

**DRAFT S24G ENVIRONMENTAL IMPACT ASSESSMENT REPORT
FOR THE UNLAWFUL COMMENCEMENT OF A
FEEDLOT FACILITY, MARQUARD AREA,
SETSOTO LOCAL MUNICIPALITY,
FREE STATE PROVINCE**

SUBMITTED TO:

Free State Department of
Economics, Small Business
Development, Tourism &
Environmental Affairs
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September 2022

REPORT TITLE:	Draft Environmental Impact Report for the Unlawful Commencement of a Feedlot Facility, Marquard Area, Setsoto Local Municipality, Free State Province
APPLICANT:	Aluf Farming (PTY) Ltd.
SPOOR PROJECT REFERENCE:	01/24 aluf feedlot_s24g
PLACE AND DATE:	Pretoria, September 2022

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DECLARATION OF INDEPENDENCE

I, JC van Rooyen as authorised representative of SPOOR Environmental Services hereby confirm my independence as an Environmental Assessment Practitioner and declare that neither I nor SPOOR Environmental Services (PTY) Ltd. have any interest, be it business, financial, personal or other, in any proposed activity, application or appeal in respect of which SPOOR Environmental Services (PTY) Ltd. was appointed as Environmental Assessment Practitioner in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), other than fair remuneration for worked performed, specifically in connection with the Feedlot Facility for Aluf Farming (PTY) Ltd, Setsoto Local Municipality, Free State Province.

Signed _____

Date: 2022-09-13

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EXECUTIVE SUMMARY

SPOOR Environmental Services (PTY) Ltd. was appointed as the independent Environmental Assessment Practitioner to conduct Environmental Impact Assessment in terms of the S24G rectification application for the Aluf Farming (PTY) Ltd. activities and facilities. The Environmental Impact Assessment Process is being undertaken in terms of Section 24(G) of the National Environmental Management Act (Act no. 107 of 1998) (NEMA) as well as the Regulations listed in terms of the National Environmental Management: Waste Act (Act No. 59 of 2008, (GNR 921).

Locality

The project falls just to the northeast of the central Free State Province. On a more local scale, the site area is located between the towns of Marquard (27km due west of Marquard) and Winburg in the Setsoto Local Municipality, Thabo Mofutsanyane District Municipality of the Free State Province. The cattle feedlot is situated on the Farm Demilander 273, Marquard area.

Project Description

The Applicant is a local Farmer who formalized his operations into an agricultural company with its core business focusing on commercial crop and animal production. Aluf Farming started a feedlot in an existing kraal on the farm, which has grown into a new facility that is able to feed 3000 small stock units (SSU) and 3000 large stock units (LSU) at a time. This new feedlot was built on existing cultivated areas and didn't require the removal of indigenous vegetation. The farm also cultivates maize for use on the farm and the national market. The proposed infrastructure include:

- ❖ A feedlot facility with the capacity to process 3000 SSU & LSU at a time,
 - Small stock units consist of 3000 Merino's; and
 - Large Stock Units consist of 3000 Wagyu cattle.
- ❖ Two main feedlot facilities divided into smaller units,
- ❖ A feed mixing facility (contained in an existing outbuilding),
- ❖ An animal processing facility (contained in the existing farm kraal),
- ❖ 2x Production boreholes feeding into a main concrete farm dam and associated water pipelines (existing),
- ❖ Water pipelines from the concrete dam to the feedlot,
- ❖ Existing farmhouse and facility outbuildings,
- ❖ Existing access road from the R708.

Small stock Units

Small Stock Units or lambs are sourced and bought in from the local market and are delivered to the feedlot with a body mass of between 3-5 kg. Between 40-60 lambs are housed per pen where they are fed a mixture of *eragrotis spp.* (cane grass, "oulandsgras" or tef) and lucerne feed pellets.

Once they reach a body mass of between 27-30 kg, the small stock units are sold and removed from the feedlot for slaughter. All lambs are sold in the national market, and none are exported.

Large Stock Units

150 Large Stock Units of calves are delivered to the feedlot every month, at the age of 5 months. Calves are kept in the processing pen overnight to calm down. Thereafter the calves roam and feed extensively

off the pasture areas for a period of one month. After they have reached the desired weight, the calves are relocated to the feedlot for 16 months where they are fed a mixture of *Eragrostis* spp. (cane grass, “oulandsgras” or tef), maize, soybean cakes and silage.

