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Final Basic Assessment Report (BAR) for Paula Poultry Abattoir, Brandfort, Masilonyana Municipality, Free State

Report prepared for

Paula Farm, Brandfort

DWS Reference Number: WU18198

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Michelle Boshoff
SM SERVICES & CONSULTING Pty Ltd
Reg. No. 2016/347600/07

Final Basic Assessment Report (BAR) for Paula Poultry Abattoir, Brandfort, Masilonyana Municipality, Free State

PREPARED FOR:

APPLICANT:

ESTAIN DE SWARDT
PAULA FARM
BRANDFORT
MASILONYANA MUNICIP0ALITY

PROJECT TITLE:

The proposed construction of a new poultry abattoir on the Farm Paula, Brandfort, Masilonyana Municipality, Free State.

COMPILED BY:

SM SERVICES & CONSULTING PTY LTD
P. O. BOX 1741
FICKSBURG
9730
FREE STATE
SOUTH AFRICA

e-mail: Michelle.Boshoff10@gmail.com
website: www.smconsult.co.za

TEL: +27 82 893 8537

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SM SERVICES & CONSULTING
WATER USE LISENCE APPLICATION AND BASIC ASSESSMENT APPLICATION

For Paula Poultry Abattoir

DOCUMENT CONTROL

Phase	Author	Status	Revision	Distributed on	Signature
Author	Michelle Boshoff	Final	01	1 February 2021	
Review	Natalie Sharp	Final	01	5 May 2021	
Approved	Michelle Boshoff	Final	02	7 May 2021	

GENERAL SITE INFORMATION

Description of all affected farm portions:	**Appendix 1**	
21-digit Surveyor General codes of all affected farm portions:	Portion 1 of Farm Paula 1063 F00600000000106300001	
Design specifications include:	Type of technology	Building structure with
	Structure height	3.5m
	Building surface area to be covered	865m^2 (exclude parking areas)
	Building layout and dimensions	Appendix 2

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Checklist: Content of BAR Report in terms of Appendix 1 of the EIA Regulations 2014

(1) A basic assessment report must contain the information that is necessary for the competent authority to consider and come to a decision on the application, and must include—

		Page / Appendix
(a) details of -		
(i)	the EAP who prepared the report; and	Appendix 3
(ii)	the expertise of the EAP, including a curriculum vitae;	Appendix 3
(b) the location of the activity; including:		
(i)	the 21 digit Surveyor General code of each cadastral land parcel;	Section 4.1.3
(ii)	where available, the physical address and farm name;	Section 4.1.2
(iii)	where the required information in items (i) and (ii) is not available, the coordinates of the boundary of the property or properties;	Section 4.1.1
(c) a plan which locates the proposed activity or activities applied for as well as associated structures and infrastructure at an appropriate scale; or, if it is		
(i)	a linear activity, a description and coordinates of the corridor in which the proposed activity or activities is to be undertaken; or	N/A
(ii)	on land where the property has not been defined, the coordinates within which the activity is to be undertaken	Section 4.2.2 Section 4.1.1
(d) a description of the scope of the proposed activity, including—		
(i)	all listed and specified activities triggered and being applied for; and	Section 3.2

(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—**	
(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 3.2
(ii)	how the proposed activity complies with and responds to the legislation and policy context, plans, guidelines, tools frameworks, and instruments;	Section 3.8
(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 3.4
(g)	**a motivation for the preferred site, activity and technology alternative**	Section 4.3.2 Section 6.2.2
(h)	**a full description of the process followed to reach the proposed preferred alternative within the site, including—**	Section 4.3
(i)	details of all the alternatives considered;	Section 4.3
(ii)	details of the public participation process undertaken in terms of regulation 41 of the Regulations, including copies of the supporting documents and inputs;	Section 8 Appendix 8
(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;	TBD
(iv)	the environmental attributes associated with the alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects;	Section 5
(v)	(v) the impacts and risks identified for each alternative, including the nature, significance, consequence, extent,	Section 6.2 Appendix 6

	duration and probability of the impacts, including the degree to which these impacts—	
	(aa) can be reversed;	
	(bb) may cause irreplaceable loss of resources; and	
	(cc) can be avoided, managed or mitigated;	
(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;	Section 6.2.2
(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;	Section 7.1
(viii)	the possible mitigation measures that could be applied and level of residual risk;	Appendix 10
(ix)	the outcome of the site selection matrix	Section 6.2.2
(x)	if no alternatives, including alternative locations for the activity were investigated, the motivation for not considering such; and	N/A
(xi)	a concluding statement indicating the preferred alternatives, including preferred location of the activity;	Section 9
(i) a full description of the process undertaken to identify, assess and rank the impacts the activity will impose on the preferred location through the life of the activity, including—		
(i)	a description of all environmental issues and risks that were identified during the environmental impact assessment process; and	Appendix 10
(ii)	an assessment of the significance of each issue and risk and an indication of the extent to which the issue and risk	Appendix 6

	could be avoided or addressed by the adoption of mitigation measures;	
(j)	**an assessment of each identified potentially significant impact and risk, including—**	
(i)	cumulative impacts;	Appendix 6
(ii)	(ii) the nature, significance and consequences of the impact and risk;	Appendix 6
(iii)	the extent and duration of the impact and risk;	Appendix 6
(iv)	(iv) the probability of the impact and risk occurring;	Appendix 6
(v)	the degree to which the impact and risk can be reversed;	Appendix 6
(vi)	the degree to which the impact and risk may cause irreplaceable loss of resources; and	Appendix 6
(vii)	the degree to which the impact and risk can be avoided, managed or mitigated;	Appendix 10
(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;**	
(l)	**an environmental impact statement which contains—**	
(i)	a summary of the key findings of the environmental impact assessment;	Section 9
(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	Section 5.3 Section 5.4 Section 5.5
(iii)	a summary of the positive and negative impacts and risks of the proposed activity and identified alternatives;	Section 7.1

(m) based on the assessment, and where applicable, impact management measures from specialist reports, the recording of the proposed impact management outcomes for the development for inclusion in the EMPr;	Appendix 4 Appendix 5
(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 10
(o) a description of any assumptions, uncertainties, and gaps in knowledge which relate to the assessment and mitigation measures proposed;	Section 3.5
(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;	Section 9
(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;	Appendix 3
(ii) the inclusion of comments and inputs from stakeholders and I&APs;	Appendix 3
(iii) the inclusion of inputs and recommendations from the specialist reports where relevant; and	Appendix 3
(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 3
(s) where applicable, details of any financial provision for the rehabilitation, closure, and ongoing post	N/A

decommissioning management of negative environmental impacts;	
(t) any specific information that may be required by the competent authority; and	TBD
(u) any other matters required in terms of section 24(4)(a) and (b) of the Act.	**N/A**

Where a government notice gazetted by the Minister provides for the basic assessment process to be followed, the requirements as indicated in such a notice will apply.

Project Manager – Michelle Boshoff

SM Services and Consulting (Pty) Ltd

P. O. Box 1741, Ficksburg, 9730

Phone / WhatsApp: 082 893 8537

Email: Michelle.Boshoff10@gmail.com

1. EXECUTIVE SUMMARY

The project proponent, Mr. Estian de Swart has appointed SM Services and Consulting Pty Ltd as the Environmental Assessment Practitioner (EAP) to undertake an application for a Basic Assessment and a water use license.

The required environmental impact assessment (Basic Assessment Report) (BAR) was conducted in terms of the Environmental Impact Assessment Regulations, 2014, promulgated in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended, for the proposed construction of an abattoir on the Farm Paula. Concurrent to the BAR, an application for a water use license (WULA) in terms of Section 21 and associated activities has been be launched to meet the requirements of the National Water Act, 1998 (Act No 36 of 1998)(NWA). As no solid waste is expected to be disposed of, as all products from the abattoir is anticipated to be used – no application will be made in terms of a waste permit.

The Farm Paula is an existing agricultural producer on the outskirts of the town Brandfort, in the Free State. The property is situated upslope of a seasonal tributary to the Modder River within the C52G quaternary catchment. There are existing chicken/poultry houses on-site and Mr. de Swardt has been breeding and selling live chickens the last few years. He now wishes to extent the operation to include the processing of the chickens further. This application is for the construction of a Poultry Abattoir for the processing of chickens (± 800 per day) on the Farm Paula.

2. GLOSSARY

Abbreviation	Meaning
BA	Basic Assessment
BAR	Basic Assessment Report
BID	Background Information Document
CA	Competent Authority
CV	Curriculum Vitae
DESTEA	Free State Department: Economic, Small Business Development, Tourism and Environmental Affairs
EA	Environmental Authorisation
EAP	Environmental Assessment Practitioner
EAPs	Environmental Assessment Practitioners
ECO	Environmental Control Officer
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
EMPr	Environmental Management Programme
ERAP	Emergency Response Plan
ESA	Ecological Support Area
HSSE	Health, Security, Safety and Environment
I&AP	Interested and Affected Party
I&AP's	Interested and Affected Parties
IDP	Integrated Development Plan
NWA	National Water Act (Act 36 of 1998)
NEMA	National Environmental Management Act (Act 107 of 1998)

NEMWA	National Environmental Management: Waste Act (Act 59 of 2008)
NHRA	National Heritage Resources Act (Act 25 of 1999)
PPP	Public Participation Process
SACNASP	South African Council for Natural Scientific Professions
SANS	South African National Standards
SAHRA	South African Heritage Resources Agency
SAHRIS	South African Heritage Resources Information System
SMMEs	Small Medium and Micro Enterprises
SDF	Spatial Development Framework
TOR	Terms of Reference

3. INTRODUCTION

3.1 Background Information

SM Services and Consulting (Pty) Ltd has been appointed as the independent Environmental Assessment Practitioner **(EAP Reg No 2020/714)** responsible for facilitating the legally required Environmental Authorisation (EA) for Paula Poultry Abattoir.

Paula Farm is a family owned agricultural holding, located on the outskirts of the town Brandfort, in the Lejweleputswa District, Masilonyana Local Municipal area, Free State (Co-ordinates: 28° 48.088’S; 26° 17.699'E) which is 91 hectares in size. The current site is an active agricultural area whereby crops are planted, irrigations is applied and small-scale animal farming, including sheep and chickens. The applicant wishes to supplement the current poultry farming by adding a poultry abattoir facility and to expand on the current chicken houses. For this, he requires environmental authorisation (EA) for the facilities.

3.2 Terms of Reference

In terms of the National Environmental Management Act (Act 107 of 1998), the proposed project requires a Basic Assessment (BA) process in terms of the NEMA EIA Regulations 2014. The BA will be submitted to the Free State Department: Economic, Small Business Development, Tourism and Environmental Affairs (DESTEA) for the environmental authorisation.

SM Services and Consulting (Pty) Ltd has been appointed as the independent Environmental Assessment Practitioner (EAP) **(EAP Reg No 2020/714)** by the applicant and will therefore be responsible for the Basic Assessment procedures concerned with the proposed development.

In terms of the NEMA EIA Regulations published in GNR 326 2014, the listed activities shown in Table 1 are and activities listed in the National Water Act (Act 36 of 1998) are shown in Table 2 which are triggered by the proposed project.

Table 1: List of activities that are triggered by the proposed project in terms of NEMA.

Relevant Notice:	Activity No (s) (in terms of the relevant notice):	Description of each listed activity as per the Government Notice:
*GNR 326, as amended on 4 December 2014	3(i)	The development and related operation of facilities or infrastructure for the slaughter of animals with a product throughput of poultry exceeding 50 poultry per day
*GNR 326, as amended on 4 December 2014	40 (ii)	The expansion and related operation of facilities for the concentration of poultry, excluding chicks younger than 20 days, where the capacity of the facility will be increased by (ii) more than 5000 poultry per facility situated outside an urban area in an agricultural land.

**Activities and listed in in terms of the EIA Regulations 2014 as amended on 4 December 2014.*

Table 2: List of activities triggered by the National Water Act (Act 36 of 1998)

Relevant Section:	Activity No (s) (in terms of the relevant notice):	Description of each listed activity as per the Government Notice:
NWA Section 21	21 (e)	Engaging in a controlled activity as identified in Section 37(1) or declared under S38(1)
NWA Section 21	21 (f)	Discharging waste or water containing waste into a water resource though a pipe, canal, sewer or any other conduit
NWA Section 21	21 (g)	Disposing of waste in manner which may detrimentally impact on a water resource

3.3 Approach and Methodology

The overall approach to this assignment included the following activities:

- Apply for Environmental Authorisation to the Department regarding the proposed construction and operation of a poultry abattoir on the Farm Paula. As well as to the Department of Water & Sanitation for the required water use license.
- A detailed analysis of the proposed development, the area where it will take place, and the identification of potential impacts.
- All legislative requirements in terms of the EIA Regulations and National Water Act (Act 36 of 1998) and to provide the relevant Departments with sufficient information to take a decision regarding the development.

3.4 Need and Desirability

The project will supplement the current agricultural activities and work on the Farm Paula. It will also allow for additional skills development for current and additional staff. The proposed development is in line with the development and economic growth requirements of the Masilonyana IDP.

Previously the applicant had to drive at least twice a week to Bloemfontein to have his chickens slaughtered. By having an abattoir onsite, it will reduce travel requirements, and ultimately carbon emissions.

The proposed development will contribute to the economic growth in the area as additional income is expected from the selling of the various meat products and fertilizer. This approach confirms to the generally accepted principle of sustainable development.

3.5 Assumptions and Limitations

This section provides a brief overview of specific assumptions and limitations having an impact on this environmental application process:

- The assumption is made that the information on which this report is based (relevant specialist studies and project information, as well as existing information) is **correct, factual and truthful**.
- It is assumed that all the relevant **mitigation measures** and agreements specified in this report will be implemented to ensure minimal negative impacts and maximum environmental benefits.

This impact assessment was undertaken with full knowledge of the above assumptions and cognizance was taken of the limitations as specified.

3.6 Objectives of the Basic Assessment Process

The objective of the basic assessment process is to, through a consultative process:

a) Determine the policy and legislative context within which the proposed activity is located and how the activity complies with and responds to the policy and legislative context;
b) Identify the alternatives considered, including activity, location, and technology alternatives;
c) Describe the need and desirability of the proposed alternatives.
d) Through the undertaking of an impact and risk assessment inclusive of cumulative impacts which focused on determining the geographical, physical, biological, social, economic, heritage and cultural sensitivity of the sites and locations within sites and the risk impact of the proposed activity and technology alternatives on these aspects to determine –
    a. The nature, significance, consequence, extent, duration and probability of the impacts occurring to, and
    b. The degree to which these impacts –
        i. can be reversed;
        ii. may cause irreplaceable loss of resources; and
        iii. can be avoided, managed or mitigated.

e) Through a ranking of the site sensitivity and possible impacts the activity and technology alternatives will impose on the sites and location identified through the life of the activity to-
    a. Identify and motivate a preferred site, activity and technology alternative;
    b. Identify suitable measures to avoid, manage or mitigate identified impacts, and
    c. Identify residual risks that need to managed and monitored.

3.7 Report Structure

The report is structured as follows:

Section 4 consists of a summary **description of the proposed activity**.

Section 5 provides **a description of the environment that may be affected by the activity**.

Section 6 consists of a summary of the potential **impacts of the proposed activity on the environment**.

Section 7 describes the **Environmental Impact Statement and Need & Desirability**

Section 8 describes the **public participation** process conducted during the scoping phase.

Section 9 provides a **summary of the recommendations**.

Supporting documents, reports correspondences and other relevant information are contained in various Appendixes attached to this report.

3.8 Legislative Framework

The environmental assessment has been undertaken in terms of the **National Environmental Management Act** (NEMA Act 107 of 1998) and the (NEMA EIA) Regulations, 2014. This Act makes provision for the **identification and assessment** of activities that are potentially detrimental to the environment and which require authorisation from the designated competent authority based on the findings of an **Environmental Impact Assessment**.

NEMA is a National Act which is enforced by the national Department of Environmental Affairs (DEA), who has delegated the authority to the Provincial Department of Economic,

Small Business Development, Tourism and Environmental Affairs (DESTEA) as the competent Authority.

The establishment of an abattoir is triggered as a listed activity that requires the drafting and submitting of a Basic Assessment for Environmental Authorisation. The assessment must be conducted and reported on by an independent environmental assessment practitioner (EAP).

The environmental requirements below are not intended to be definitive or exhaustive but serve to highlight key environmental legislation and responsibilities only.

3.8.1 The National Constitution

The **National Constitution (Act 108 of 1996)** is the supreme law of the Republic of South Africa. It is the logical point of departure of any exploration of the maze of statutory provisions hat apply within environmental protection and land use management context. It *inter alia* confirms that everyone has the right to an environment that is not harmful to their health and well-being and to have the environment protected for the benefit of present and future generations. It also stipulates, as an objective of local government, that it should promote social and economic development and it enjoins the public administration to be development orientated. In other words, a balanced approach is envisaged to matters of this nature.

The National Constitution states that the Republic is a democratic state founded on stipulated values. Those values include the supremacy of the Constitution and the rule of law. The rule of law basically requires the state to act in accordance with the law. This in turn means that the state can only exercise power to the extent permitted by law and that it must obey the law like everyone else in the country. It is therefore necessary to briefly refer to some of the other statutory provisions that apply in addition to the National Constitution in respect of the activity under investigation.

3.8.2 National Environmental Management Act (Act 107 of 1998)

NEMA makes provision for the identification and assessment of activities that are potentially detrimental of the environment and which require authorisation from the relevant authorities based on the findings of an environmental assessment.

According to the regulations of Section 24(5) of NEMA, authorisation is required for the following Government Notice **R 326** (Basic Assessment) listed activities of 4 December 2014. Please refer to Table 1: List of activities that are triggered by the proposed project in terms of NEMA..

An application for Environmental Authorisation must be submitted to the Free State Department of Economic, Small Business Development, Tourism and Environmental Affairs (DESTEA) as the competent Authority.

3.8.3 National Environmental Management: Biodiversity Act (Act 10 of 2004) (NEMBA)

This Act controls the management and conservation of South Africa's biodiversity within the framework of NEMA. Amongst others, it deals with the protection of species and ecosystems that warrant national protection, as well as the sustainable use of indigenous biological resources. Sections 52 & 53 of this Act specifically make provision for the protection of critically endangered, endangered, vulnerable and protected ecosystems that have undergone, or have a risk of undergoing, significant degradation of ecological structure, function or composition as a result of human intervention through threatening processes.

The National List of Threatened Ecosystems (Notice 1477 of 2009, Government Gazette No 32689, 6 November 2009) was gazetted in 2014. The list of threatened terrestrial ecosystems supersedes the information regarding terrestrial ecosystem status in the National Spatial Biodiversity Assessment (NSBA) 2004 & 2011.

In the case of Paula Farm 1063, Brandfort, the entire property is developed agricultural land and has been significantly transformed by historical agricultural practices and as such this Act has very limited applicability. As a result, a terrestrial biodiversity assessment was undertaken.

3.8.4 National Environmental Management: Waste Act (NEM:WA, Act 59 of 2008)

NEM:WA deals with the handling, depositing, treatment, processing, recycling, re-use and/or storage of both 'general' and 'hazardous' waste products. This Act was assented by the President on 10 March 2009 and enacted on 3 July 2009. Subsequently all waste related activities are omitted from NEMA and must be authorised in terms of NEM:WA.

The proposed facility produces no hazardous waste, only general waste and animal manure. It has been confirmed that waste items that are re-used as a different primary product are considered to be '*by-products'* and not waste. With relation to the Paula Poultry Abattoir none of the general waste, by-products, or animal manure generated by the facility fall within the threshold of NEM:WA listed activities:

- All **general waste**[1] products such as offal, hides / skins and blood are re-used as by-products namely food, clothing and fertilizer purposes to name a few. It is

[1] *As defines in NEM:WA – "General waste" means waste that does not pose an immediate hazard or threat to health or to the environment, and includes (a) domestic waste, (b) building and demolition waste, (c) business waste , and (d) inert waste.*

anticipated that current and future general waste will be taken to town (Brandfort) and disposed at the town's municipal general waste site. Solid waste like building rubble will primarily be used in the foundation of the new abattoir and excess rubble will be disposed of at the town's municipal waste site.

