
In progress	Basic Assessment for the proposed development of a Solar PV Facility (Vryburg Solar 3) and associated electrical infrastructure, Vryburg, NW	Project member and GIS	Private energy company

SECTION F: APPENDICES

Basic Assessment for the proposed development of a chicken layer facility for New Age Chicken Supply Primary
Co-operative on Holding 75 Endicott near Springs in Gauteng.

In progress	Strategic Environmental Assessment (SEA) for the Phased Gas Pipeline and Expansion of Electricity Grid Infrastructure Corridors	Project member-stakeholder engagement and project support.	National Department of Environmental Affairs
In progress	Basic Assessment for the proposed development of a chicken layer facility, on Holding 75 Endicott Agricultural Holdings, Springs, Gauteng.	Project Manager and GIS	New Age Chicken Supply 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 GIS	Zaforho assisted <i>pro bono</i> under the DEA-CSIR SNSD programme.
2018	Scoping and EIA for the proposed development of a Solar PV Facility (Skeerhok PV 1), Kenhardt, NC	Project member and GIS	Private energy company
2018	Scoping and EIA for the proposed development of a Solar PV Facility (Skeerhok PV 2), Kenhardt, NC	Project member and GIS	Private energy company
2018	Scoping and EIA for the proposed development of a Solar PV Facility (Skeerhok PV 3), Kenhardt, NC	Project member and GIS	Private energy company
2018	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 GIS	IDCNKE 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 GIS	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 GIS	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 GIS	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 GIS	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

SECTION F: APPENDICES

Basic Assessment for the proposed development of a chicken layer facility for New Age Chicken Supply Primary Co-operative on Holding 75 Endicott near Springs in Gauteng.

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
- **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)

SECTION F: APPENDICES

Basic Assessment for the proposed development of a chicken layer facility for New Age Chicken Supply Primary Co-operative on Holding 75 Endicott near Springs in Gauteng.

- Technical Workshop on the Roles and Responsibilities of Environmental Control Officer, IAIAA (2016)
- CILLA Presentation Skills Course, CSIR (2016)
- 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 IAIAA 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



06 September 2018