30% of the calves are sold for the inland market (PicknPay, Checkers and boutique butcheries) and the remaining 70% are exported to international markets via meat agents for Saudi Arabia, China, Mauritius, Kuwait, and UAE.

Study Methodology

On application for the development finance the Applicant was requested by the financing institution to perform an EIA. The Applicant then contacted SPOOR who advised on the application for rectification under Section 24G of NEMA, 1998 (Act 107 of 1998) S24G, process. The Free State Department of Economic, Small Business Development, Tourism And Environmental Affairs (DESTEA) was contacted on the on the 27th of May 2022 with information on the proposed way forward for public participation and to request a project reference nr.

In short, this S24G EIAR will describe the following:

- ❖ The background to the project;
- ❖ The relevant legislation and guidelines that were considered in preparation of the EIA Report;
- ❖ a description of the property on which the proposed activity is to be located;
- ❖ a detailed description of the proposed scope of work;
- ❖ a description of the environment that may be affected by the project which will include all current physical, biological, social, economic, and cultural aspects of the receiving environment;
- ❖ details of the public participation process conducted;
- ❖ a description of all feasible and reasonable alternatives;
- ❖ identification of all physical, biological, social, economic, and cultural environmental impacts of the proposed development on the properties.

Public Participation

The public participation process to follow will be conducted as set forth in Chapter 6 of the Environmental Impact Assessment Regulations R543 of the NEMA (Act No. 107 of 1998). A summary of all the comments received by interested and affected parties, as well as the response from the environmental practitioner will be included in the comments and response report.

Alternatives

Key reasons why no alternatives were considered:

- ❖ The site where the facility is located is within an existing agricultural/rural area with the same land use zoning (See Appendix 7),
- ❖ The surrounding land uses adjacent to the site are all agricultural or rural uses,
- ❖ The facility is located on the area where the old kraal was situated, and the additional new feedlots were developed on cultivated areas. These areas were ideal for the required activities and facilities and no new buildings needed to be constructed and only minor changes had to be made to the development area,
- ❖ The Aluf Farming operations currently provides 37 permanent employment opportunities on the farm with 13 directly linked to the feedlots.
- ❖ No natural or indigenous vegetation were removed for the development.

- ❖ The feedlots are situated further away than 150m from surface water resources.
- ❖ Clean surface run-off is diverted to discharge in natural surface water areas.

Impact Summary

Potential Impacts	Impact Significance
Climate	
High volumes of precipitation.	High
Lightning strikes.	Medium
Geology and Soils	
Surface and sub-soils contamination via manure.	High
Surface and sub-soils contamination via hydrocarbons.	Medium
Hydrology	
Possible contamination of stormwater as a result of oil and fuel leaks on vehicles.	Medium
Possible contamination of stormwater as a result of run-off water from feedlots.	Medium
Possible contamination of groundwater as a result of oil and fuel leaks on vehicles.	High
Biodiversity	
Potential loss and fragmentation of the wetland and the ESA near the vicinity of the proposed development.	Low
The negative fragmentation effects of the development and enable safe movement of faunal species.	Low
The direct and indirect loss and disturbance of faunal species and community.(including potentially occurring species of conservation concern).	Low
Employment	
37 Permanent jobs created.	High (Positive)
Noise	
Possible increase of environmental noise.	Low
Possible increase of occupational noise.	Medium
Air Quality	
Potential Impacts on sensitive receptors, surrounding farmsteads and dwellings.	Low
Nuisance odour impacts	Medium
Contribution to greenhouse gases.	Medium
Traffic	
Movement of large vehicles on and off the facility.	High

Potential Impacts	Impact Significance
Fire	
Potential fire hazard	High
Heritage Features	
Potential alteration or destruction of heritage features within the project boundaries and broader area	Low

Conclusion

It is believed that the most noteworthy, anticipated impacts and other relevant issues have been identified at the conclusion of this, the draft EIAR phase of the Aluf Farming Feedlot Development. The receiving environment of the proposed development have been scrutinized in terms of the most pertinent impacts revealed by specialist studies, maps, and other literature as well as discussions with representatives of local authorities and interested and affected parties.