- Currently about 0.5 ton of manure is produced on a monthly basis and it is anticipated that about 1 ton of manure will be produced per month (should the project proceed). Manure is being used in the farming operations by fertilizing the soils for crop production. Manure is temporarily stored in an area close to the chicken houses and then used in the soil fertilization process. Any excess oval material (if any) such as the lower intestines that contain fecal matter (**animal manure**[2]) will be disposed of at a confirmed municipal site not exceeding 500kgs per working day.

  It is anticipated that most parts of the chickens will be sold. Feet, heads, hearts, liver and stomacks will be cleaned, packed and sold. Bones will be dried and crushed as feed. Blood and waste water will be sent to a treatment tank and used as fertilizer after treatment. A separate disposal permit from the Department of Water and Sanitation has been applied for. Feathers will be buried and left for decomposition.

In terms of NEM:WA, a waste License is thus **not** required as the general waste is *re-used* as by-products and the *disposal* of the animal manure matter is not listed.

3.8.5 National Environmental Management Laws Amendment Act (Act 25 of 2004)

The National Environmental Management Laws Amendment Act (Act 25 of 2004) makes provision for amendments to current NEMA legislation and regulations and must be read in conjunction with NEMA and any other relevant environmental laws.

3.8.6 Environmental Conservation Act, 1989 (ECA)

The EIA regulations contained in the Environmental Conservation Act (ECA) have been replaced by NEMA. However, property owners must comply with the draft regulations pertaining to noise as published in Section 25 of the ECA, as well as Section 24 of the ECA regarding waste management and Section 20 of the ECA dealing with waste management.

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[2] *The NEM:WA activity relating to animal manure refers specifically to the "storage, treatment or processing of animal manure at a facility with a capacity to process in excess of one ton per day". Disposal of animal manure matter is not listed.*

3.8.7 National Environmental Management: Air Quality Act 2004 (Act 39 of 2004) NEM:AQ

The purpose of the Act is to protect the environment by providing reasonable measures for the "prevention of pollution and ecological degradation and for securing ecologically sustainable development while promoting justifiable economic and social development; to prove for national norms and standards regulating air quality monitoring, management and control by all sphere of government; for specific air quality measures; and for matters incidental to.

Section 35(2) of the Act is of potential relevance. It specifies that "the occupier of any premises must take all reasonable steps to prevent the emission of any offensive odour caused by any activity on such premises". Due to the remote locality of the site, the impact that might arise as a result of the development is regarded as non-significant.

3.8.8 National Water Act (Act 36 of 1998) (NWA)

The National Government is responsible for the equitable allocation and use of the scarce and unevenly distributed water resources of the nation. The aim of water resource management is to ensure the sustainable use of water through the protection of the quality of water resources for the benefit of all water users. There is a need for the integrated management of all aspects of water resources and the delegation of management functions to a regional or catchment level where appropriate, to enable everyone to participate.

Sections 5 to 7 provide the framework for the protection, use, development, conservation, management and control of water resources for the country. Section 3 promotes the protection of water resources related to their use, development, conservation, management and control. Specific waste uses The National Government has overall responsibility for and authority over water resource management. This includes the equitable allocation and beneficial use of water in the public interest. Therefore, a person can only be entitled to use water if the use is permissible under the Act. Section 4 makes provision for listed activities whereby authorisation from the Department of Water and Sanitation need to provide authorisation for.

3.8.9 National Heritage Resources Act (Act 25 of 1999)

Heritage Resources are those resources, both human and natural, created by activities from the past that remain to inform present and future societies of that past. The South African Heritage Resources Agency (SAHRA) is a statutory organisation established in terms of the National Heritage Resources Act (No. 25 of 1999) as the national body responsible for the protection of South Africa's cultural heritage resources.

SARHA maintains a list of national and provincial heritage sites in South Africa, as declared by them and the nine provincial heritage resources authorities. The list is maintained by SAHRA by means of an online, publicly accessible database, the South African Heritage Resources Information System (SAHRIS), that also serves as an integrated national heritage resources management tool. Should any artifacts be uncovered and be regarded as historical cultural / heritage significant, a permit must be obtained from SARHA.

3.8.10 Meat Safety Act (Act 40 of 2000)

The Act aims to provide measures to promote meat safety of animal products. It also aim to establish and maintain essential national standards in respect of abattoirs. The Act regulate the importation and exportation of meat and establish meat safety schemes.

The Act further ensures that any meat product designated for public consumption must be slaughtered as a registered facility. The facility must comply with the health and safety standards provided for in the Act. The Act also provides guidelines to determine the grading of facilities.

3.8.11 Poultry Regulations (GN 153 of 2006)

The Poultry Regulations were promulgated by the Minister of Agriculture in terms of Section 22 of the Meat Safety Act. The purpose of the Regulations is *inter alia* to provide for measures to promote poultry meat safety and the safety of poultry products. The Regulations establish and maintain essential national standards in respect of poultry abattoirs. It also refers to meat safety schemes. The Regulations came into effect on 24 February 2006.

3.8.12 Animal Diseases Act (Act 3 of 1984)

This Act is of importance since the Regulations were amended on 13 November 2009 by Regulation 1059. The amendment covers the use of protein from ruminant origins (excluding milk and milk products) and their disposal. This has a direct effect on the manufacturing of blood and bone meal. Part of the onsite monitoring by the veterinary public health official is to ensure that bio security within the abattoir is maintained.

3.8.13 Animal Protection Act (Act 71 of 1962)

This Act pertains to the slaughtering requirements and specifications for the transportation, bleeding, stunning and lairage of animals in confined areas. The building plans and throughput certificates issued to abattoirs take these into account.

3.8.14 Occupational Health and Safety Act (Act 85 of 1993)

The Act provides for health and safety to persons at work and for the health and safety of persons in connection with the use of plant and machinery; the protection of persons other than persons at work against hazards to health and safety arising out of or in connection with the activities of persons of work.

In terms of this Act, a Health and Safety Officer and Protocol must be implemented on the site. The appointment of a Health and Safety Officer (HSO)is the responsibility of the applicant/proponent and contractor and is included in this report to ensure due diligence on construction sites. It is the responsibility of the appointed of HSO) to conduct any required audits and as such only the appointment of an OHS will be auditable in terms of this document.

3.8.15 National Building Regulations

The National Building Regulations and Building Standards Act set out the requirements for abattoir and address the following, *inter alia*:

- Specifications for draftsmen, plans, documents and diagrams;
- Approval by local authorities;
- Appeal procedures;
- Prohibition or conditions with regard to erection of buildings in certain conditions;
- Demolition of buildings;
- Access to building control officers;
- Regulations and directives and
- Liability

4. DESCRIPTION OF THE PROPOSED ACTIVITY

4.1. Project Location

4.1.1 Co-ordinates

The outside figure co-ordinates for the proposed activity are illustrated in the layout (Figure 1) and in Table 3: Outside boundaries for the Farm Paula. The location of the proposed alternatives are located in Table 4: Location of alternative sites for the proposed development

Table 3: Outside boundaries for the Farm Paula

Site	Co-ordinates	
Corner 1	28˚47'34,25" S	26˚18'9.59 E
Corner 2	28˚47'45.04" S	26˚18'19.89" E
Corner 3	28˚48'30.15" S	26˚17'36.26" E
Corner 4	28˚47'58.98" S	26˚17'34.40" E

Table 4: Location of alternative sites for the proposed development

Site	Co-ordinates	
Alternative 1	28˚48'5.62" S	26˚17'41.80 E
Alternative 2	28˚48'4.87" S	26˚17'44.50" E
Alternative 3	28˚48'13.53" S	26˚17'45.90" E
Alternative 4	28˚47'46.72" S	26˚18'3.88" E
Alternative 5[1]	28˚48'7.53" S	26˚17'44.29" E

Note 1: Alternative 5 has been selected as the preferred site for the abattoir development.

4.1.2 Farm Name

Portion 1 of Farm Paula 1063

4.1.3 21 Digit Surveyor General

SG ID: F00600000000106300001

4.2 Activity Description

4.2.1 Extent of Development

The total extent of the development is approximately 995m^2. This include the abattoir building, the additional chicken houses and parking/delivery areas.

4.2.2 Description of the Proposed Activity

Paula Farm is a chicken farming and agricultural holding located on a 90-hectare farm. The property is currently zoned as agricultural land and the current land use is agricultural. The site for the project falls within an area designated as being for agricultural purposes in the Integrated Development Plan (IDP) of Lejweleputswa 2016/2017[3]. The proposed development is therefore compatible with the IDP's of both Lejweleputswa District Municipality and Masilonyana Local Municipality.

[3] *Lejweleputswa District Municipality Integrated Development Plan (IDP) of 2016/2017*

The Farm Paula has an existing lawful water use under section 35(4) of the National Water Act, 1998 (Act 36 of 1998), register number 23094688 on 1 November 2014 for abstraction for agricultural purposes from the boreholes.

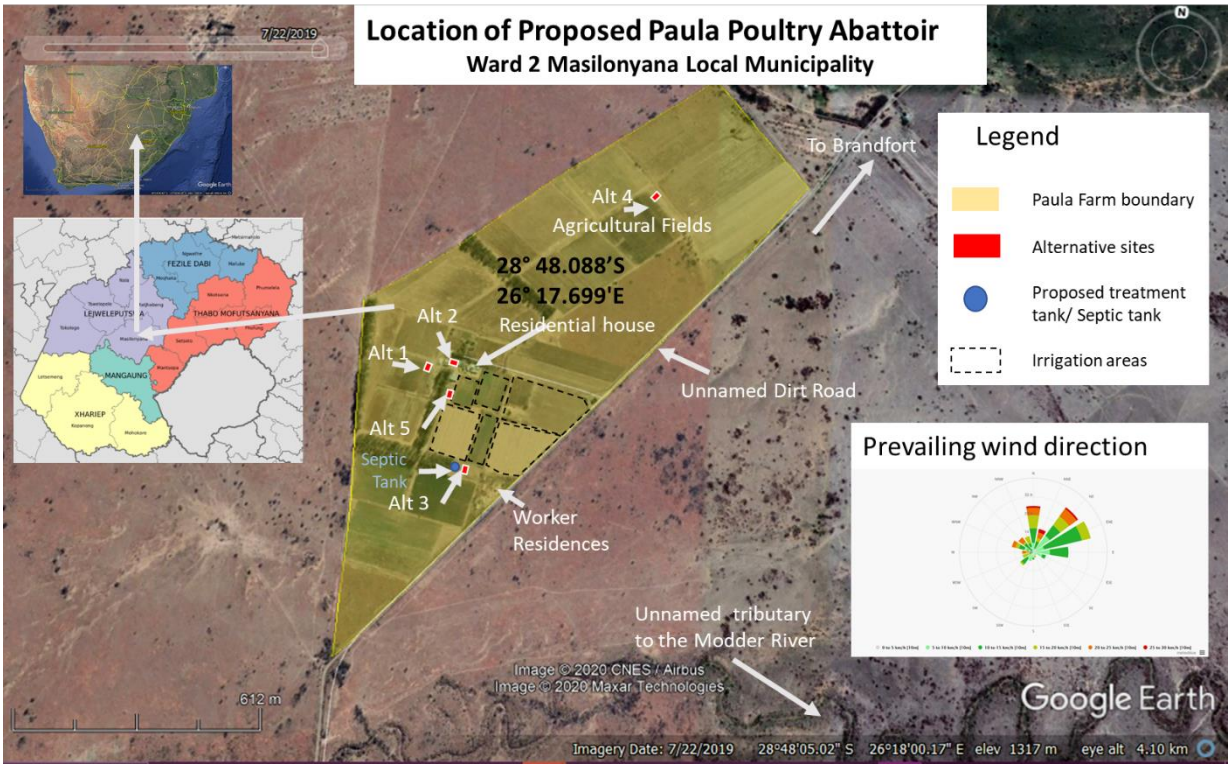


Figure 1: Location of Paula Farm and the proposed abattoir.

The farm has been extensively used for agricultural activities in the past and current activities include sheep farming and food production (maize, beans, etc). Some agricultural fields are under irrigation. Please refer to Figure 2 to see agricultural activities since 2001 on the farm.

Figure 2: Timeline of development on the Farm Paula from 2001 till 2019

The abattoir will be located within the farm boundaries and will be approximately 27,3m X 6,4m. It will also have two ablution facilities - one for women and one for men. It is

anticipated that 800 chickens per day will be slaughtered and prepared for the market. Waste streams will be limited to effluent (containing predominantly blood) and feathers. Mortalities will be buried or burnt in a controlled manner via a steel drum and ashes will be used in the soil fertilization process.

Effluent will be treated in a septic tank system and be utilized for irrigation on the farm. Feathers will be buried and covered for natural breakdown. It is anticipated that most of the chicken parts will be process and packaged for the market to sell.

The facility will be inspected on a regular basis. Should diseased chickens be noticed, the local Health and Safety Inspector will be contacted immediately and chickens will be managed in accordance to the Health Inspector's advise. It is anticipated that most parts of the chickens will be sold. Feet, heads, hearts, liver and stomacks will be cleaned, packed and sold. Bones will be dried and crushed as feed. Blood and waste water will be sent to a treatment tank and used as fertilizer after treatment. A separate disposal permit from the Department of Water and Sanitation has been applied for. Feathers will be buried and left for decomposition.

This project is considered as an economic growth and upliftment project that will provide 12 to 17 initial job opportunities to the local community in Masilonyana Municipality. The project is in line with the Integrated Development Plan (IDP) of 2016/2017[4] and the Comprehensive Rural Development Program (CRDP) of 2006 for the area that promote livestock farming and associated value chain development.

Paula Farm currently has infrastructure that can accommodate 5000 broiler chickens and plans to expand to more chicken broiler houses in the future. The chicken facility currently has two 225m^2 chicken houses (2500 chickens per house). Each chicken house has a footprint of approximately 225m^2. The facility is also proposing an office and processing facility (Abattoir) unit of 27.5m x 15m.

The applicant is proposing an additional two 225m^2 chicken houses (with approximately 2500 chickens in each house), one waste site for chicken manure of approximately 130m^2, office and a processing facility (Abattoir) of approximately 415m^2. Please refer to Figure 3 for the layout of the abattoir.

[4] *Masilonyana Municipality Integrated Development Plan (IDP) of 2016/2017*

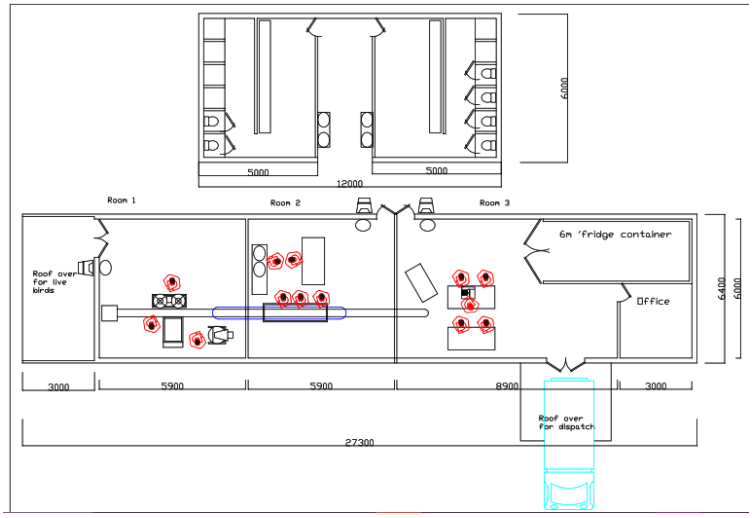


Figure 3: Layout Plan for the Abattoir

The total footprint of the proposed facilities is therefore approximately 995m^2 (0.9 hectares). No clearing between these facilities will be required as it is anticipated that facilities will be located within disturbed areas that has previously been cleared during the agricultural activities on the farm.

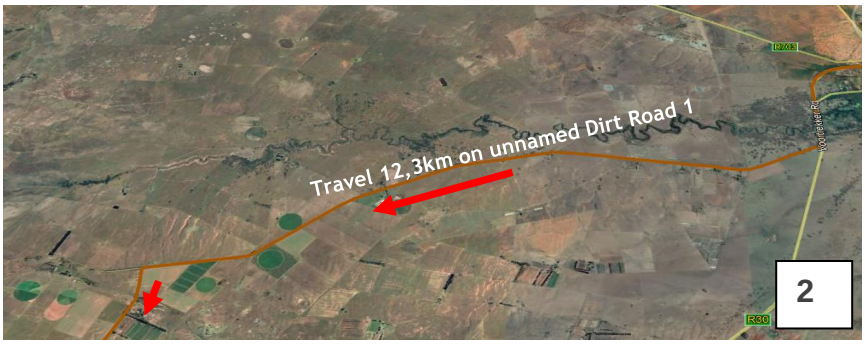
The proposed activity will be situated on the Farm Paula, that is an existing working farm with existing electricity and water supply. Five sites on the farm has been identified as possible areas to construct and operate the abattoir. **Alternative 5** has been selected as the preferred area to construct the Abattoir and **Alternative 1** as the preferred location for the chicken houses. More will be discussed in the section dealing with alternatives.

4.2.3 Access to the Site

The site is located on an unnamed dirt road south west of Brandfort. Take the R703 (Voortrekker Road) and exit Brandfort on the west side. Travel 1.16km towards the R30 road and turn right (westwards) onto unnamed Dirt Road 1.

Continue straight on the dirt road (Dirt Road 1) for 12.3km and turn left (southwards) onto another dirt road (Dirt Road 2) Travel

for 5.73km. Paula Farm will be located on the right.



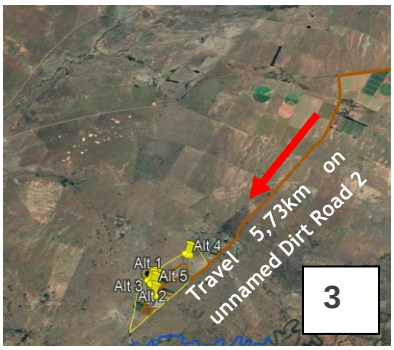


Figure 4: Access to site from Brandfort Town

Photograph 4-1: Site photos including map of photo direction

4.2.4 Existing Situation

Currently there are various outbuildings (including residential, workers, storage and chicken houses) and associated infrastructure present on the property. The whole farm is under agricultural development with irrigation fields and crop plants. The existing state of the environment consists mainly of ploughed lands, sparse grasses and old foundations. Photograph 4-1 illustrates the current floral and faunal characteristics of the site.

4.3 Consideration of Alternatives

Alternatives are seen as different means of meeting the general purpose and need of a proposed activity. Alternatives could include, amongst others the following:

- Activity Alternatives: This requires a change in the nature of the proposed activity. This alternative is most appropriate at a strategic decision-making level.
- Location Alternatives: Alternative locations for the entire project proposal, of for components of the project proposal.
- Layout Alternatives: This alternative allows different spatial configurations of an activity on a specific site.
- Scheduling Alternatives: also refer to alternative phasing options for the development. This alternative considers different phasing options during the implementation of the development.
- Infrastructure / Input Alternatives: Also referred to as technological or equipment alternatives. This option considers various alternatives that will result in the same end result.

Location and Scheduling alternatives are most pertinent to this EIA process, however all the above-mentioned alternatives are briefly explored in the subsections below as well as the alternative of maintaining the status quo, commonly known as the “no-go” option.

4.3.1 Activity Alternatives

The only other activity alternative considered is that of proposing a red meat abattoir. However, the demand for chicken is greater in the region, hence the applicant’s keen interest to expand the current chicken houses. The construction of a red meat abattoir would effectively require the same impact assessment and therefore was not investigated further.

4.3.2 Location Alternatives

Figure 5: Proposed alternative locations for the poultry abattoir

Five alternative sites (Alt 1, Alt 2, Alt 3, Alt 4 and Alt 5) on the property Paula Farm were considered for the location of the poultry abattoir during the impact assessment. A environmental assessment nd risk assessment on each alternative site was undertaken. Please refer to section 6.2.1 (Determination of the Nature of the Impact & Classification) for more details on the assessment. The various locations can be seen in in Figure 5.

All the alternative sites are located within disturbed agricultural areas that have been in use and is still in use.

Alternative 4 (Alt 4) is located to the north of the property. There is a borehole located near the site, but electricity supply is limited and will require significant financial investment and infrastructure installation to upgrade to provide power supply for the proposed abattoir. For this reason, Alternative 4 (Alt 4) is rejected since it is located far from infrastructure that will be sufficient to run the abattoir.

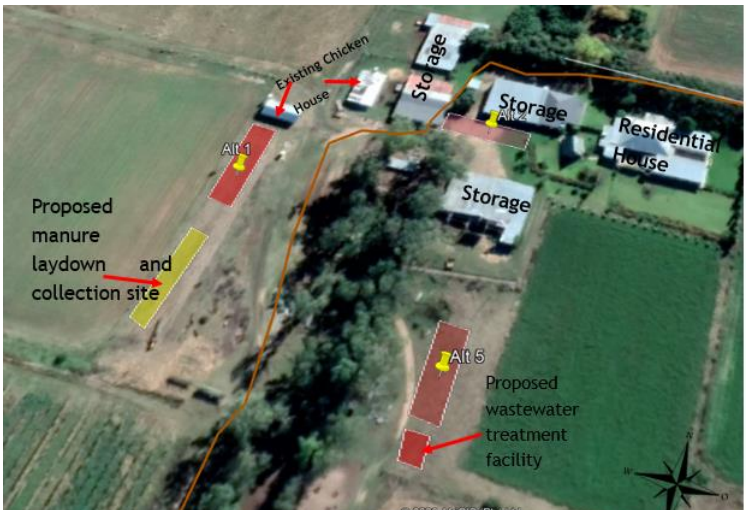


Figure 6: Zoomed in aerial photo of Sites 1, 2 & 5

Alternatives 1, 2, 3 & 5 is located closer to the main buildings and existing infrastructure. Alternative 1 (Alt 1) is located adjacent to existing chicken houses.

It is proposed that the additional chicken houses are constructed at Alternative 1 (Alt 1) to align the chicken houses and enable the applicant to contain all the houses in one area for security reasons as well as for hygienic / cleaning purposes on a regular basis. Alternative 1 site is already disturbed due to agricultural activities and is located adjacent to existing chicken houses. It is proposed that the new chicken houses are located adjacent to the current chicken houses to minimize the disturbed areas and to connect to existing infrastructure. **Alternative 1 (Alt 1) is thus recommended for development for construction of additional chicken houses.**

Figure 7: Photo of Alternative Site 1

Alternative 2 (Alt 2) is located adjacent to the existing storage shed and residential house. **Alternative 2 is not recommended** to be used due to the close proximity of the residential house and limited space to house chickens awaiting the slaughter.

Figure 8: Photo of Alternative Site 2

Figure 9: Photo of Alternative Site 3

Alternative 3 (Alt 3) is located to the south of the farm and has been considered. However, it was noted that significant infrastructure construction will be required to establish the development. Pipelines and electrical infrastructure still need to be installed (with associated financial and environmental impacts). The site is also close to the worker houses/accommodation. The close proximity may cause potential health issues and noise nuisance for the residents in the worker houses. For this reason this option was rejected. **Alternative 3 (Alt 3) is thus not recommended**.

Figure 10: Photo of Alternative Site 4

Alternative 4 (Alt 4) is located to the north of the site. There is a borehole located in proximity of the proposed site. But infrastructure is limited. The site is located far from the irrigated crops and pipelines will need to be installed. There is also concern for theft and break-in's as the area is isolated and far

from the main buildings. **Alternative 4 (Alt 4) is thus not recommended.**

Figure 11: Photo of Alternative Site 5

The location of Alternative 5 (Alt 5) is near the agricultural crops that is under irrigation. It is anticipated that the wastewater from the poultry abattoir will be utilized for irrigation once it has been treated. Alt 5 is also close to other infrastructure and can be included within the main building complex area to limit disturbance to other areas. **Alternative 5 (Alt 5) is thus recommended for development for construction of the abattoir, associated infrastructure and the wastewater treatment facility.**

Table 5: Location Alternative Recommendations

Alternative	Rejected	Preferred Site
Alternative 1 (Alt 1)		Preferred for development of chicken houses
Alternative 2 (Alt 2)	X	
Alternative 3 (Alt 3)	X	
Alternative 4 (Alt 4)	X	
Alternative 5 (Alt 5)		Preferred for Abattoir, offices and wastewater treatment

4.3.3 Layout Alternatives

The proposed design and layout of the proposed development is done in a way to minimize the potential impacts on the environment. Therefore no alternative layouts have been proposed as the current layout There are no design or layout alternatives being proposed as the current and preferred layout will be located on transformed land and

conforms to the current standards[5][6] required for a poultry abattoir and the processing of the products. Please see the proposed layout below.

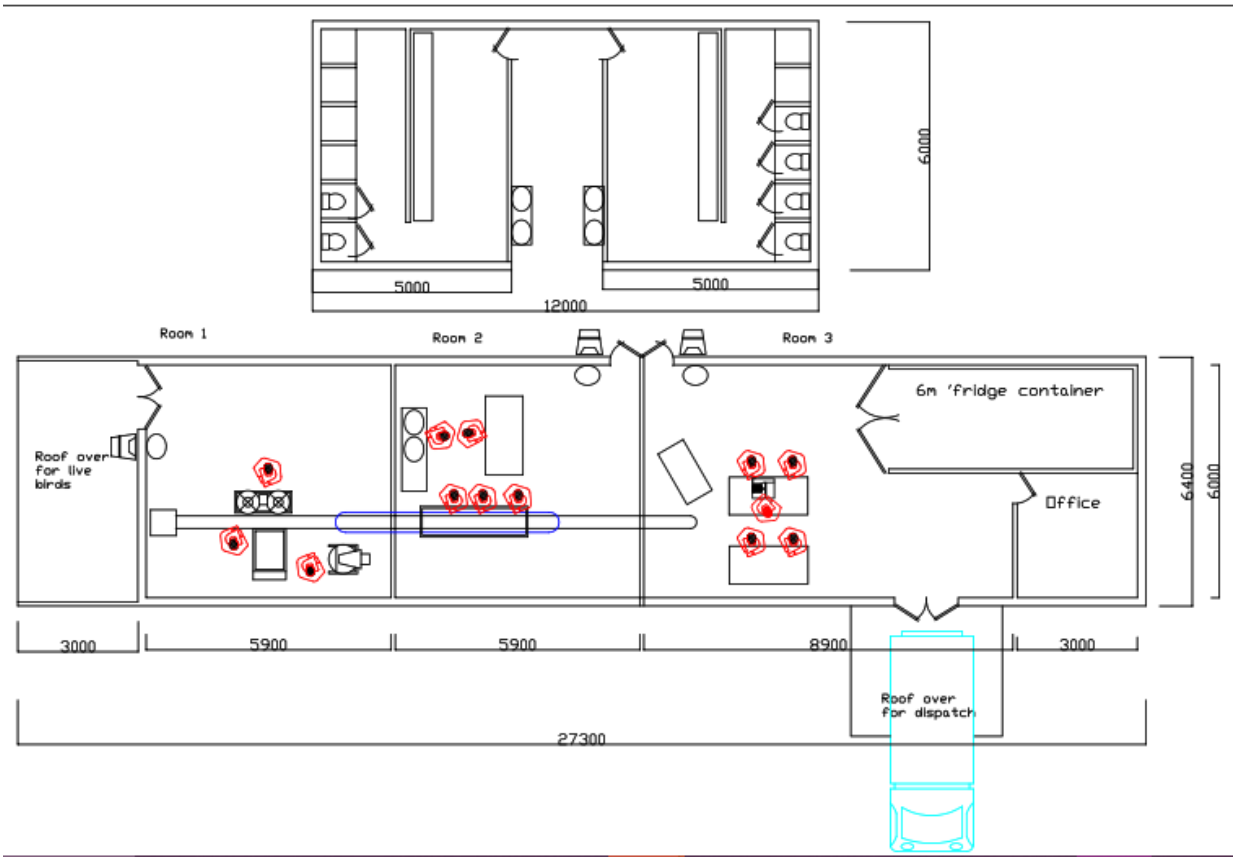


Figure 12:Proposed layout of the poultry abattoir

4.3.4 Scheduling Alternatives

The applicant wishes to undertake the proposed development (building of additional chicken houses and the abattoir) as soon as possible as he currently needs to travel daily to the poultry abattoir in Bloemfontein to have his chickens slaughtered.

4.3.5 Infrastructure and Operational Alternatives

As the applicant will be expanding on the current poultry operation, no other operational alternatives were considered. Where possible the applicant will connect to the existing infrastructure on the Farm Paula.

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[5] *KZN Guidance Document on Poultry Abattoirr, 2016. Source: https://www.kzndard.gov.za/images/Documents/Veterinary_Services/ABATTOIR_HANDOUTS/POULTRY_HANDOUT_2016.pdf*

[6] *Meat Inspectors Manual Poultry 2007, http://www.nda.agric.za/vetweb/VPH/Manuals/PoultryManual.pdf*

With regards to the wastewater treatment the applicant considered the following treatment options:

1. Use of untreated wastewater directly onto the crops: This option was **not supported** as it might lead to localized, short term degradation of the crops and soil.
2. Wastewater to be pumped to holding tanks and treated to satisfactory standards to be used on the crops. This option is strongly supported as it will prevent degradation of the crops and soils. **This option is recommended**.

4.3.6 Input Alternatives

The applicant currently rear chickens on the Farm Paula and take them to Bloemfontein to be slaughtered. No other animals are anticipated to be slaughtered for commercial purposes and therefore, no other input alternatives were considered.

4.3.7 "No-go" Alternatives

The proposed activity is located on private farmland. Existing activities on the farm already include existing chicken houses, that urgently need to be expanded to tend to the current poultry produce need in the area. Should the proposed activity not proceed, it will serve to preclude the applicant and local economy from benefitting from the development of land in a manner acceptable to the general rights of a person to lawfully and reasonably maximize the value of it. The proposed activity will boost the local economy in providing job opportunities for the local Brandfort residents as well as addition local poultry produce to the local markets.

5. SITUATION ASSESSMENT OF PROJECT AREA AND AFFECTED ENVIRONMENT

5.1 Climate

The Farm Paula and surrounding Brandfort area have warm summers and short, cold dry winters. It is mostly clear year-round. Over the course of the year, the temperature typically varies from -2°C to 30°C and is rarely below -5°C or above 34°C. Please see Figure 13: The daily average high (red line) and low (blue line) temperature, with 25th to 75th and 10th to 90th percentile bands. The thin dotted lines are the corresponding average perceived temperatures.

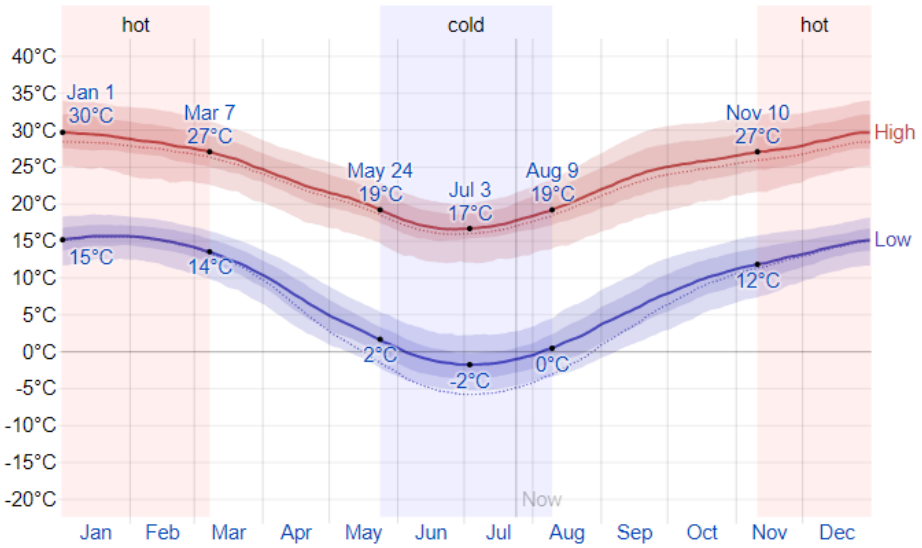


Figure 13: The daily average high (red line) and low (blue line) temperature, with 25th to 75th and 10th to 90th percentile bands. The thin dotted lines are the corresponding average perceived temperatures.[7]

The rainy period of the year lasts for 8.6 months, from August 26 to May 14, with a sliding 31-day rainfall of at least 13 millimeters. The most rain falls during the 31 days centered around February 6, with an average total accumulation of 68 millimeters.

The rainless period of the year lasts for 3.4 months, from May 14 to August 26. The least rain falls around July 8, with an average total accumulation of 5 millimeters. Please see below.

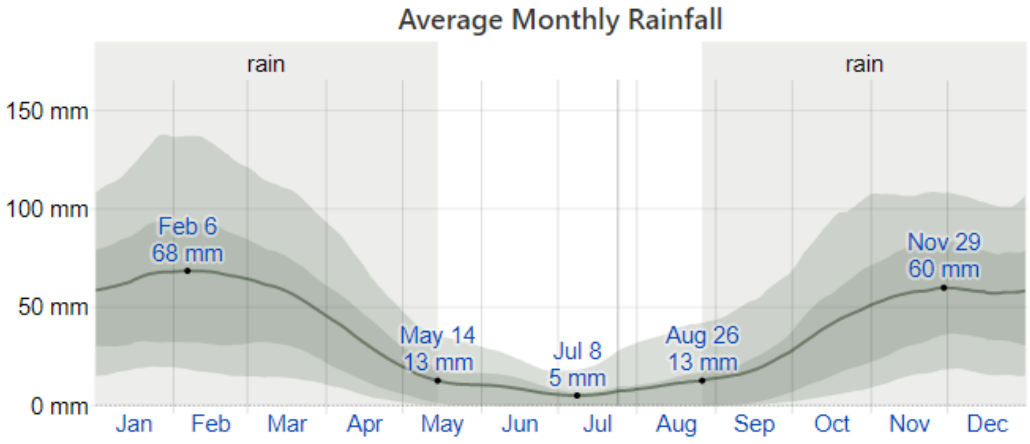


Figure 14: The percentage of days in which various types of precipitation are observed, excluding trace quantities: rain alone, snow alone, and mixed (both rain and snow fell in the same day).[8]

[7] Source: https://weatherspark.com/y/92851/Average-Weather-in-Brandfort-South-Africa-Year-Round#Sections-Temperature

[8] Source: https://weatherspark.com/y/92851/Average-Weather-in-Brandfort-South-Africa-Year-Round#Sections-Temperature

The average hourly wind speed in Brandfort experiences mild seasonal variation over the course of the year. The windier part of the year lasts for 5.5 months, from July 27 to January 10, with average wind speeds of more than 13.1 kilometers per hour. The windiest day of the year is November 6, with an average hourly wind speed of 15.3 kilometers per hour.

The calmer time of year lasts for 6.5 months, from January 10 to July 27. The calmest day of the year is March 31, with an average hourly wind speed of 10.9 kilometers per hour.

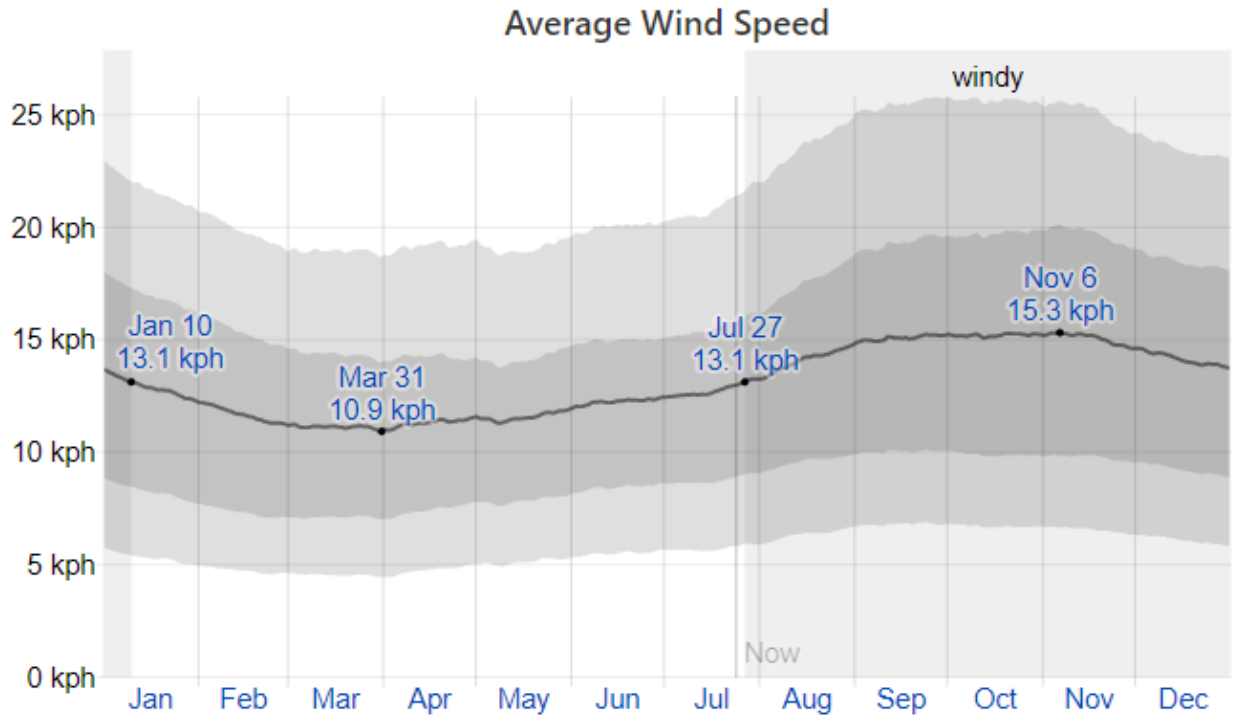


Figure 15: The average of mean hourly wind speeds (dark gray line), with 25th to 75th and 10th to 90th percentile bands[9].

5.2 Landscape Characteristics

The area is characterized by relatively flat lying areas on the property, which is dominated by agricultural activities on the Farm Paula and the neighbouring farms. The site itself has been under agricultural use for the past few years and is considered as disturbed agricultural land. In the Brandfort area, water is considered as a crucial natural resource.

[9] Source: https://weatherspark.com/y/92851/Average-Weather-in-Brandfort-South-Africa-Year-Round#Sections-Temperature

Brandfort itself is surrounded by areas with undulating plains and low mountainous surroundings. The town is situated in a transitional zone, i.e. it is representative of the transition from a Highveld grassland region to a Karoo steppe-type landscape with a lower rainfall.

A notable feature of the landscape to the immediate northwest of Brandfort is a number of saltpans extending over a significant area up to the edge of the Kalahari. These pans tend to lie in the more arid parts of the region.

5.3 Fauna & Flora Characteristics

Alternative 1 (Alt 1) and Alternative 5 (Alt 5) have been rated as being the preferred sites for the development of the poultry houses and the abattoir, respectively. This is mostly because of the highly degraded conditions of the two sites, the transformation of the natural vegetation on them, as well as their proximity to existing infrastructure.

Historical agricultural land uses have clearly caused significant transformation of the natural vegetation on the two sites. The vegetation on both sites (Alternative 1 (Alt 1) and Alternative 5 (Alt 5)) are dominated by short dwarf karroid scrub layers with a very short grass layer. This can mostly be attributed to constant grazing by sheep which keeps the grass layer short and encourages the dominance of dwarf scrubs. Trampling has also decreased the vegetation cover.