Impacts deemed to occur during the operational phase were identified and their significance rated accordingly. Pertinent impacts identified include:

- ❖ Impacts as a result of inclement weather conditions,
- ❖ Surface and subsurface soil contaminations,
- ❖ Surface and groundwater contaminations,
- ❖ Limited disturbances to faunal species,
- ❖ Occupational noise levels,
- ❖ Limited reduction in air quality and contributions to greenhouse gasses,
- ❖ Potential fire related impacts,
- ❖ On a positive note, the socio-economic benefits created by local employment and the associated benefits to the local economy.

A thorough Public Participation Process in line with the NEMA (Act 107 of 1998) regulations has been conducted thus far and will be maintained for the remainder of the S24G application process. Responses received from local I&APs and other stakeholders to date, as well as proof of the site and newspaper adverts are included in the Comments and responses report, which is appended to this report. The final issues and response report will serve as a summary of the comments and responses received from I&APs throughout the application process and will be included in the final S24G EIR.

In the light of the environmental data described, issues investigated and discussions with interested and affected parties, it is believed that the Environmental Impact Management Process is completed for this, the Draft S24G EIR phase of the feedlot development. The feedlot development is deemed to have a positive socio-economic impact with limited manageable negative impacts. It is therefore recommended that the feedlot development be approved. It will be important to implement the mitigation measures and recommendations stipulated by this EIAR and the various specialist studies. These mitigation measures and recommendations are included and refined in the EMPr of which adherence must form part of the contractual agreement with the construction phase contractors appointed and the operational phase farm management staff. A copy of the draft EMPr is included in Appendix 6 and changes will be made where required, once feedback has been received from DESTEA and the consultation process have been completed.

DETAILS AND EXPERTISE OF THE ENVIRONMENTAL ASSESSMENT PRACTITIONER

In accordance with Regulation 28(1) (a) of Government Notice No. R. 543 of 18 June 2010, this section provides an overview of SPOOR Environmental Service's experience with EIAs, as well as the details and experience of the EAPs that form part of the EIA team.

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Ms. H. Botha has 7 years of experience in EIA, environmental management, report writing, water use licenses and project management. She was responsible for ensuring that the S24G EIR report satisfies the requirements of Chapter 4, Part 3 of GN 982 of the 2014 NEMA (Act 107 of 1998) regulations.

Name: JC van Rooyen
Company: SPOOR Environmental Services (PTY) LTD.
Qualifications: M.Sc. (Environmental Management), B. Landscape Architecture
Professional Registration: EAPASA: 2020/303

SPOOR Environmental Services (PTY) Ltd. has been in operation since 2011. The Director and principal EAP, Mr JC van Rooyen, has been involved in an array of environmental consultation and planning projects in various spheres of the landscape design, development, and environmental management disciplines over the past 20 years. SPOOR Environmental Service's approach towards projects is to strive for sustainable environments that not only reflect artistic and aesthetic quality but also hold diverse ecological and cultural value. The Company is capable of conducting environmental applications and landscape development planning and design for various projects including:

- Scoping Reports
- Environmental Impact Assessment Reports
- Visual Impact Assessments
- Environmental Management Systems/ Plans
- Environmental Management Programmes (EMPr)
- Air Emissions Licence Applications (AEL)
- Waste Management Licence Applications (WML)
- Environmental Audits & Monitoring
- Integrated Environmental Management (IEM)
- Environmental Rehabilitation
- Conservation Planning / Eco-tourism Developments
- Landscape Design and Development
- Landscape/ Environmental Project Management

Applications and processes included for projects over the past 20 years required that the EAPs have sound knowledge and skill in the areas of undertaking of public participation processes, the translation of scientific information into comprehensible impact assessment reporting and an understanding of the financial implications of the various projects in order for these applications to be successful. This indicates that the EAPs are capable to conduct the environmental assessment for the proposed project.