Figure 16: Photo of ground cover at Alternative 1

The focus of the faunal and floral (terrestrial biodiversity) assessment was to identify species with the slightest chance of occurring within the site in the species lists. The characteristics of the site and the prominent features surrounding it, as shortly discussed below, play a key role in whether an animal would theoretically inhabit the study area. In assessing species occurrence, their approximate distribution and habitat requirements were firstly considered. Therefore, only groups for which distribution data are available have been considered in this assessment.

Figure 17: Photo of ground cover at Alternative 5

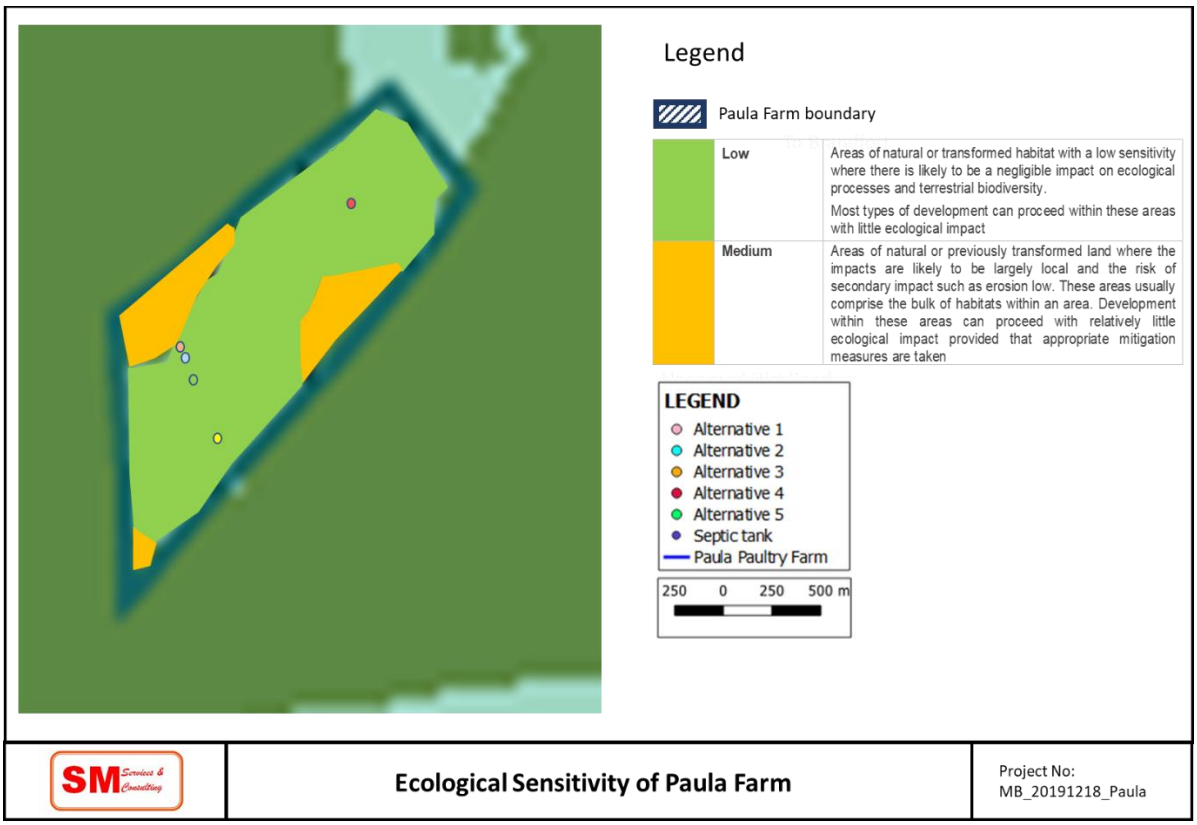


Figure 18: Ecological Sensitivity Map of Paula Farm and the location of the 5 Alternative Sites

A Terrestrial Biodiversity Specialist assessment was undertaken, and the report has been attached as Appendix 4. The specialist report noted that there are no species of conservation concern that are likely to be present or abundant on the preferred Site 1 (Alternative 1) and Site 5 (Alternative 5). The primary impact of the development on the fauna would be minor habitat loss for the more common resident species. As such, no high long-term post-mitigation impact on fauna are expected to occur. Consequently, the impacts of the development on fauna and flora are considered acceptable and would be of low significance after mitigation.

5.3.1 Fauna

According to the Terrestrial Biodiversity Specialist (Fauna and Flora) Report conducted a terrestrial assessment on the Farm Paula. The lists of mammals, reptiles and amphibians which are likely to occur at the site were derived based on distribution records from the literature and Animal Demography Unit (ADU) Virtual Museum spatial database[10].

Apart from the literature sources, additional information on fauna was extracted

[10] http://vmus.adu.org.za/

from the ADU web portal[11] . The faunal species lists provided are based on species which are known to occur in the broad geographical area, as well as a preliminary assessment of the availability and quality of suitable habitat at the site. The conservation status of mammals is based on the IUCN Red List Categories (EWT/SANBI 2016), while reptiles are based on the South African Reptile Conservation Assessment (Bates et al. 2014) and amphibians on Minter et al. (2004) as well as the IUCN (2018).

The main focus of the faunal assessment was to include every species with the slightest chance of occurring within the site in the species list. The characteristics of this site and the prominent features surrounding it, as shortly discussed below, play a key role in whether an animal would theoretically inhabit the study area. In assessing species occurrence, they approximate distribution and habitat requirements were firstly considered. Therefore, only animal groups for which distribution data and ecological requirements are available have been considered in this assessment.

Due to the fragmentation and level of disturbance on all the selected sites for the proposed poultry abattoir alternatives, very few faunal species were observed during the field visit. However, this does not exclude the possibility of their existence in the area.

Overall, there did not appear to be any significant issues regarding the terrestrial biodiversity and the proposed development. In general, the major impact associated with the development would be minor habitat loss (within an already disturbed area) and impacts related to the construction phase.

The footprint of the propose development would not create significant habitat loss or compromise the ecological functioning of the broader biodiversity area as it will be located within an area already used for agricultural activities. No Protected Areas are in close proximity to the farm. Critical Biodiversity Areas (CBA's) surround the Farm Paula and although the farm is mapped as a possible Ecological Support Area (ESA) site has been largely disturbed due to long term historical agricultural practices. Therefore, will the establishment of an poultry abattoir not pose a threat to any CBA's or other areas considered to be of significance from a broad-scale conservation planning perspective.

5.3.2 Flora

Data sources from the literature consulted and used where necessary in the study included vegetation types and their conservation status were extracted from the South African National Vegetation Map (Mucina & Rutherford 2006[12] and 2016 update) as well

[11] *http://vmus.adu.org.za*

[12] *Mucina, L. and Rutherford, M.C., Eds. (2006) The Vegetation of South Africa, Lesotho and Swaziland. Strelitzia 19, South African National Biodiversity Institute, Pretoria.*

as the National List of Threatened Ecosystems (2011), where relevant. Information on plant species recorded for the broad area around the site was extracted from the SANBI POSA database hosted by SANBI. The species list was derived from a considerably larger area than the study site, but this is necessary to ensure a conservative approach as well as counter the fact that the site itself or the immediate area has not been well sampled in the past. The IUCN conservation status of the species in the list was also extracted from the database and is based on the Threatened Species Programme, Red List of South African Plants (2018).

Paula Farm is located within the broader Dry Highveld Grassland biome and more specifically within the Vaal-Vet Sandy Grassland vegetation type (Gh10) that is listed as vulnerable. The Vaal-Vet Sandy Grassland's original area covered 2 274 000 ha and according to records 36% of the natural area of ecosystem remain. Only 1 endemic plant species of special concern occur in this biome. Little of the dry highveld grassland area is under formal protection, and much has already been irreversibly modified.

No plant species of conservation significance were recorded during the study. No plant species listed as threatened or protected by the National Environmental Management: Biodiversity Act's (Act No 10 of 2004) list of Threatened or Protected Species (TOPS), nor any protected trees as listed by the National Forest Act, were recorded in the study area during the time of the study. No Red Data species or species of special concern were recorded in the study.

5.3.3 Cumulative Impacts

Cumulative impacts within the broader study that lies within the Vaal-Vet Sandy Grassland is of potential concern due to the extent of agricultural and other development activities in the wider Brandfort area. The contribution of the proposed abattoir and chicken houses would however be very minor and is not considered to represent a significant contribution to the cumulative impact on the area as Alternative 1 and Alternative 5 is located in an already highly disturbed areas due to historical agricultural uses on the farm. In terms of habitat loss, the affected vegetation and habitat type are widespread in the surrounding areas and have not experienced significant levels of transformation to date. Cumulative impacts associated with the development of the proposed project is therefore considered not to transform or impact on the broader Vaal-Vet Sandy Grassland biome, and therefore considered acceptable.

5.4 Sites with Archeological Interest

The National Heritage Resources Act (No 25 of 1999, section 38) (NHRA), states that a PIA (Palaeontological Impact Assessment) is necessary to identify the presence of fossil

material within the planned development footprint. This PIA is thus necessary to evaluate the effect of the construction on the palaeontological resources

Palaeontological Impact Assessment report has been compiled considering the National Environmental Management Act 1998 (NEMA) and Environmental Impact Regulations 2014 as amended. The report has been included in Appendix 5.

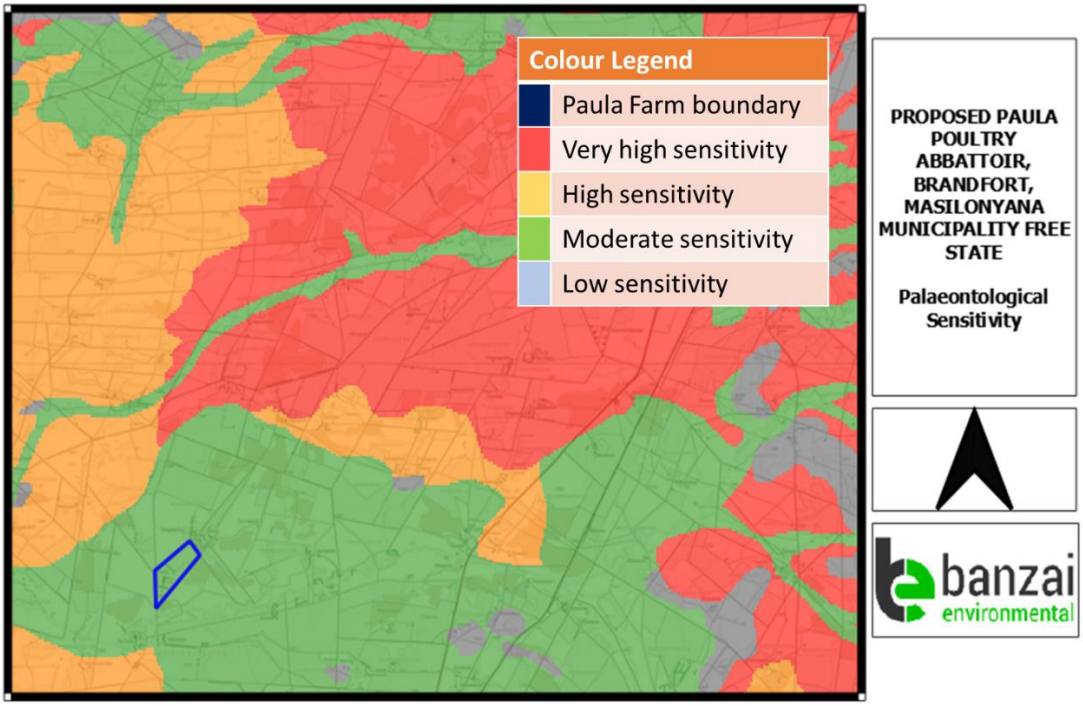


Figure 19: Extract of the 1 in 250 000 SAHRIS PalaeoMap map (Council of Geosciences) indicating the locality of the proposed development.

The aim of the PIA was to decrease the effect of the development on potential fossils at the development site. According to the SAHRIS Palaeosensitivity map (Figure 11) there is a moderate chance of finding fossils in this area.

The proposed Paula poultry farm and five proposed alternatives is underlain by Quaternary superficial deposits. According to the PalaeoMap of South African Heritage Resources Information System the Palaeontological Sensitivity of the Quaternary superficial deposits is moderate.

The impact on Fossil Heritage is DIRECT NEGATIVE. Only the study site will be affected by the proposed development. The expected duration of the impact is assessed as potentially permanent. The impact is highly destructive but will only occur during the

construction phase. The significance of the impact occurring will be moderate. As fossil heritage will be destroyed the impact is irreversible but the degree to which the impact can cause irreplaceable loss of resources is *Moderate* if proper mitigation is to undertaken.

It is therefore considered that the Paula poultry development and all alternatives are deemed appropriate and feasible and will not lead to detrimental impacts on the palaeontological resources of the area. Thus, the construction and operation of the development may be authorised as the whole extent of the development footprint is not considered sensitive in terms of palaeontological resources.

5.5 Water Management Area

The National Freshwater Ecosystem Priority Areas (NFEPA) project provides strategic spatial priorities for conserving South Africa's freshwater ecosystems and supports sustainable use of water resources. These priority areas are called Freshwater Ecosystem Priority Areas, or 'FEPAs'.

In terms of surface water, Paula Farm is located within the Masilonyana Local Municipality and falls within the C52G Quaternary Area Catchment within the Upper Orange Catchment. Please refer to the figure below.

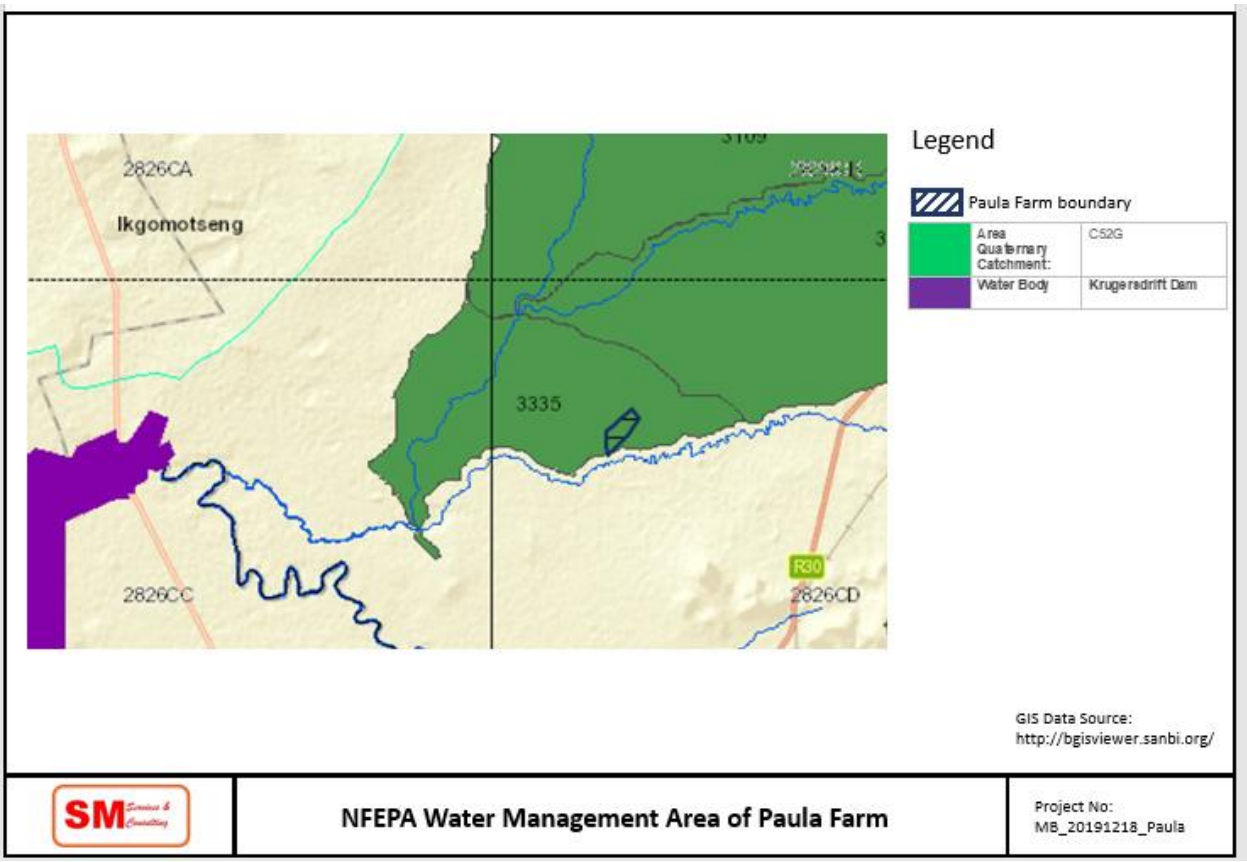


Figure 20: Water Management Area in which Paula Farm is located.

No wetlands or seeps have been identified within close proximity or within 32m of the project site. Please see below. The Modder River located south of the property, however draining from the farm is anticipated to drain north towards the C52G quaternary catchment.

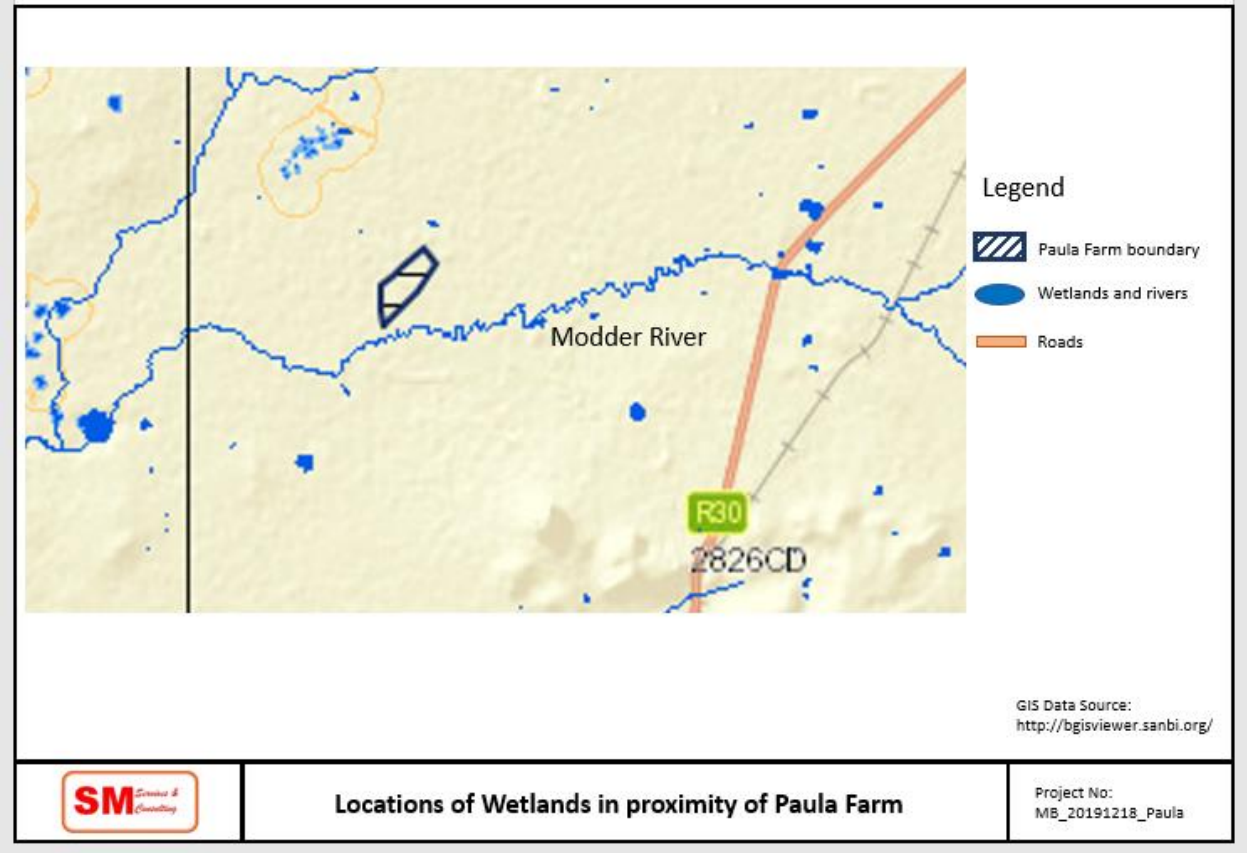


Figure 21: Locations of wetlands in proximity to Paula Farm

The proposed Paula poultry farm and five proposed alternatives is underlain by Quaternary superficial deposits. The Quaternary superficial deposits are the youngest geological deposits formed during the most recent geological period (approximately 2.6 million years ago to present). The rocks and sediments are found at or near the Earth's surface. Pre-Quaternary deposits are known as bedrock. Most of the superficial deposits are unconsolidated sediments and consist of clay, gravel, sand, silt, that form relatively thin, discontinuous patches of sediments or larger spreads onshore. These sediments comprise of beach sand, channel, floodplain and stream deposits, talus gravels and glacial drift sediments.