PROJECT TEAM

The project team working on the proposed project consists of the following practitioners:

- ❖ **Mr. J.C. Van Rooyen** (*BL., M. Sc (Env. Soc)*) (SACLAP) (Principal EAP)
Landscape Technologist and Environmental Assessment Practitioner
- ❖ **Ms. H.E. Botha** (*M. Env. Man.; B. Sc (Hons) Zoology; B. Sc Zoology & Genetics*)
Environmental Assessment Practitioner & Water Use License Consultant

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ABBREVIATIONS

DESTEA	-	Free State Department of Economics, Small Business Development Tourism & Environmental Affairs
DWS	-	Department of Water Affairs and Sanitation
EAP	-	Environmental Assessment Practitioner
EAPASA	-	Environmental Assessment Practitioners Association of South Africa
ECA	-	Environment Conservation Act
EIA	-	Environmental Impact Assessment
EIAR	-	Environmental Impact Assessment Report
EMPr	-	Environmental Management Programme
FSHRA	-	Free State Heritage Resources Authority
GNR	-	Government Notice Number
IAIAsa	-	International Association for Impact Assessment South Africa
IEM	-	Integrated Environmental Management
IDP	-	Integrated Development Plan
I&AP	-	Interested and Affected Party
Kg	-	Kilogram
Km	-	Kilometre
LSU	-	Large Stock Unit
m	-	Metre
mbgl	-	Meters Below Ground Level
m ²	-	Square Metres
m ³	-	Cubic Metres
NEMA	-	National Environmental Management Act
NEMBA	-	National Environmental Management: Biodiversity Act
NEMWA	-	National Environmental Management: Waste Act
NEM: AQA	-	National Environmental Management: Air Quality Act
NFEPA	-	National Freshwater Ecosystems Priority Areas
NHRA	-	National Heritage Resources Act
NWA	-	National Water Act
SAHRA	-	South African Heritage Resources Agency
SDF	-	Spatial Development Framework
SSU	-	Small Stock Unit
WCDoA	-	Western Cape Department of Agriculture

1. INTRODUCTION

1.1 Project Overview




SPOOR Environmental Services (Pty) Ltd was appointed as the independent environmental assessment practitioner (EAP) to manage the S24G rectification application process for a feedlot operation which has been developed on previously developed agricultural areas on the farm. The proposed infrastructure includes:

- ❖ A feedlot facility with the capacity to process 3000 SSU & LSU at a time,
 - Small stock units consist of 3000 Merino's; and
 - Large Stock Units consist of 3000 Wagyu cattle.
- ❖ Two main feedlot facilities divided into smaller units,
- ❖ A feed mixing facility (contained in an existing outbuilding),
- ❖ An animal processing facility (contained in the existing farm kraal),
- ❖ 2x Production boreholes feeding into a main concrete farm dam and associated water pipelines (existing),
- ❖ Water pipelines from the concrete dam to the feedlot,
- ❖ Existing farmhouse and facility outbuildings,
- ❖ Existing access road from the R708.

1.2 Locality

The project falls just to the northeast of the central Free State Province. On a more local scale, the site area is located between the towns of Marquard (27km due west of Marquard) and Winburg in the Setsoto Local Municipality, Thabo Mofutsanyane District Municipality of the Free State Province. The cattle feedlot is situated on the Farm Demilander 273, Marquard area. See **Table 1** and **Figure 1**.

Table 1: Development Area Coordinates

Site Coordinates			
Corners	Existing feedlot Decimal Coordinates	Phase 1 new feedlot Decimal Coordinates	Phase 2 New feedlot Decimal Coordinates
Locality on site			
Corner 1	S 28.665948° E 27.211501°	S 28.669002° E 27.210549°	S 28.669199° E 27.211291°
Corner 2	S 28.666379° E 27.213345°	S 28.669180° E 27.211251°	S 28.669428° E 27.211903°
Corner 3	S 28.668218° E 27.212382°	S 28.671345° E 27.210215°	S 28.671715° E 27.211229°
Corner 4	S 28.667352° E 27.210786°	S 28.671158° E 27.209698°	S 28.671366° E 27.210283°

1.3 Background

The Applicant is a local Farmer who formalized his operations into an agricultural company with its core business focusing on commercial crop and animal production. The Applicant started a feedlot on a portion of an existing farm that was traditionally used as a livestock kraal. The kraal area was originally created to keep commercial farm animals (mainly sheep and cattle) that grazed extensively (on the open veld) on the larger farm, for various purposes including overnight protection against predators (in the case of sheep especially) and stock theft and for the standard management procedures such as loading and off-loading, vaccinations, pest control, and veterinary treatment.