Brandfort and surrounding areas, including Paula Farm is located in a minor aquifer region which is a moderately-yielding aquifer system of variable water quality[13]. Paula

[13] *Information obtained from the Department of Water & Sanitation, Directorate: Hydrological Services, Sub-Directorate: Groundwater Information.*

Farm is located in an area that represents the moderately vulnerable region which is vulnerable to some pollutants, but only when continuously discharged or leached.

Implementation of the Reconstruction and Development Programme (RDP) in South Africa has highlighted the importance of groundwater resources in the country as the role they will play in satisfying the targets of the RDP. As a result, exploration, development and protection of aquifers is receiving unprecedented attention. Provision of the appropriate information to national water resource managers and planners is a critical part of the process which aims to provide a further twelve million people with adequate access to potable water.

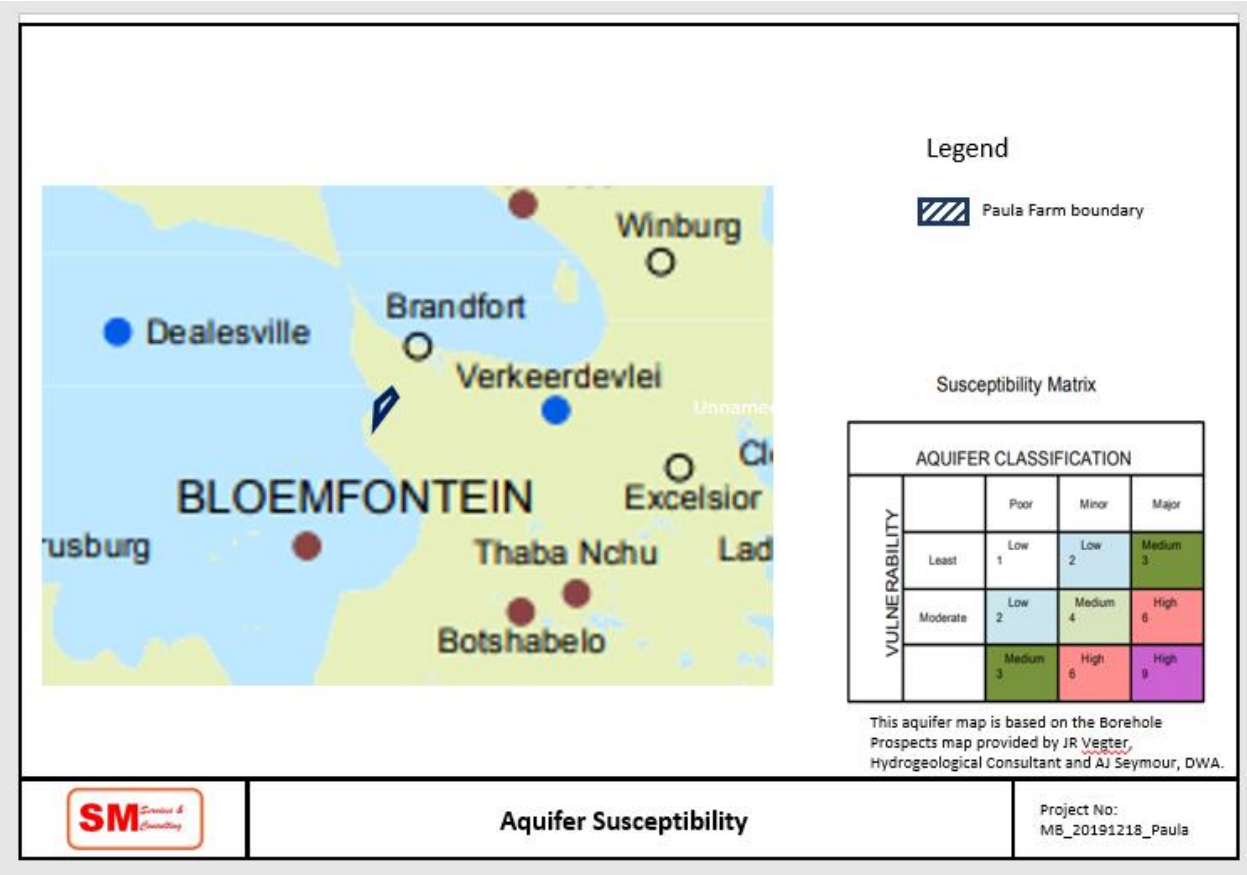


Figure 22: Aquifer Susceptibility in relation of Paula Farm

According to the aquifer susceptibility map (please see Figure 14), Paul Farm is located in an area with "*Medium*" vulnerability aquifer (vulnerability and the relative importance of the aquifer in terms of its classification) noting that there is a medium risk that the groundwater body can be potentially contaminated by anthropogenic activities.

6 IMPACT ASSESSMENT

6.1 Introduction

The impact assessment aims at identifying potential environmental impacts (both positive and negative) and evaluating these impacts in terms of its significance. This assessment is provided in the form of a systematic analysis framework to evaluate the nature, extent, duration, intensity, probability and significance of the various impacts are considered both without and with mitigation and management measures.

The impact assessment criteria are drawn from the EIA Regulations, published by the Department of Environmental Affairs and Tourism (April 1998) in terms of the Environmental Conservation Act (Act 73 of 1989) and have been supplemented with the relevant specialist guideline series.

6.2 Impact Assessment Criteria

The assessment of the potential impacts of the envisaged development is undertaken in accordance with the broad criteria required by the integrated environmental management procedure.

The criteria for specialist impact assessments include:

Consequence

- Nature of the impact: **This is an appraisal of the type of effect the construction, operation and maintenance of a proposed development would have on the affected environment. This description should include what is to be effective and how.**
- Extent of the impact: **The specialist / EAP should describe whether the impact will be local extending only as far as the proposed development site area; or limited to this site and its immediate surroundings; or will have an impact on the region; or will have impact on a national scale or across international borders**
- Duration of the impact: **The specialist / EAP should indicate whether the lifespan of the impact would be short term (0-5 years), medium term (6-15 years), long-term (16-30 years) or permanent**
- Intensity: **The specialist / EAP should establish whether the impact is destructive or benign and should be qualified as low, moderate, high or critical. The specialist study assessment must attempt to quantify the magnitude of the impacts and outline the rationale used.**
- Cumulative Impact: **Consideration must be given to the extent of any accumulative impact that may occur due to the proposed development. Such impacts must be evaluated with an assessment of**

	similar developments already in the area. Such impacts will either be positive or negative.
Likelihood	• **Probability/ Likelihood of occurrence:** The specialist / EAP should Describe the probability of the impact actually occurring and should be described as almost certain, likely, probable, unlikely or rare. Likelihood can be categorised as: **Almost certain, Likely, Possible, Unlikely**, and/ or **Rare**

It is important to differentiate if the environmental risk will be either inherent (what could happen) or residual (what is likely to happen) with regards to the proposed development. An Environmental Risk Assessment (ERA) is a scientific process that identifies and evaluates the likelihood of a development to threaten the environment, in particular to living organisms, natural habitats, and ecosystems.

6.2.1 Anticipated Activities and their Consequences on the Environment for the Proposed Development

Activities relate to the environmental impacts and their inherent risk and ultimate consequence the activity may have on the environment. Anticipated activities include the following:

- Building infrastructure (new abattoir, ablution facility, storage facility, drainage system, etc.);
- Access infrastructure (roads, parking area);
- Services (water, electricity supply, sewerage and wastewater);
- Fences (perimeter fences);
- Holding pens for poultry to be slaughtered.

Possible environmental impacts for the proposed development:

- Loss of vegetation, terrestrial biodiversity
- Water quality
- Heritage & Paleontological
- Sedimentation and erosion
- Traffic volume to the facility
- Waste material
- Employment opportunity
- Economic opportunity

Using the information available and the understanding of the possible impacts, the assessment was conducted in tabular format in terms of the methodology mentioned above.

6.2.2 Determination of the Nature of the Impact & Classification

Environmental impacts were determined by the inherent risk they may pose to the environment and rated qualitatively. The risk rating is the product of consequence and likelihood of occurrence or re-occurrence of the impact, thus:

Environmental Impact / Risk = Consequence X Likelihood. The product of which determines the incident rating.

As a guide, the Tables below shows the inherent risk rating matrix of the impact assessment based on the consequence and likelihood of occurrence/ re-occurrence and is used to determine that severity of the impact.

Table 6: Consequence Descriptors

Consequence	MINOR	MEDIUM	SERIOUS	MAJOR	CATASTROPHIC
ENVIRONMENT	Near-source confined and promptly reversible impact (typically a shift). Impact will be local extending only as far as the proposed development site area (Footprint area only).	Near-source confined and short-term reversible impact (typically a week). Impact will be local extending only as far as the property in which the development site is located (i.e. Paula Farm). (Footprint and property)	Near-source confined and medium-term recovery impact (typically a month). Impact extending beyond the boundaries of the property in which the proposed development site is located (i.e. Paula Farm). (Footprint, property & neighbouring properties)	Impact that is unconfined and requiring long-term recovery, leaving residual damage (typically years). Impact extending beyond the boundaries of the property in which the proposed development site is located (i.e. Paula Farm). (Footprint, property, neighbouring properties and beyond)	Impact that is widespread unconfined and requiring long-term recovery, leaving major residual damage (typically years). Impact extending well beyond the municipal boundaries.

The impact was assessed to determine if the impact will be local extending only as far as the proposed development site area; or limited to this site and its immediate surroundings; or will have an impact on the region; or will have impact on a national scale or across international borders. These parameters are defined in Table 6: Consequence Descriptors.

Table 7: Likelihood Descriptors

Likelihood	Likelihood description	Frequency	Cumulative Impact
ALMOST CERTAIN	Recurring event during the life-time of an operation / project	May occur within 0 – 5 years	Similar development occurring on the property
LIKELY	Event that may occur frequently during the life-time of an operation / project	May occur within 6-15 years	Similar development occurring on the adjacent property
POSSIBLE	Event that may occur during the life-time of an operation / project	May occur within 16-30 years	Similar development occurring on the neighborhood/ municipal ward
UNLIKELY	Event that is unlikely to occur during the life-time of an operation / project	May occur in 31-100 years	Similar development occurring on the municipal area
RARE	Event that is very unlikely to occur very during the life-time of an operation / project	May be a greater than 100 year event	Similar development occurring on the district municipal area/ country

It was further estimated how often the anticipated impact will occur and this is defined in Table 7: Likelihood Descriptors.

Table 8: Environmental Impact Determination Matrix

LIKELIHOOD	CONSEQUENCE				
	1 - Minor	2 - Medium	3- Serious	4 - Major	5 - Catastrophic
A - Almost certain	Moderate	High	Critical	Critical	Critical
B - Likely	Moderate	High	High	Critical	Critical
C - Possible	Low	Moderate	High	Critical	Critical
D - Unlikely	Low	Low	Moderate	High	Critical
E - Rare	Low	Low	Moderate	High	High

As a final step the environmental impacts were assessed based on the consequence and likelihood of each impact for each alternative site.

An example on how the assessment was done is shown below. Any environmental impact with a high of critical risk as per the matrix below is considered a significant impact.

Objective: Securing the site and site camp establishment, including fences

Activities associated with the objective:

- Open excavations
- Site preparation
- Cement / concrete batching
- Fuel storage
- Movement of construction employees' vehicles in the area and on site

Anticipated environmental impact / risk:

Hazardous substance contamination (soil & water)

Step 1: Determine consequence on site

Consequence	MINOR	MEDIUM	SERIOUS	MAJOR	CATASTROPHIC
ENVIRONMENT	Near-source confined and promptly reversible impact (typically a shift). Impact will be local extending only as far as the proposed development site area (Footprint area only).	Near-source confined and short term reversible impact (typically a week). Impact will be local extending only as far as the property in which the development site is located (i.e. Paula Farm). (Footprint and property)	Near-source confined and medium-term recovery impact (typically a month). Impact extending beyond the boundaries of the property in which the proposed development site is located (i.e. Paula Farm). (Footprint, property & neighbouring properties)	Impact that is unconfined and requiring long-term recovery, leaving residual damage (typically years). Impact extending beyond the boundaries of the property in which the proposed development site is located (i.e. Paula Farm). (Footprint, property, neighbouring properties and beyond)	Impact that is widespread unconfined and requiring long-term recovery, leaving major residual damage (typically years). Impact extending well beyond the municipal boundaries.

Step 2: Determine likelihood

Likelihood	Likelihood description	Frequency	Cumulative Impact
ALMOST CERTAIN	Recurring event during the life-time of an operation / project	May occur within 0 – 5 years	Similar development occurring on the property
LIKELY	Event that may occur frequently during the life-time of an operation / project	May occur within 6-15 years	Similar development occurring on the adjacent property
POSSIBLE	Event that may occur during the life-time of an operation / project	May occur within 16-30 years	Similar development occurring on the neighborhood/ municipal ward
UNLIKELY	Event that is unlikely to occur during the life-time of an operation / project	May occur in 31-100 years	Similar development occurring on the municipal area
RARE	Event that is very unlikely to occur very during the life-time of an operation / project	May be a greater than 100 year event	Similar development occurring on the district municipal area/ country

Step 3: Determine the risk

LIKELIHOOD	CONSEQUENCE				
	1 - Minor	2 - Medium	3- Serious	4 - Major	5 - Catastrophic
A - Almost certain	Moderate	High	Critical	Critical	Critical
B - Likely	Moderate	High	High	Critical	Critical
C - Possible	Low	Moderate	High	Critical	Critical
D - Unlikely	Low	Low	Moderate	High	Critical
E - Rare	Low	Low	Moderate	High	High

Step 4: Create assessment/risk table

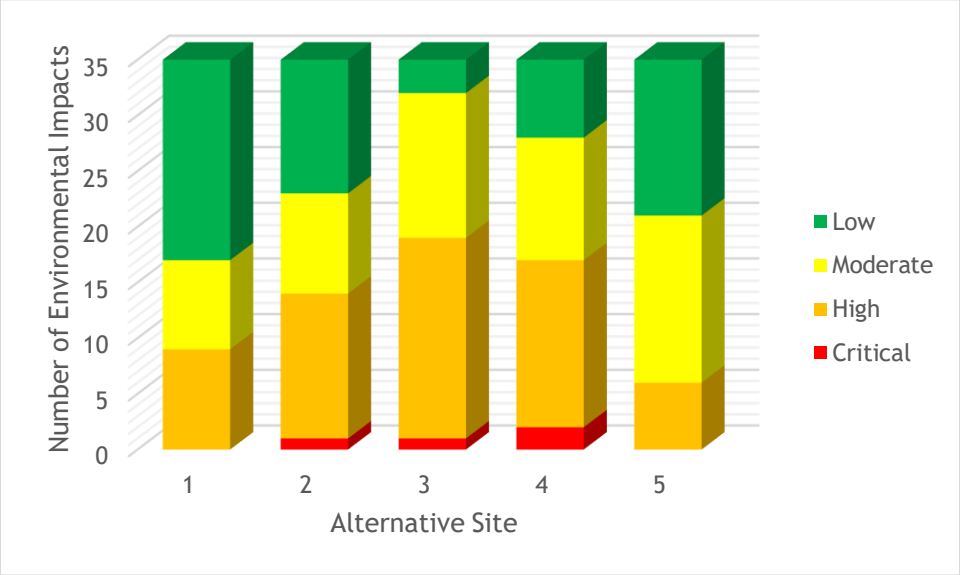
		Consequence					Likelihood					Environmental Impact / Risk
Potential Impact	Alternative Site	Minor	Medium	Serious	Major	Catastrophic	Almost Certain	Likely	Possible	Unlikely	Rare	Environmental Impact / Risk
Hazardous substance contamination (soil & water)	1		X					X				High

The comprehensive risk assessment table is attached in Appendix 6: Impact Assessment Table. A summary of the outcome is illustrated in the table and graph below:

Table 9: Summary table comparing the inherent environmental risk at each alternative site.

Alternative Sites	Environmental Impacts & Risks			
	Critical	High	Moderate	Low
1	0	9	8	18
2	1	13	9	12
3	1	18	13	3
4	2	15	11	7
5	0	6	15	14

Table 10: Summary graph of the inherent environmental risk at each alternative site.



Based on the assessment and the outcomes there are some critical risks present in Sites 2, 3 & 4 that relates to construction disturbance to local residents, uncontrolled spread of fire and the risk of chemicals used in the abattoir to explode and or contaminate water resources during a fire or any other incident event.

It is therefore recommended that Sites 1 & 5 be considered for development. Site 1 will be suitable for establishing chicken houses/pens and Site 5 will be suitable to establish the Abattoir and associated wastewater treatment system as it is located close to the

crops that will be irrigated with the treated wastewater as well as close to existing infrastructure, thereby limiting disturbance to create servitudes for infrastructure to connect to existing services.

7 ENVIRONMENTAL IMPACT STATEMENT AND SUMMARY ON NEED AND DESIRABILITY

7.1 Environmental Impact Statement

The major environmental impacts, which are likely to result from this activity, may be assess according to the potential impacts. Such impacts therefore include visual, noise, traffic, social and biophysical impacts as have previously been mentioned. Through the implementation of suitable mitigation measures associated with each of the possible impacts on surrounding land uses the effect thereof can to a large extent be mitigated to acceptable levels. The table below considers both the advantages and disadvantages of the proposed development.

Table 11: Advantages and Disadvantages of the Proposed Paula Poultry Abattoir

Advantages	Disadvantages
Create local employment	Potential contamination of ground water
Create skills development i.e. educate the employees of poultry management and meat processing	Potential contamination of surface water
Produce good quality meat to local and regional markets	Potential loss of palaeontological artifacts (however based on the assessment report this risk is considered negligible.
Reduce greenhouse gas emissions by limiting the transporting of livestock to other abattoirs and then transporting carcasses back for processing and distribution to local and regional markets	

Based on the above, the project will supplement the local and regional economy and increase local skills levels. Disadvantages can be mitigated through the implementation

of the mitigation measures stipulated in **Appendix 7: Impact Assessment and best practice guidelines** for the operating and management of an abattoir. This development is aligned with the strategic infrastructure projects (SIP): Agri-logistics and rural infrastructure that support the expansion of production and employment for small-scale and rural farming.

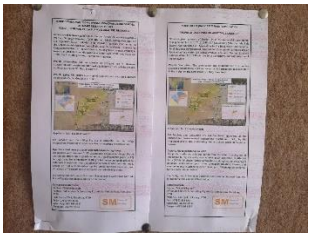
8 PUBLIC PARTICIPATION

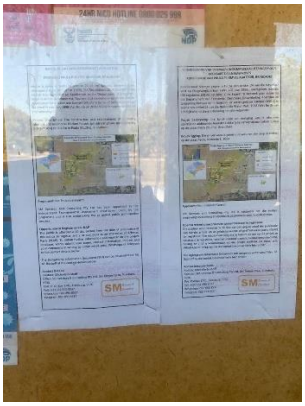
8.1 Requirements of the Environmental Impact Assessment Regulations of 2014 &Public Participation Process followed

The table below outlie the requirements for the public participation process set out in Section 41 of the Environmental Impact Assessment Regulations as well as the actions taken by the Environmental Assessment Practitioners (EAP).