The Applicant has since decided to create an intensive animal production operation on the same farm in the form of a cattle feedlot. This feedlot was built on existing cultivated areas and didn't require the removal of indigenous vegetation (refer to **Error! Reference source not found.**). The cattle are therefore concentrated in the traditional kraal on the farm and fed with a specially formulated feed and does not graze exclusively on the open veld anymore. The process and timeframes of the establishment of the feedlot are basically as follows:

- ❖ The Applicant started the feedlot in 2017 with 38 oxen;
- ❖ The local market responded quickly and by the end of 2018 the Applicant fed 300 oxen in the existing kraal;
- ❖ The trend continued and by mid-2021 there were 1050 animals in the original kraal;
- ❖ At this stage the Applicant decided to start formal planning for a larger feedlot to reach 3000 LSU.

On application for the development finance the Applicant was requested by the financing institution to perform an EIA. The Applicant then contacted SPOOR who advised on the application for rectification under Section 24G of NEMA, 1998 (Act 107 of 1998) S24G, process. The Applicant understands that the existing feedlot has surpassed the number of animals to be produced in this manner as per the NEMA (Act 107 of 1998) regulations and that a rectification application is required. The current activities are however a product of an organically grown operation, and not of wilful disregard of the Act and regulations. As indicated above, the Applicant needs to apply for inter alia environmental authorization.

The Aluf Farming operations currently provides 37 permanent employment opportunities on the farm with 13 directly linked to the feedlots. Finally, the feedlot facility is located on a site zoned for agricultural purposes within a larger agricultural/rural area which is well suited for this type of development. It is believed that the activities and facilities are managed in a way that poses insignificant environmental impacts and the positive impacts are believed to outweigh the possible negative impacts that may occur.

1.4 Motivation

In an article published in the Journal of Animal Science it is stated that livestock production in South Africa contributes substantially to food security. It is stated here that 70% of agricultural land in South Africa can be utilized only by livestock and game and species are found in all provinces with high concentrations in the eastern higher rainfall regions. Intensive production systems (feedlots, poultry, pigs) are also widespread owing to choices associated with optimal land use and vertical integration but tend to congregate near metropolitan markets and feed suppliers. About 38 500 commercial farms and intensive units and an estimated 2 million small-scale/communal farmers are involved with livestock. Statistics in 2010 already indicated that the industry produced 13.6 million beef cattle, 1.4 million dairy cattle, 24.6 million sheep, 7.0 million goats, 3 million game species (farmed), 1.1 million pigs, 113 million broilers, 31.8 million layers and 1.6 million ostriches (Meissner, Scholtz & Palmer, 2013).

Furthermore, the gross value of livestock products increased by 185% from 1995/2000 to 2006/2010. In relation to field crops and horticulture, livestock products increased their position from 42% to 47% of gross agricultural value. The main reason was a rise in the value and demand for livestock foods, and particularly in meat. Livestock foods contribute 27% of the consumer food basket on a weight basis. Consumption of livestock foods resembles that of developing countries with meat consumption being 50 - 90 g/capita/day, milk, and dairy products 120 - 130 g /capita/day and eggs 15 - 20 g/capita/day. (Meissner, Scholtz & Palmer, 2013).

The livestock sector in South Africa is a major role player in the conservation of biodiversity through a variety of well-adapted indigenous and non-indigenous breeds and rare game species. It has also shown commitment to rangeland/ecosystem conservation through conservative stocking rates, with several studies and observations reporting improvement in the condition of the natural resource. (Meissner, Scholtz & Palmer, 2013).

The sector has always been a major employer. The employment rate has declined steadily though since 2000 because of increased minimum wages, fewer commercial farmers, and increased property size. At the time of this study in 2013, some 245 000 employees with 1.45 million dependants, in addition to dependants on communal land and emerging farms, were employed on 38 500 commercial farms and intensive units with wages amounting to R 6 100 million (South African rand). (Meissner, Scholtz & Palmer, 2013).