2014 EIA Regulations	Action taken by EAP
a. Fixing a notice board at a place conspicuous to the public at the boundary or on the fence along the corridor of the site.	Notice boards were placed at various locations on the site boundary to ensure that they are visible.  
i. The site where the activity to which the application related is or is to be undertaken; and	
ii. any alternative site	

Notice boards were placed at the Community Notice Boards within the local Brandfort Library and the Masilonyana Local Municipal notice board.





b. Giving written notice, in any manners provided for in Section 47D of the Act, to

i. The occupiers of the site and, of the proponent or applicant is not the owner or person in control of the site on which the activity is to be undertaken, the owner or person in control of the site where the activity is to be undertaken or to any alternative site where the activity is to be undertaken;

ii. owners, persons in control of, and occupiers of land adjacent to the site where the activity is to be undertaken or to any alternative site

A Background Information Document (BID) was compiled for the proposed development and distributed to the surrounding neighbors.

Hard copies of the BID were left at Brandfort Library and the Masilonyana Local Municipally office.

The BID included some project background details of the Independent Environmental Assessment Practitioner as well as the process to be followed during the EIA. In invitation to become involved in the project and to register as a stakeholder was also included in the BID.

where the activity is to be undertaken

iii. the municipal councilor of the ward in which the site or alternative site is situated and any organization of ratepayers that represents the community in the area;

iv. the municipality which has jurisdiction in the area;

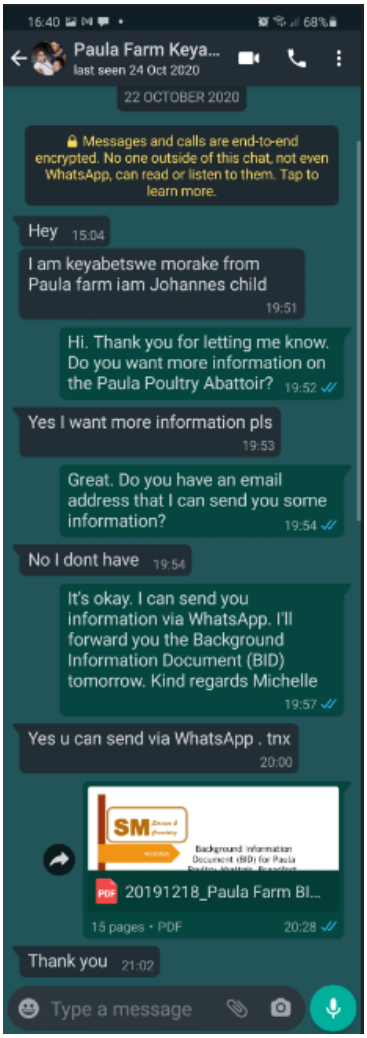
v. any organ of state having jurisdiction in respect of any aspect of the activity, and

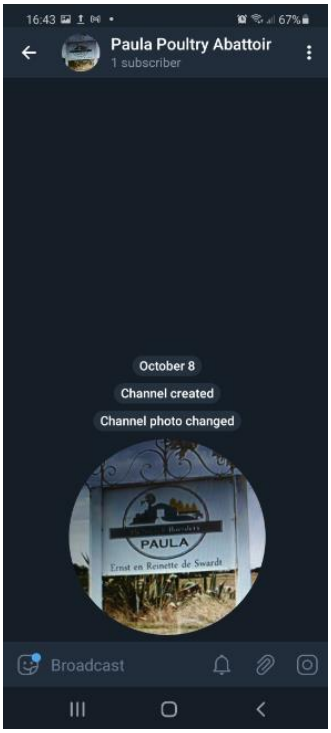
vi. any other party as required by the competent authority.

Emails and letters as well as copies of the Background Information Document (BID) were sent to the relevant Government Departments and Organizations who might have an interest in or be affected by the proposed development to invite them to comment on the proposed development.

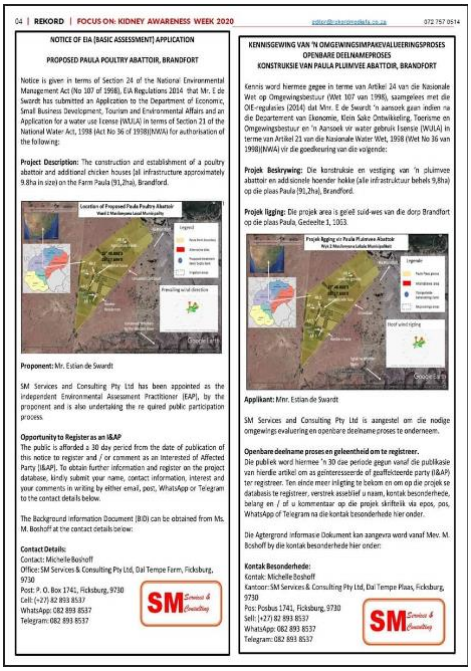
The proposed development was also advertised on Facebook.

Further to this a WhatsApp reply option was made available for communication as well as a Telegram channel.





c. Placing an advertisement in – i. One local newspaper; or ii. an official Gazette that is published specifically for the purpose of providing public notice of applications or other submissions made in terms of these Regulations	The EIA process was advertised on pg4 in the Brandfort Rekord which is a local community based newspaper.



04 | REKORD | FOCUS ON: KIDNEY AWARENESS WEEK 2020

NOTICE OF EIA [BASIC ASSESSMENT] APPLICATION

PROPOSED PAULA POULTRY ABATTOIR, BRANDFORT

Notice is given in terms of Section 24 of the National Environmental Management Act (No 107 of 1998), EIA Regulations 2014 that Mr. E de Swardt has submitted an Application to the Department of Economic, Small Business Development, Tourism and Environmental Affairs and an Application for a water use license (WULA) in terms of Section 21 of the National Water Act, 1998 (Act No 36 of 1998)(NWA) for authorisation of the following:

Project Description: The construction and establishment of a poultry abattoir and additional chicken houses [all infrastructure approximately 9.8ha in size) on the Farm Paula (91,2ha), Brandford.

Proponent: Mr. Estian de Swardt

SM Services and Consulting Pty Ltd has been appointed as the independent Environmental Assessment Practitioner (EAP), by the proponent and is also undertaking the re quired public participation process.

Opportunity to Register as an I&AP

The public is afforded a 30 day period from the date of publication of this notice to register and / or comment as an Interested of Affected Party [I&AP]. To obtain further information and register on the project database, kindly submit your name, contact information, interest and your comments in writing by either email, post, WhatsApp or Telegram to the contact details below.

The Background Information Document (BID) can be obtained from Ms. M. Boshoff at the contact details below.

Contact Details:
Contact: Michelle Boshoff
Office: SM Services & Consulting Pty Ltd, Dal Tempe Farm, Ficksburg, 9730
Post: P. O. Box 1741, Ficksburg, 9730
Cell: (+27) 82 893 8537
WhatsApp: 082 893 8537
Telegram: 082 893 8537

KENNISGEWING VAN 'N OMGEWINGSIMPAKEVALUEERINGSPROSES OPENBARE DEELNAMEPROSES

KONSTRUKSIE VAN PAULA PLUIMVEE ABATTOIR, BRANDFORT

Kennis word hiermee gegee in terme van Artikel 24 van die Nasionale Wet op Omgewingsbestuur (Wet 107 van 1998), saamgelees met die OIE-regulasies (2014): dat Mnr. E de Swardt 'n aansoek gaan indien na die Departement van Ekonomie, Klein Sake Ontwikkeling, Toerisme en Omgewingsbestuur en 'n Aansoek vir water gebruik lisensie (WULA) in terme van Artikel 21 van die Nasionale Water Wet, 1998 (Wet No 36 van 1998)(NWA) vir die goedkeuring van die volgende:

Projek Beskrywing: Die konstruksie en vestiging van 'n pluimvee abattoir en addisionele hoender hokke (alle infrastruktuur behels 9,8ha) op die plaas Paula (91,2ha), Brandford.

Projek ligging: Die projek area is geleë suid-wes van die dorp Brandfort op die plaas Paula, Gedeelte 1, 1063.

Applikant: Mnr. Estian de Swardt

SM Services and Consulting Pty Ltd is aangestel om die nodige omgewings evaluering en openbare deelname proses te onderneem.

Openbare deelname proses en geleentheid om te registreer.

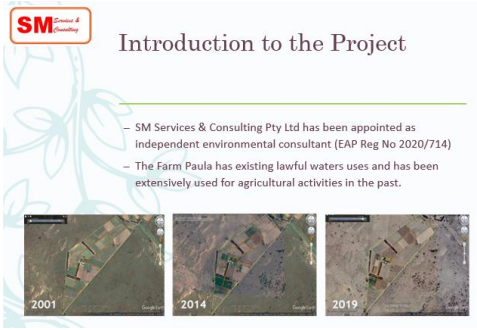
Die publiek word hiermee 'n 30 dae periode gegun vanaf die publikasie van hierdie artikel om as geinteresseerde of geaffekteerde party (I&AP) ter registreer. Ten einde meer inligting te bekom en om op die projek se databasis te registreer, verstrek asseblief u naam, kontak besonderhede, belang en / of u kommentaar op die projek skriftelik via epos, pos, WhatsApp of Telegram na die kontak besonderhede hier onder.

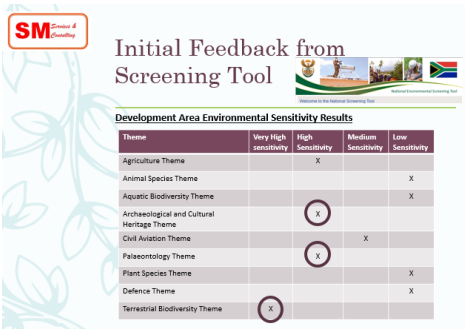
Die Agtergrond informasie Dokument kan aangevra word vanaf Mev. M. Bosholf by die kontak besonderhede hier onder:

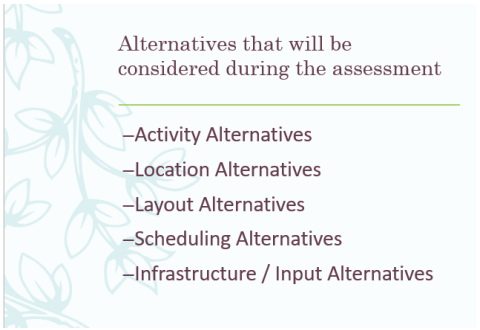
Kontak Besonderhede:
Kontak: Michelle Boshoff
Kantoor: SM Services & Consulting Pty Ltd, Dal Tempe Plaas, Ficksburg, 9730
Pos: Posbus 1741, Ficksburg, 9730
Sell: (+27) 82 893 8537
WhatsApp: 082 893 8537
Telegram: 082 893 8537

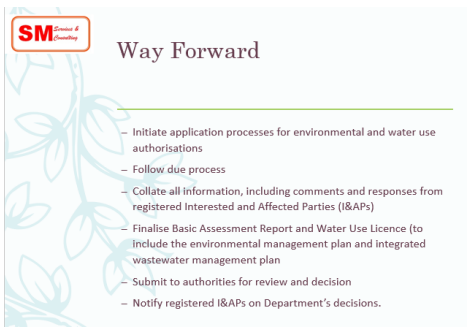
8.2 Public Meetings

A public virtual meeting was held via Zoom on the 27th October 2020 at 9h00. During the meeting a brief outline of the project was provided. The initial feedback from the Screening tool was also discussed, the various alternatives that will be considered as well as the way forward..









8.4 Register of Interested and Affected Parties

According to the Environmental Impact Assessment Regulations of 2014, a register of interested and affected parties (I&APs) must be kept during the EIA process.

The following parties were identified as key I&AP's and were sent copies of the BID and request to register as I&AP for the proposed project. **Appendix 8** include a **Public Participation Report**.

		Role in Organisation	**Name**	**Tel**	**Cell**	**Email**
Provincial Departments	Agriculture & Rural Development	Office Manager	Degracia Ranoto	051 861 8363	060 983 8820	degracia@fs.agric.za
		Strategic Communications & Information Services		051 861 8311	060 983 8156	senate@fs.agric.za
		Director: Agriculture	Moliehi Moeng	(051) 861 8515	073 260 5173	moeng@fs.agric.za
	Department of Economic & Small Business, Tourism & Environmental Affairs (DESTEA)Free State		Diana Nel			nel@detea.fs.gov.za
		Deputy Director: Environmental Impact Assessment	Grace Mkhosana			mkhosana@destea.gov.za
		Impact Assessment	Lerato Moalosi			moalosil@destea.gov.za
	Free State Heritage Resources Authority		Mr. Mbatha	051 410 4750		mbatha.npz@sacr.fs.gov.za

District Municipality	Lejweleputswa	Info Centre		(57) 353 3094/5/8/9		info@lejwe.co.za
		Manager Environmental Health & Disaster Management.	Dewald Kirsten	(057) 391 8959	0837747979	dewald@lejwe.co.za
Local Municipality	Masilonyana	Info		(057) 733 0106		info@masilonyana.co.za
		Councillor: Ward 2	Michelle Sello		0732030672	msello@masilonyana.co.za
		Acting Unit Manager: BRT	Zongezile Ntjwabule		0735954973	
Organisations	SAHRA	Company Secretary	Ms Lungisa Malgas			lmalgas@sahra.org.za
		Executive Officer: Heritage Resources Management	Mr Dumisani Sibayi			dsibayi@sahra.org.za
Other	Neighbor		Martin Wiplinger		0833030297	-
	Neighbor		Ben Botha		0725898031	-
	Neighbor		Sam Pio		0825566294	-
	Neighbor		Sharleen Gibson		0732832397	-
	Interested Party		Nadia Gouws		0840334234	-
	Interested Party		Patrick Willemse		0603520337	-
	Neighbor		Gerhardus Liebenberg		0829726117	-
	BKB		Suretha Van Eeden		0794933800	-

8.2 Comments received from the registered I&AP's

The comments received from the Department and registered stakeholders regarding the BID and draft Basic Assessment Report are included in the Comments and Response Report enclosed as **Appendix 9: Comments & Response Report**.

Copies of the final BAR are to be delivered to the following Department for comment:

- Department of Economic, Small Business Development, Tourism and Environmental Affairs (DETEA)

9. SUMMARY RECOMMENDATIONS OF EAP

It is the opinion of the EAP that the information contained in the Basic Assessment Report (BAR), and the specialist studies enclosed herewith have been compiled to address specific areas of concern, provided sufficient information to undertake a sound assessment of the proposal and provide an informed recommendation with a sufficient degree of confidence. It is also the opinion of the Environmental Assessment Practitioner that the project can be supported on condition that the Mitigation and Management Measures described in the specialist reports and the Integrated Environmental Management Plan & Integrated Wastewater Management Plan (EMPr & IWWMP)(**Appendix 10**) should be strictly adhered.

This Basic Assessment (BA) Report has investigated and assessed the significance of the predicted, potential positive and negative direct, indirect and cumulative impacts associated with the proposed development. No negative impacts have been identified within this BA that, in the opinion of the EAP who have conducted this BA process. No "fatal flaws" from an environmental perspective were noted that would necessitate substantial re-design or termination of the project.

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

A variety of mitigation measures have been identified that will serve to mitigate the scale, intensity, duration or significance of the impacts which have a medium to high significance rating. The proposed mitigatory measures, if implemented, will reduce the significance of the majority of the identified impacts to "low", and allow for the proposed project to precede with minimal effect to the environment, local community and surrounding land

use practice. In order to ensure the effective implementation of the mitigation and management actions, and Integrated EMPr &IWWMP has been compiled and is included in **Appendix 10** of the Basic Assessment Report. The mitigation measures necessary to ensure that the project is planned and carried out in an environmentally responsible manner are listed in the EMPr & IWWMP. The EMPr & IWWMP is a dynamic document that should be updated as required and provides clear and implementable measures for the proposed project.

Concluding statement from EAPs:

Provided that the specified mitigation measures are applied effectively, it is proposed that the project receive Environmental Authorisation for Alternative Site 1 and 5 in terms of the EIA Regulations promulgated under NEMA.