The study scope did not include the contributions of the livestock farming sector to the local, provincial, and national economies but these agri-economic activities provide vital support to the rural economic value chain in the products and services that they require to produce viable LSU's. Although not so significant this will also hold true on the provincial and national level. Furthermore, with the steady decline of rural towns in South Africa, this is an important economy to support in terms of the non-direct products and services delivered to the populations of these rural towns. In the light of this it is therefore easy to comprehend the significance of the role which livestock farming plays in the local socio-economic environments and the food security it offers.

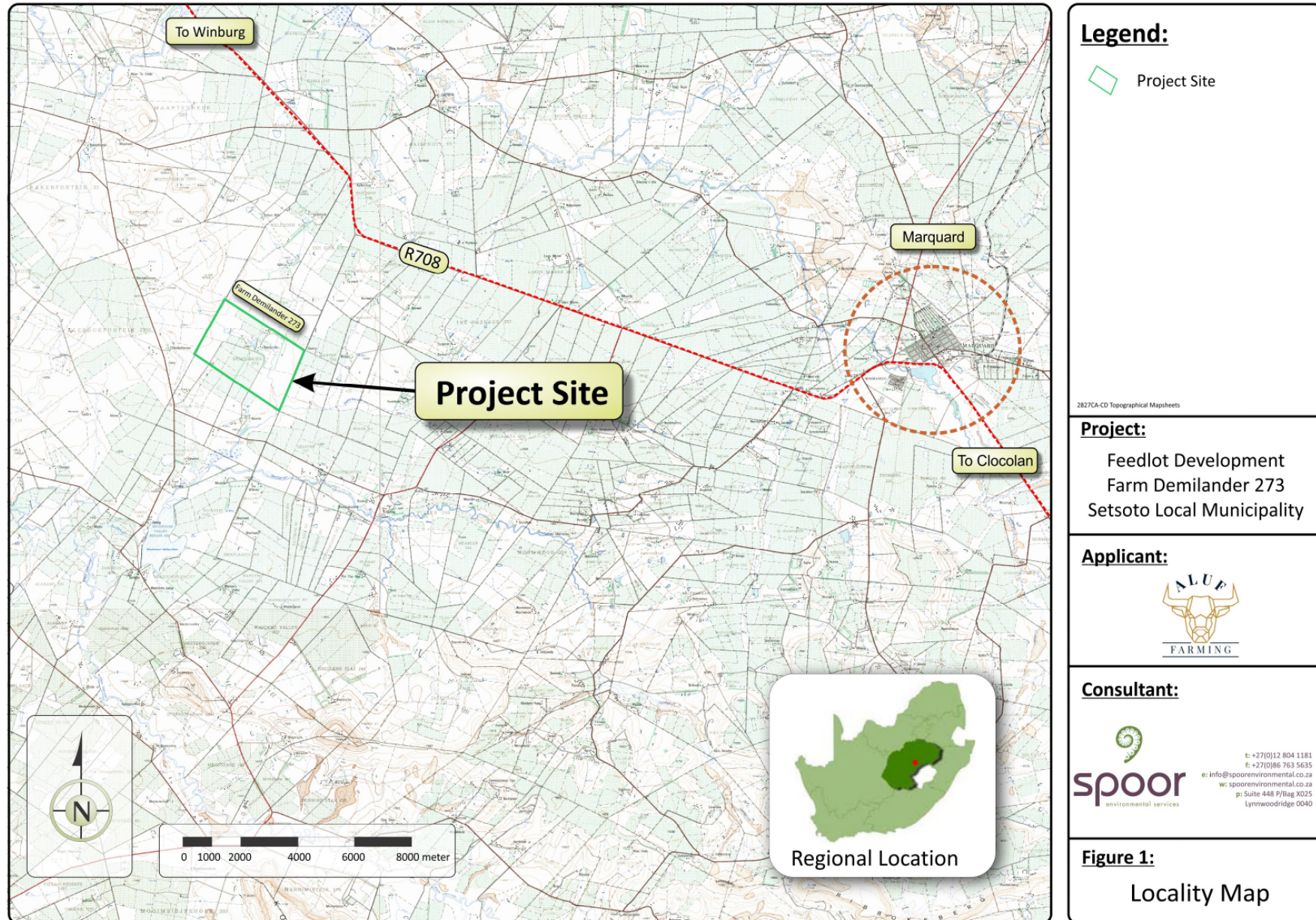


Figure 1: Locality Map

1.5 Methodology

The principles of NEMA (Act No. 107 of 1998) stress the importance of the conservation of the worlds and our country's natural and cultural heritage. It also stresses the fact that environmental management must place people and their needs at the forefront and serve their physical, psychological, developmental, cultural, and social interests equitably. This introduces an anthropocentric approach to environmental management and establishes the importance of a balanced view towards development and conservation.