Appendix 1: Description of all affected properties

Property Name: Paula 1063

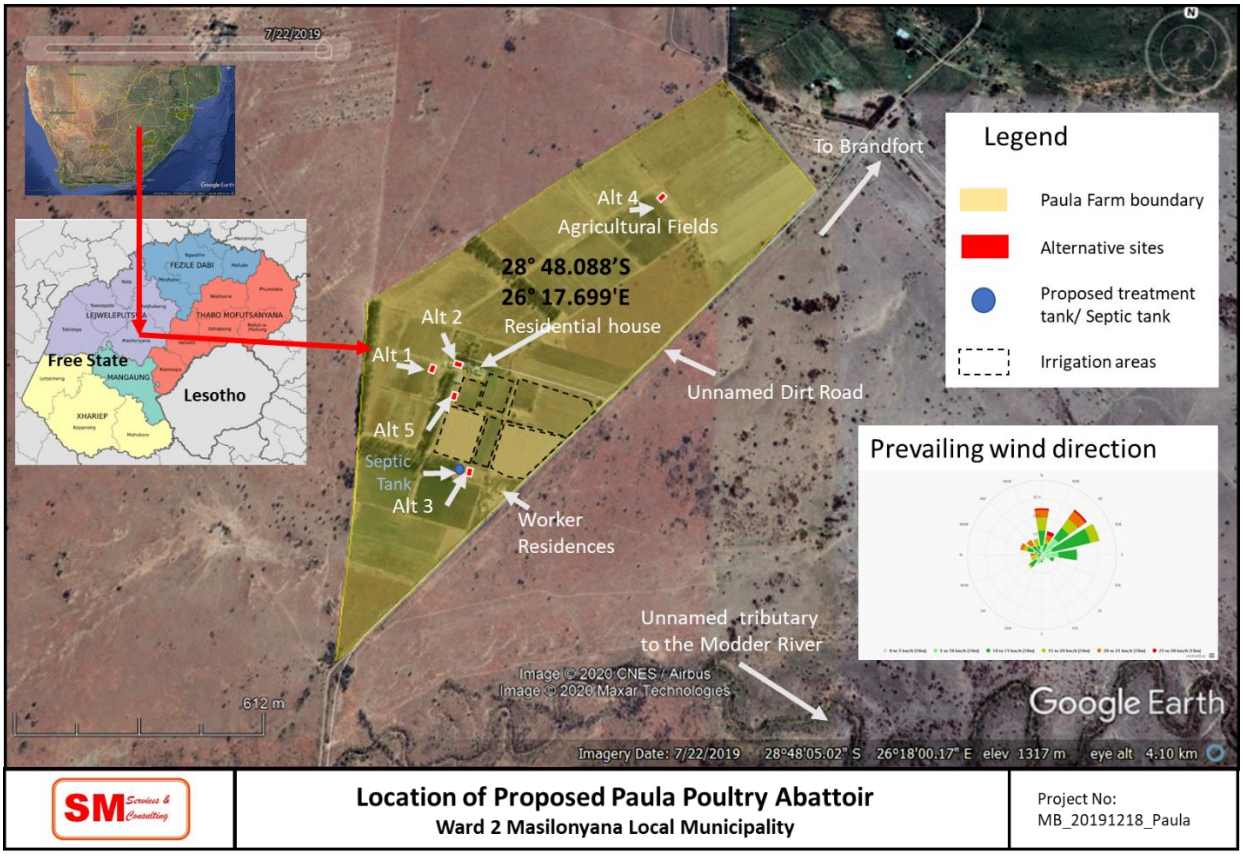
SG Code: F006 0000 0000 1063 0000 1

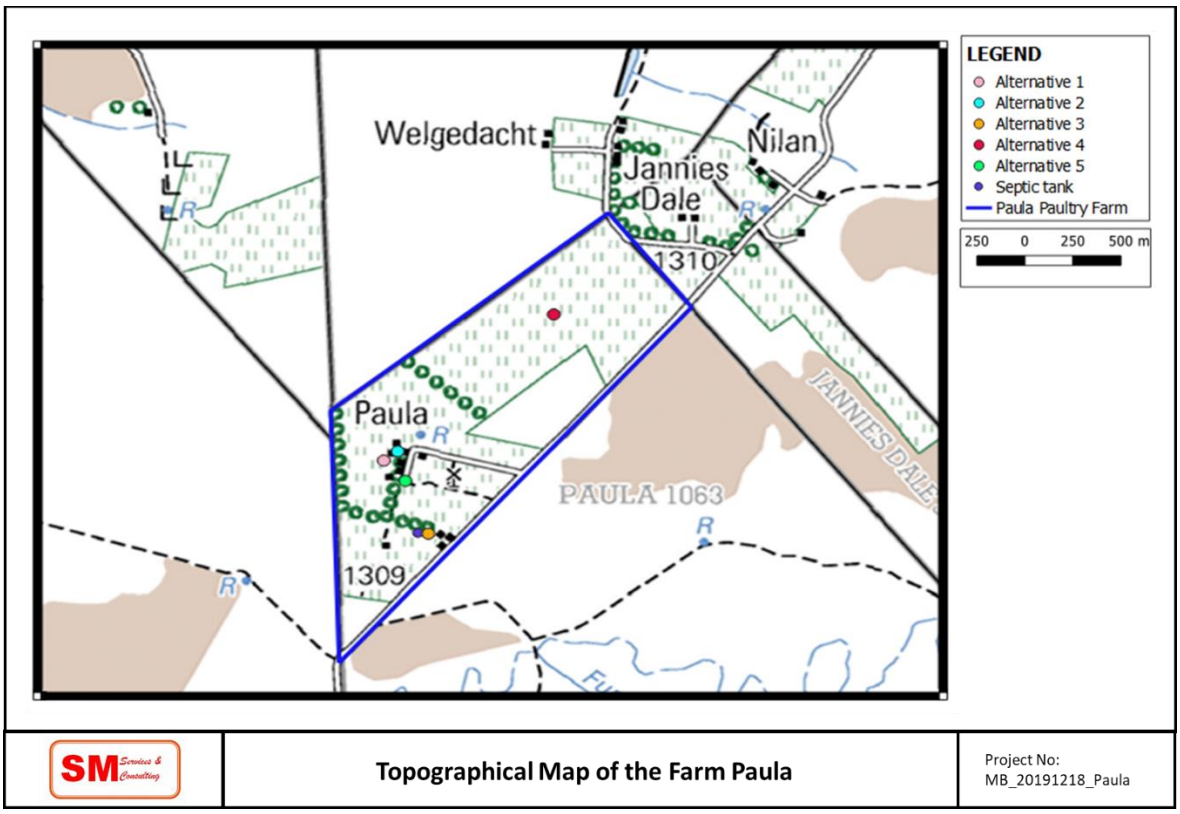
Region: Brandfort

Local Municipality: Masilonyana Municipality

District Municipality: Lejweleputswa

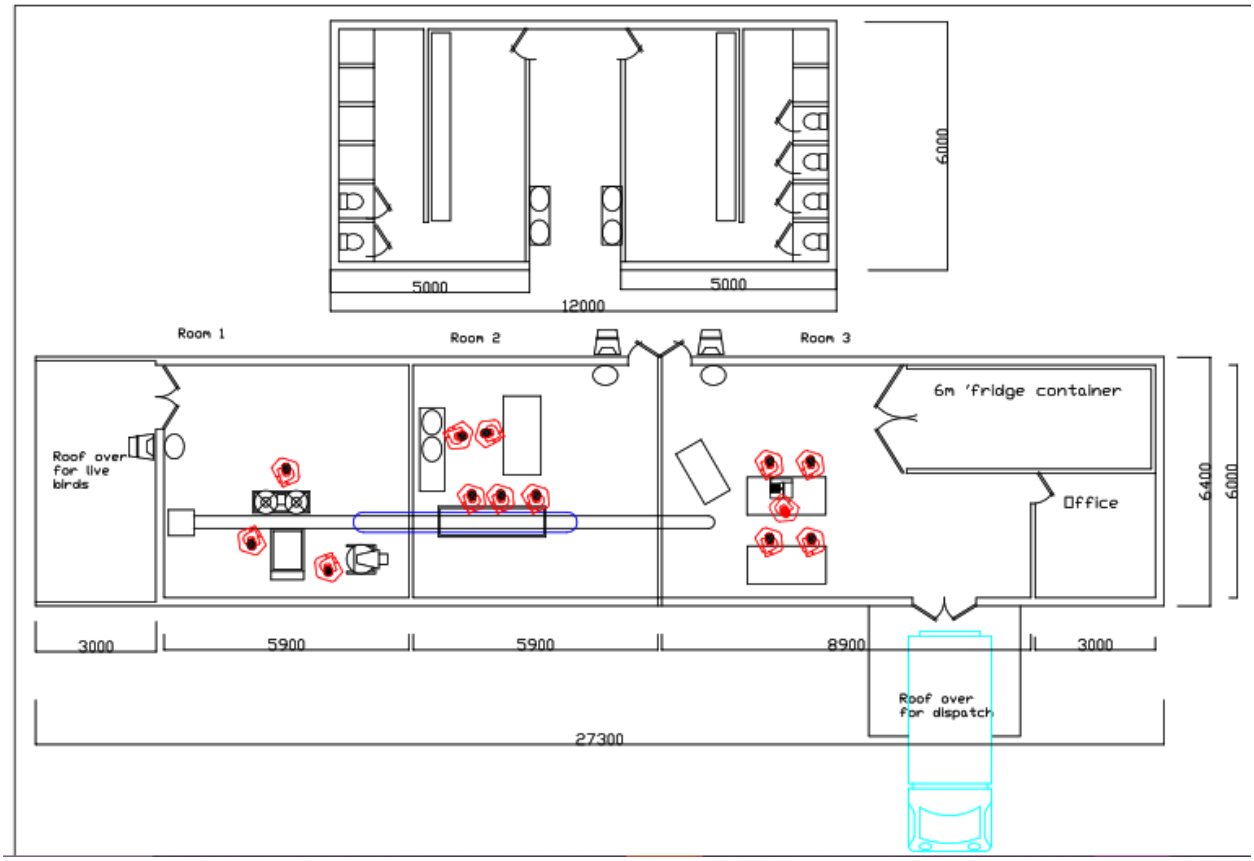
Province: Free State





SM Services & Consulting	**Topographical Map of the Farm Paula**	Project No: MB_20191218_Paula

Appendix 2: Building layout & dimensions



Appendix 3: EAP details who prepared the report and the Curriculum Vitae of the EAP

Name & Surname:	**Michelle Boshoff**
Address:	Dal Tempe, Ficksburg, 9730
	P. O. Box 1741, Ficksburg, 9730
Cell:	+27 82 893 8537
Email:	Michelle.Boshoff10@gmail.com
EAP Reg no:	2020/714
Pri Nat Sci Reg no:	119286

Qualifications:	BSc (Entomology and Botany) (UFS), BSc Hon (Entomology) (UFS), MSc (Entomology) (NWU), Management Development Diploma (UNISA), PriNatSci 119286.
Work Experience:	Michelle has over 24 years of work experience (national and international) in the environmental, mining and consulting industry. She has extensive experience in impact assessments, environmental management programs, closure planning and legal advice in permitting.
Declaration:	I, Michelle Boshoff, declare that this report has been prepared independently of any influence or prejudice as may be specified by the Department of Environmental Affairs.
	I hereby confirm that all comments received from I & APs will be included in the Final Basic Assessment Report and will be submitted to the Free State Department: Economic, Small Business Development, Tourism and Environmental Affairs (DESTEA). A record will be kept of all comments

and will be submitted in the form of a Comments and Responses Report.

Signature:

Declaration by EAP:

I, , declare that –

General declaration:

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

Signed: Michelle Boshoff _____ Date: _____

Michelle Boshoff

Michelle Boshoff

P.O. Box 1741
Ficksburg
9730
Cell: +27 82 893 8537
Email: Michelle.Boshoff10@gamil.com

MSc
Pr.Sci Nat. Ref 119286

PERSONAL INFORMATION:

Name: Michelle Boshoff
Name of Company: SM Services and Consulting Pty Ltd
Position: Senior Manager (Director)
Qualification & experience: MSc and 21 years' experience in stakeholder management, dynamic multicultural team leadership, complex problem-solving initiatives and project management. I have over 10 years' work experience in very demanding, fast paced international company, namely Rio Tinto. My key work functions focused on implementing world class environmental management programs, alignment of various aspects of social, economic and environmental issues and stakeholder liaison. My extensive operational and legislative experience has enabled me to translate complex concepts into practical solutions.

Key projects in which I have been involved with include:

- Base Resources, Base Toliara project in Madagascar (permits coordinator, assistance to legal and project team support,
- Rio Tinto, Richards Bay Minerals Zulti South Project (team leadership, alignment of environmental permits and signoff from key government institutions, including conservation authorities);

- Rio Tinto, Richards Bay Minerals Zulti North Mining Lease (team leadership, alignment of environmental permits and second mine in South Africa to be aligned to the new EIA regulations and has approval from both the Minerals and Petroleum Resources Development Act (MPRDA) and National Environmental Management Act (NEMA);
- Rio Tinto, Richards Bay Minerals, Town Board Mining Lease (obtained closure certificate for mining area from all regulators);
- Rio Tinto, QIT QMM, Madagascar (team leader on environmental management program, best practice advisor, reviewed rehabilitation program and progress, audited environmental management plan and implemented Rio Tinto Environmental Standards)
- Various impact- and risk assessments including expansion of the Port Operations, Richards Bay, establishing of Pulp Manufacturing Industry, new industrial developments;
- ISCOR Hlobane Mine (reviewed wetland rehabilitation program and environmental management program)

Additional experience includes:

- Principal Advisor services to Rio Tinto, Richards Bay Minerals operation on drought risk mitigation measures, ensuring Rio Tinto is recognized as a key stakeholder and formed part of the decision panels who were led by government.
- Group Leader on Rio Tinto led group initiatives to transfer best practices on land and rehabilitation management. I have participated in review of Rio Tinto's E14 related environment guidelines / standards and was a member of the MP5 Centre of Excellence (Environmental database system). I have reviewed and contributed to the South African Mining and Biodiversity Best Practice Guideline for land management that was sign off by the government. I have extensive experience in networking with relevant external environmental organizations, government officials and consultants.
- As a qualified natural scientist, I have strong analytical skills. This coupled with my operational knowledge can assist in providing practical and fit for purpose solutions across the HSE frameworks and management systems. A key passion for me is alignment in environmental data reporting across groups and organizations with the aim to

promote best practice, foster transparency, minimizing risks and standardizing reporting.

I do see myself as a passionate leader, with an engaging personal style. I have experience in leading diverse multi-cultural and international teams and can interact on various levels. Throughout my leadership on the Environmental team at Rio Tinto, Richards Bay Minerals, the mine won several environmental related awards (2013 Water Conservation & Demand Management Industry Winner, 2014 Annual National Association of Clean Air (NACA) Awards for Industry, 2014 & 2016 Waste Management Awards, 2016 Ecologic Award). These awards are not only as a result of guidance and leadership, but they were obtained through partnerships and collaboration with the various departments and divisions within in the business unit.

Recent Achievements:

2013: Award to Richards Bay Minerals: National Sector Award on Water Conservation and Demand Management
2013: Mining & Biodiversity Guideline (collaborative project with SANBI, Government and key mining houses)
2014: Award to Richards Bay Minerals: Annual National Association of Clean Air (NACA) Award for Industry
2014: Award to Richards Bay Minerals: Gold 4-Star Certificate and the Best New Entrant award from the Institute for Waste Management South Africa (IWMSA)
2016: Award to Richards Bay Minerals: Eco-Logic Awards Certificate of Merit for biodiversity management
2016: Award to Richards Bay Minerals: Gold 4-Star Certificate and the Best Team Spirit award from the Institute for Waste Management South Africa (IWMSA)
2017: Award to Richards Bay Minerals: Eco-Logic Awards Certificate of Merit for water conservation

Key Roles & skills:

- Project management and tactical environmental management advice.
- Overseeing and managing the environmental departments for technical advice, EIA management, legal registers, risk assessments, advising the company on environmental legal requirements and assisting in reporting to regulators.
- Lead key strategic projects (water management and biodiversity planning) and provide feedback to senior management on progress and way forward.

- Maintaining ISO 14001 accreditation, compliance to all environmental permits, and implementing monitoring and management plans;
- Communicate, liaise and negotiate internally and externally using appropriate methods to reduce risk, facilitate development of the business and sustainable relationships.
- Co-ordinate, execute and control strategic development projects to optimize production, align mine planning, rehabilitation and end land use and partake in key strategic initiatives.
- Develop company policies that strategically set goals and commitments.
- Manage project budget, oversee resources and provide specialist input where required. Budget planning, 5-year strategies and alignment with business strategies.
- Development and implement the Environmental Management Plans and Environmental Management Systems (including environmental data management), Closure Plans and Land Use Stewardship Plans.
- Provide technical input into Environmental Educational programs for mining induction programs and communities.
- Report on performance against Environmental targets and assist in compilation of annual Sustainable Development Report.
- Review and update closure reports and environmental liability cost calculations for mine closure.
- Implementing the Rio Tinto HSEQ Management System
- Representing Rio Tinto in key forums such as the Chamber of Mines: Environmental Policy Committee, the South African Mining and Biodiversity Forum, the uThungulu Coastal Management Forum.
- Technical advice on new exploration projects.
- Acting for General Manager Health, Safety, Environment and Security when required.

Core Skills: Capacity building, problem solving, conflict resolution, leadership, strategic planning, good communication/presentation, report writing, budget planning, business alignment, team work & willingness to work hard.

EDUCATIONAL QUALIFICATIONS:

BSc Degree (University of the Free Sate) - 1997

BSc Degree Honn (University of the Free Sate) - 1998
MSc Degree (University of Potchefstroom) - 2005
MDP (Management Development Program) Diploma (UNISA) – 2012
Digital Marketing Diploma (Shaw Academy) - current

EXPERTISE AND KNOWLEDGE:

Legal

- Sound knowledge and understanding of environmental legislation such as NEMA, National Water Act, MPRDA, NEMWA, NEMBA and NEMAQ and associated legal processes such as EIA's, Integrated Water Use License Applications (IWULA's) , Integrated Waste Water Management Plan (IWWMP's), EMPR amendments, Closure plans, legal reporting and online reporting.
- Environmental Liability Reporting and rehabilitation funding calculations in accordance with the MPRDA.
- ISO 140001 implementation and auditing
- Alignment of Environmental Management Program (EMPR) and Closure Report with the Social and Labour Plan
- Sound knowledge of IDP's, land planning and permitting requirements.

Operational

- Strategic planning and liaison on all spheres of operation and government.
- Managing a team of environmental scientists and interfacing with other departments.
- Day-to-day operational requirements, technical advice, data analysis and reporting relating to waste-, water- and air quality and biodiversity management.
- Project support to new projects.
- Environmental risk control and assessment.
- Internal & external auditing against Rio Tinto standards and ISO140001 standards as well as recommending action plans.
- Representing the company at various forums (regional, provincial and national).
- Environmental awareness training.
- Management and co-ordination of environmental research and studies on-site.
- Managing the on-site environmental incident classification and reporting.

Value add

- Alignment of water related projects and strategies on-site and finalization of water strategy for a company.
- Providing advice and strategies to incorporate biodiversity planning and restoration projects in project planning and execution phases.
- Proactive collaboration with key stakeholders on the planning for a ecotourism development nodes and sustainable development.
- Stakeholder mapping and communication strategies aligned to internal and external stakeholders.

OBJECTIVES

I enjoy working with people and the environment and all the impacts and aspects associated with both – because, inevitably they are linked.

I have a strong background in environmental management. I worked as environmental consultant at entry level in my career (1998), thereafter I was employed by the Department of Environmental Affairs in 2001 first as assessing officer and later promoted to Assistant Director: Impact Assessment. In 2007 I joined the team at Richards Bay Minerals as Ecologist. My focus was on coastal forest restoration, rehabilitation, ecological research and liaison with key stakeholders. In 2010 I was promoted to Manager: Environment and the focus broadened to water management, air quality, waste management, environmental radiation, systems, standards and more key stakeholders. Being in the environmental field is challenging – but a satisfying job. Every day bring along new challenges and new solutions.

My objective in life is to take on challenges head on. I believe I am responsible for my own success and failures, hence having a goal to work towards are imperative.

M. BOSHOFF

MICHELLE BOSHOFF

PERSONAL DETAILS

Surname:	Boshoff (Maiden name: Potgieter)
Name:	Michelle
Identity nr.:	7512080020081
Birth date:	8 December 1975
Gender:	Female
Marital status:	Married

Driver's license:	Code 08
Nationality:	South African
House language:	Afrikaans
Other:	English (talk, read and write)
	Zulu (talk a little bit)
Criminal record:	None & have Police Clearance Certificate
Health:	Very Good
Post address:	P. O. Box 1741
	Ficksburg
	9730
Telephone nr.:	082 893 8537
Work address:	P. O. Box 1741
	SM Services & Consulting
	Ficksburg
	9730
e-mail:	Michelle.Boshoff10@gmail.com

EDUCATION (DETAILED)

Tertiary education:	
University attended	University of the Free State Bloemfontein (1994 – 1997) Free State
Graduated:	B.Sc. (1997)
Majors completed:	Entomology III Botany III *(Annexure 6)*
Distinctions achieved in:	Entomology II (1995) Entomology III (1996)
Third year project:	Incidence, movement and seasonal distribution of terrestrial arthropods in a stand of cultivated *Amaranthus hybridus* (Amaranthaceae)
Awards:	Performance Acknowledgement (1996) *(Annexure 7)* Best Student in Entomology in Second Year (1995) *(Annexure 8)* Performance Acknowledgement (1997) *(Annexure 9)* Best Student in Entomology in Third Year (1997) *(Annexure 10)* Best Final Year Student in Zoology at the University of the Orange Freestate (*Annexure 11*)
Graduated:	B. Sc. Honors in Entomology (1998)
Honors project:	The evaluation of predators and parasites in a stand of cultivated *Amaranthus hybridus* (Amaranthaceae)
University attended	Potchefstroom University for Christian Higher Education (1998-2004) Potchefstroom 2531 South Africa

Graduated:	M.Sc. in Entomology (2005)
MSc Project:	An Ecological Study into the possible Reclamation Value of Reed beds in a Wetland System on a Coal Mine in Kwa-Zulu Natal.
University attended	UNISA (2011-2012) Pretoria 0001 South Africa
Graduated (Diploma):	Management Development Program (MDP) (2012)
Digital Marketing:	Diploma in Digital Marketing
University attended	Shaw Academy
Graduated (Diploma):	Current

Short Courses & other experience:	
***Photography Course* (1997)**	Beginners photography course
Entrepreneurship and Business Management* (1997) *(Annexure 20)	Business entrepreneurship
Biodiversity: Principles & Management Course,* 15 July 1997 *(Annexure 6)	
Glenkovs* (1997) *(Annexure 21)	
Aquabase* (2000) *(Annexure 22)	
Introduction to Waste Management (Aug 2003)	
Coastcare Induction Programme (Feb 2004)	
Environmental Law (May 2004)	Short course on environmental law and waste management
ArcGIS Introduction (2007)	Geographical program
SAP/ Business Solutions	Business program
Monitor Pro (2010)	Environmental database program
Rio Tinto Air Quality Management Workshop (2011)	Workshop held in Salt Lake City on best practices, case studies and air quality challenges.
Computer literacy	MS Office and Windows 2010

- **SASS and wetland ecology (2002)**

WORK EXPERIENCE

Company: SM Services and Consulting Pty Ltd
Position: Senior Manager
Time: January 2018 – Present
Role & functions:

- Strategic authority and tactical leader in development, improvement and oversight of the company's Environmental Management Systems.
- Development, implementation and administration of effective environmental programs, policies and procedures
- Environmental awareness campaigns and environmental training.