The principles of IEM also include:

- ❖ the promotion of sustainable development;
- ❖ protecting natural environments;
- ❖ maintaining of an environment which is not harmful to people's health or well-being;
- ❖ an open participatory approach to impact assessment;
- ❖ the timeous consideration of environmental impacts before decisions on proposed developments are taken and;
- ❖ accountability for the potential impacts and the management of these impacts.

On application for the development finance the Applicant was requested by the financing institution to perform an EIA. The Applicant then contacted SPOOR who advised on the application for rectification under Section 24G of NEMA, 1998 (Act 107 of 1998) S24G, process. The Free State Department of Economic, Small Business Development, Tourism And Environmental Affairs (DESTEAs) was contacted on the on the 27th of May 2022 with information on the proposed way forward for public participation and to request a project reference nr. The EAP is still awaiting feedback and will incorporate the requirements of the DESTEAs once received. In short, this S24G EIAR will describe the following:

- ❖ The background to the project;
- ❖ The relevant legislation and guidelines that were considered in preparation of the EIA Report;
- ❖ a description of the property on which the proposed activity is to be located;
- ❖ a detailed description of the proposed scope of work;
- ❖ a description of the environment that may be affected by the project which will include all current physical, biological, social, economic, and cultural aspects of the receiving environment;
- ❖ details of the public participation process conducted;
- ❖ a description of all feasible and reasonable alternatives;
- ❖ identification of all physical, biological, social, economic, and cultural environmental impacts of the proposed development on the properties.

The image below illustrates the S24G process diagrammatically. At the time of submission of this report Phase 1 of the PPP was completed and the process was at the beginning of Phase 2. In Phase 2, comment will be requested on the Draft S24G EIR and the responses on these comments and included in the Final EIE as well as any amendments to the EIR as a result of the public involvement process.