Company: Richards Bay Minerals – Rio Tinto
Position: Manager: Environment
Time: January 2010 – December 2017
Role & functions:

- Driving company operational and financial deliveries within the Department. This include elimination of waste legacy issues, compliance against permits, pro-active participation on Chamber of Mines initiatives, ensuring sustainable land-use and rehabilitation progress, setting the benchmark in the mining industry for concurrent rehabilitation and ecological monitoring.
- Oversee strategic planning and committees with regards to drought preparedness, product delivery and stakeholder engagement.
- Managing the Environmental Department by ensuring that all legal obligations in terms of the legislation, by-laws, company requirements and external commitments are met and reported on. Provide specialist input into operational projects in terms of water-, air-, waste-, radiation- and land management. Co-ordinate all research and monitoring activities related to environmental management on-site. Provide support in terms of ISO 140001 compliance, and contribute to innovation and problem solving initiatives
- Representing RBM & Rio Tinto at the Chambers of Mines at the Environmental Policy Committee (EPC)
- Representing RBM & Rio Tinto at the Chambers of Mines at the South African Mining and Biodiversity Forum (SAMBF)
- Play leading role in the "Biodiversity in Mining Guideline" document, supporting South African National Biodiversity Institute (SANBI) & SAMBF

- Facilitating partnerships and collaboration between RBM & Rio Tinto with Wildlife and Environmental Society of South Africa (WESSA) on environmental education programs
- Provide support to staff by formulating the annual work plan, tracking progress, assist with technical input, and sign off on legal correspondences, problem solving, strategic alignment with company goals and vision. Develop career pathways and skills development within the team.
- Act as mentor for employees at RBM.

Reason for leaving post: Was promoted to higher level in new organization and due to relocation of family.

Company: Richards Bay Minerals – Rio Tinto
Position: Ecologist
Time: March 2007 – December 2009
Role & functions:

- Managing the ecological research and monitoring on the progress of the rehabilitation program and ensuring compliance with environmental legal requirements. Updated environmental management plans and closure documents. Reviewed environmental impacts assessment documents.
- Managed research funds and captured payment requirements in SAP.
- Planned and implemented environmental awareness events.
- Reviewed environmental training manuals and presentations..
- Assisted in public participations sessions during EIA's and IWULA applications.
- Acted as liaison between SHEQ Department and other Departments.

Reason for leaving post: Was promoted within organization.

Company: Department of Agriculture and Environmental Affairs
Position: Assistant Manager: Impact Assessments
Time: March 2006 – February 2007
Role & functions:

- Management of EIA department,
- Management of budget and vehicle fleet for the department,
- Providing support to team members on IEM tools,
- Management and dissemination of information and technical/procedural advice;
- -Internal management, co-operation and liaison, and support with other departments (National & Provincial, & Local Municipalities),

- -Development of practical, implementable and measurable conditions of authorisation or exemptions & environmental management plans;
- -Collecting & providing relevant information for the development of norms & standards, assessment criteria and operational guidelines;
- -EIA Database management
- -Environmental Legal Advice and representing the Department in court cases.

Reason for leaving post: Wanted more exposure in industrial& mining environmental management.

Company: Department of Agriculture and Environmental Affairs
Position: Assistant Director: Impact Assessments
Time: March 2004 – February 2007
Role & functions:

- -Management of EIA process,
- -Management and implementation of other IEM tools, Management and dissemination of information and technical/procedural advice;
- -Internal management, co-operation and liaison, and support,
- -Development of practical, implementable and measurable conditions of authorisation or exemption;
- -EIA Database management
- -Environmental Legal Advice

Reason for leaving post: Was promoted within organization.

Company: Department of Agriculture and Environmental Affairs
Position: Environmental Officer: Impact Assessments
Time: January 2003 – February 2004
Role & functions:

- -Management of EIA process,
- -Management and implementation of other IEM tools, Management and dissemination of information and technical/procedural advice;
- -Internal management, co-operation and liaison, and support,
- -Development of practical, implementable and measurable conditions of authorisation or exemption;
- -EIA Database management
- -Environmental Legal Advice

Reason for leaving post: Was promoted within organization.

Company: Hydrological Research Unit (HRU
Position: Research Assistant & Part time Lecturer
Time: September 2001 – December 2002
Role & functions:

- Groundwater modeling,
- Database updating,
- Lecturing,
- Field trip organization,
- Presentations &, internet searches

Reason for leaving post: Wanted more exposure into environmental legislation.

Company: Jasper Muller & Associates Geohydrologists
Position: Scientific Assistant
Time: September 2000 – August 2001
Role & functions:

- Groundwater modeling,
- Database updating, generating multi-parameter profiles,
- Presentations, internet searches,
- Writing documents in electronic format, writing data cd's, typing and editing of documents,
- Act as liaison with international organizations.

Reason for leaving post: Fiancé was relocated to new town.

Other leadership contributions:

Social areas:

- Parents for Adoption and Child Development, Richards Bay (2007-current)
- Deacon at the Nederduitz Hervormde Chruch (1994, 2002-2007)
- Presbyter at the Nederduitz Hervormde Chruch (1995-1997)
- University Hostel Serenade Group (1994-1996)
- Journalist for Digatrixia (1995-1996)
- Journalist for Kovshaan (1995-1997)
- Kovsgem Community Support Projects (1995)
- Community vegetable garden at Igomotseng (52 km north-east of Bloemfontein) (1996)

SKILLS

Scientific contributions:

Poster presentations:

Potgieter, M. & Louw, S. 1997. *Incidence, movement and seasonal distribution of terrestrial arthropods in a stand of cultivated Amaranthus hybridus (Amaranthaceae).* Presented at the Entomological Congress held at Stellenbosch, 1997.

Potgieter, M. & Verhoeven, R. 1996. *The polinarium structure of Cynanchum*. Presented to the Faculty of Botany at the University of the Orange Freestate.

Potgieter, M. & van Rensburg, L. 1999. *An ecological study into the possible reclamation value of reed-bed in a coal mine wetland system in KwaZulu-Natal. The role of Insects.* Presented at the Entomological Congress (ESSA) held at Potchefstroom, 1999. *(Annexure 13)*

Potgieter, M. & van Rensburg, L. 2000. *An ecological study into the possible reclamation value of reed-beds in a coal mine wetland system in KwaZulu-Natal .The role of Macrophytes.* Presented at the Botanical Congress (SAAB) held at Potchefstroom, 2000. *(Annexure 14)*

Van Rensburg, L., Pistorius, L. & Potgieter, M. 2000. *An investigation into the problems associated with revegetating chrysotile tailings.* Presented at the Botanical Congress (SAAB) held at Potchefstroom, 2000. *(Annexure 15)*

Van Rensburg, L., De Sousa Correia, R. I., Potgieter, M. & Ginster, M. 2000. *Revegetation on a coal fine ash disposal site in South Africa.* Presented at the Botanical Congress (SAAB) held at Potchefstroom, 2000. *(Annexure 16)*

Boshoff, M. 2003. Current issues on decision making with regards to environmental management in the North Coast Region. Limpopo Environmental Fair, Polokwane, 2003 (*Annexure 17*)

Conference presentations:

Boshoff, M. 2012. *Evaluating the complexities of environmental compliance and complying with the MPRDA. Mineral Resource Compliance and Reporting 4th Annual Conference 2012*

Boshoff, M. 2016. *Our Coastal Zones. The South African Institute of International Affairs' Governance of Africa's Resources Programme (GARP): Contested Spaces: Mining and South Africa's Coastal Zones. South African Institute of International Affairs, Round Table, 8 February 2016.*

Seminar presentations:

Potgieter, M. & Louw, S. 1997. *The evolutionary development of phytophagous insects*. Presented to the Faculty of Zoology and Entomology at the University of the Orange Freestate, 1997.

Potgieter, M. & Louw, S. 1997. *Phytophagous insects and their role in multi-trophic interactions*. Presented to the Faculty of Zoology and Entomology at the University of the Orange Freestate, 1997.

Potgieter, M. 1998. *A brief overview on the practical side of evaluating and monitoring a reedbed system in a coal mine*. Presented to the Institute of Ecological Rehabilitation (Eko Rehab), Potchefstroom, 1998.

Potgieter, M. 1998. *An environmental study on Sithebe Wetland, on Hlobane Mine and the reclamation effect of reed-beds in a wetland system.* Presented at the Fifth Nkongolwana River Forum meeting, Vryheid Coronation Colliery, Coronation, 1998.

Potgieter M. & van Rensburg, L. 1999. *An ecological study into the possible reclamation value of reed-beds in a coal mine wetland system in KwaZulu-Natal.* Presented at the Entomological Congress held at Potchefstroom, 1999.

Articles:

Potgieter M. & van Rensburg, L. 1999. *An ecological study into the possible reclamation value of reed-beds in a coal mine wetland system in KwaZulu-Natal.* Published in: Mining Weekly, Issue 23 September 1999. *(Annexure 17)*

More detail on my skills:

Environmental Management (Industry):

My industrial & mining experience involves the management of environmental programs such as waste-, water-, air, and land- and biodiversity management in a comprehensive, systematic and planned manner. It includes budget planning, obtaining resources for developing, implementing and maintaining policy and systems and risk registers for environmental protection & legal compliance.

Work experience also include maintaining & improving environmental performance, ISO 14001 accreditation, managing environmental data in a systematic way and providing feedback to operations. Strategic experience relate to land use planning, closure and rehabilitation planning, stakeholder engagement and keeping the company's focus on immediate and long term impacts of its products, services and processes on the environment by ongoing evaluation of practices, rehabilitation, legislation, procedures and processes. I have also a good understanding of health and safety requirements for a mining and industrial company, level II, III & IV Risks, document control, and auditing.

Environmental Management (Government):

I worked within the Department of Agriculture and Environmental Affairs (DAEA) for 6 years, based in Richards Bay. My role was Assistant Director: Impact Assessments. The role demanded sound understanding of environmental legislation such as National Environmental Management Act (NEMA), National Environmental Management Act: Air Quality (NEMA:QA), National Environmental Management Waste Act (NEMWA), National Environmental Management Biodiversity Act (NEMBA), the National Water Act, National Forestry Act, Mineral & Petroleum Resources Act (MPRDA), Coastal Management Act, etc. Good experience relating to government procedures (including Environmental Authorizations), directives, municipal collaboration (district and local), Catchment Management Agencies, Conservancies and stakeholder engagements.

Principal Specialist:
Work experience includes specializing on wetland functionality (MSc thesis), ecology, hydrology, researcher, lecturer and environmental impact assessing officer.

Other work functions in the past included:

- Co-ordinate RBM/CERU ecological research and monitoring program and ensure that relevant reports are produced and feedback given to RBM Personel Technical Reports;
- Co-ordinate ecological research programmes on RBM Lease areas and provide feedback to RBM Personnel;
- Monitor and produce regular functional status reports of the Nhlabane Fish Ladder;
- Validate the compliance to the relevant Rio Tinto Environmental Standards and highlight gaps;
- Maintain communications with regulators, land owners and local communities with regards to land management requirements;
- Continuously monitor success of management and rehabilitation succession and provide feedback to RBM personnel;
- Assist with public and VIP Tours of the Rehabilitation areas;
- Perfrom bi-annual CWAC counts on Lake Nhlabane;
- Co-ordinate all aquatic ecological monitoring programmes;
- Review and align rehabilitation plan with mine plan;
- Co-ordinate Zulti South ecological work for ZS Feasibility phase, including environmental impact assessments;
- Establish and maintain a functional GIS that covers all ecological aspects at RBM;
- RBM's Biodiversity Programme
- Currently in the process of being updated;

- Develop and maintain a database of all red data species that occur or may occur in the lease areas and develop plans to manage the risks posed to those species.

Appendix 4: Terrestrial Biodiversity (Fauna & Flora) Specialist Assessment

Appendix 5: Palaeontological Specialist Report

Appendix 6: Environmental Impact Assessment Table

					Consequence					Likelihood					
Project Component	Objective	Activity/ies	Potential Impact	Alternative Site	Minor	Medium	Serious	Major	Catastrophic	Almost Certain	Likely	Possible	Unlikely	Rare	Environ-mental Impact / Risk
Construction Phase	Securing the site and site camp establishment, including fences	• Open excavations • Site preparation • Cement / concrete batching • Fuel storage & hazardous substance spillage • Movement of construction employees' vehicles in the area and on site • Habitat transformation during construction	Hazardous substance contamination (soil & water)	1		X					X				High
				2		X					X				High
				3		X					X				High
				4			X					X			High
				5		X					X				High
			Erosion	1	X						X				Low
				2	X						X				Low
				3	X						X				Low
				4	X						X				Low
				5	X						X				Low
			Vegetation clearance	1	X									X	Low
				2	X									X	Low
				3		X							X		Low
				4		X				X					High
				5	X					X					Moderate
			Disturbance of faunal communities due to construction as well as poaching and hunting risk from construction staff.	1	X								X		Low
				2		X						X			Moderate
				3		X						X			Moderate
				4		X						X			Moderate
				5	X							X			Low
			Disturbance to potential archaeological sites	1	X									X	Low
				2	X									X	Low
				3		X						X			Moderate
				4		X						X			Moderate
				5		X							X		Low
				1	X									X	Low

	Minimisation of Development Footprint (demarcation of work areas) including all infrastructure	• Site preparation • Vegetation clearance • Installation of services • Construction of buildings & pollution • Alien plant invasion in and around the road. • Unregulated runoff from the access road. • Maintenance activities which may lead to negative impacts such as pollution, herbicide drift etc.	Alien plant invasion	2		X							X		High
				3	X							X			Moderate
				4	X						X				High
				5	X								X		Low
			Disturbance to potential archaeological sites	1	X									X	Low
				2	X									X	Low
				3		X						X			Moderate
				4		X						X			Moderate
				5		X							X		Low
			Impact on ecological processes and loss of plant cover leading to erosion as well as loss of faunal habitat and loss of specimens of protected plants	1	X								X		Low
				2	X								X		Low
				3		X						X			Moderate
				4		X					X				High
				5		X						X			Moderate
			Disturbance to local residents	1	X					X					Low
				2			X			X					Critical
				3		X				X					High
				4	X					X					Low
				5	X					X					Low
	Waste & Hazardous Substances Management	• Construction rubble generation • Hazardous substance spillage and disposal of containers • Debris clearance • General waste generation	Contamination of soil and water resource	1	X							X			Low
				2			X					X			High
				3	X							X			Low
				4	X						X				Moderate
				5	X							X			Low
			Unauthorized waste laydown areas	1	X							X			Low
				2	X							X			Low
				3	X						X				Moderate
				4	X						X				Moderate
				5	X						X				Moderate
			Impacts on vegetation & ecological processes	1	X								X		Low
				2		X							X		High
				3		X						X			Moderate
				4		X					X				High
				5		X						X			Moderate
	Heritage & Paleontological Management	• Site preparation & vegetation clearance•	Disturbance to archaeological sites and	1	X									X	Low
				2	X									X	Low
				3		X						X			Moderate

		Construction activities	destruction of artefacts	4		X						X			Moderate
				5		X						X			Moderate
	Erosion and Sedimentation Control	• Site preparation • Vegetation clearance • Construction activities	Vegetation loss can lead to exposed soil that can erode due to rain and wind	1		X						X			Moderate
				2	X								X		Low
				3		X						X			Moderate
				4		X						X			Moderate
				5		X							X		Low
			Sediments can be displaced during heavy rainfall events	1	X								X		Low
				2	X									X	Low
				3		X					X				High
				4		X					X				High
				5		X						X			Moderate
Operational Phase	Chemical Management	• Storage and Use of chemicals on-site for cleaning purposes and treatment of waste / effluent	Spillages can result in water resource pollution	1		X					X				High
				2	X						X				Moderate
				3		X					X				High
				4		X					X				High
				5		X					X				High
			Wrongful use can result in human / animal/ vegetation harm	1	X						X				Moderate
				2	X							X			Low
				3		X				X					High
				4	X							X			Low
				5	X							X			Low
	Fire Management	• Open fires and smoking areas	Uncontrolled spread of fire	1	X						X				Moderate
				2			X					X			High
				3		X					X				High
				4			X				X				Critical
				5		X						X			Moderate
			Fire can cause stored chemicals to explode	1		X					X				High
				2		X					X				High
				3			X				X				Critical
				4			X				X				Critical
				5		X						X			Moderate
	Condemned Material Management	• Material resulting from slaughtering activities	Contamination of water resources receiving environment	1		X							X		Low
				2		X							X		Low
				3		X						X			Moderate
				4			X					X			High
				5		X						X			Moderate
			Contamination of the	1	X							X			Low
				2		X						X			Moderate

			workplace and impact on worker health	3		X						X			Moderate
				4	X							X			Low
				5	X							X			Low
	Effluent Management	• Effluent (resulting from wash down, facility cleaning, water mixed with blood) as a resulting of slaughtering activities	Contamination of water resources	1	X						X				Moderate
				2	X						X				Moderate
				3		X					X				High
				4			X				X				High
				5		X					X				High
			Contamination of the workplace and impact on worker / residents health	1		X					X				High
				2		X					X				High
				3		X					X				High
				4	X						X				Moderate
				5	X						X				Moderate
	Waste Management	• Daily operation and generation of general waste / office waste	Illegal dumping in surrounding area	1		X					X				High
				2	X						X				Moderate
				3		X					X				High
				4			X				X				High
				5		X					X				High
			Contamination of environment where the illegal dumping is taking place	1		X					X				High
				2	X						X				Moderate
				3		X					X				High
				4			X				X				High
				5		X					X				High
	Domestic Sewerage	• Daily operation of toilet facilities	Spillage from the sewerage infrastructure may cause harm to the environment	1		X					X				High
				2		X						X			Moderate
				3		X					X				High
				4		X				X					Low
				5		X						X			Moderate
	Blood & Manure Management	• Blood & manure resulting from slaughtering activities	Contamination of water resources	1		X						X			Moderate
				2		X							X		Low
				3			X					X			High
				4			X					X			High
				5		X						X			Moderate
			Contamination of the workplace and impact on worker health	1		X						X			Moderate
				2		X				X					High
				3		X				X					High
				4		X						X			Moderate
				5		X							X		Low
			Health Impacts	1		X					X				High

				2		X				X					High
				3		X				X					High
				4		X						X			Moderate
				5		X					X				High
			Spreading of diseases	**1**		X						X			Low
				2			X					X			High
				3			X					X			High
				4		X						X			Low
				5		X						X			Low
			Localised contammination of soil & water resource	**1**		X						X			Low
				2			X					X			High
				3			X					X			High
				4			X					X			High
				5		X						X			Low
	Solid Waste Management	• Daily operation of facility	Health impacts	**1**		X						X			Low
				2			X				X				High
				3			X				X				High
				4		X						X			Low
				5		X						X			Low
			Nuisance odours	**1**		X				X					High
				2		X				X					High
				3		X				X					High
				4			X					X			High
				5		X						X			Moderate
	Odour Management	• Daily operation of facility	Environmental impacts due to facilities / storage tanks that have not been cleaned out	**1**		X						X			Moderate
				2		X						X			Moderate
				3		X						X			Moderate
				4		X						X			Moderate
				5		X						X			Moderate
			Physical disturbance to the area	**1**		X						X			Moderate
				2		X						X			Moderate
				3		X						X			Moderate
				4		X					X				High
				5		X						X			Moderate
Decommissining Phase	Decommissioning of buildings and infrastructure	• Demolition of buildings and related infrastructure													

Appendix 7: Best Practice Guidelines for Operating and Managing an Abattoir

To be attached

Appendix 8: Public Participation Report

To be completed

Appendix 9: Comments & Response Report

To be completed

Appendix 10: Integrated Environmental Management Program (EMPr) and Wastewater Management Plan (IWWMP)