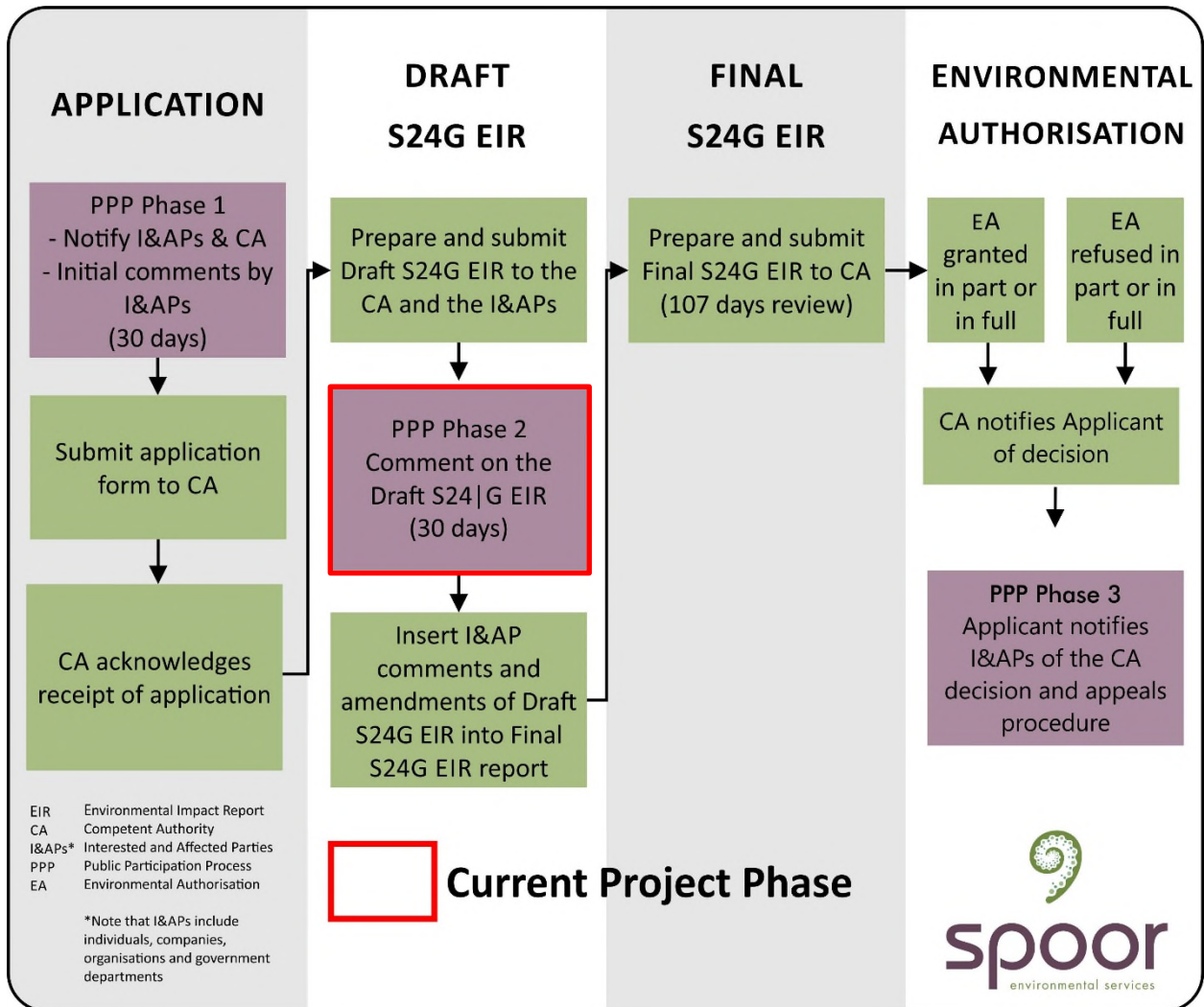


Figure 2: S24G Application Process

1.5.1 Pre-Application Public Participation (Phase 1) (See Appendix 5)

Interested and Affected Parties (&APs) were notified of the process by way of advertisements in the local newspapers (The Ficksburg, Senekal & Marquard Rekord and The Brandfort, Theunissen & Winburg Record of the 2nd and 3rd of June 2022) and via a site notice placed on the site boundary.

I&APs adjacent to the development including local resident’s associations, ward Councillors and the relevant Public and State Departments were also notified and provided with Background Information Documents (BIDs). The BID included a broad description of the detail as well as the contact details of the EAP, where stakeholders could obtain additional information regarding the proposed feedlot development.

The period for registration and comment on the project terminated at in July 2022. During this time the EAP responded to each comment and provided the information as requested. See Section 5. This EIAR is now submitted to the GDARD Enforcement Section for compliance authorization.

1.5.2 Phase 2 Public Participation

Phase 2 of the public participation process will include the distribution of the Draft EIR report to all of the parties that registered as I&AP's during the first phase of public participation process. All the comments received during the first phase public participation as well as the responses from the EAP will be included in the Draft EIR and redistributed to the registered I&AP's for further comments and review. These comments will then be included in the final EIR which will be submitted to the CA for review and authorization.

2. DESCRIPTION OF THE PROPOSED PROJECT

2.1 Introduction

The Applicant is a local Farmer who formalized his operations into an agricultural company with its core business focusing on commercial crop and animal production. Aluf Farming started a feedlot in an existing kraal on the farm, which has grown into a new facility that is able to feed 3000 small stock units (SSU) and 3000 large stock units (LSU) at a time. The original feedlot was upgraded to serve the SSU and the LSU components of the feedlot while the new feedlot was constructed on existing cultivated areas which didn't require the removal of any natural vegetation or veld (refer to Figure 4). The farm also cultivates maize for use on the farm and the national market. The infrastructure include:

- ❖ A feedlot facility with the capacity to process 3000 SSU & LSU at a time,
 - ❖ Small stock units consist of 3000 Mutton Merino's; and
 - ❖ Large Stock Units consisting of 3000 Wagyu cattle.
- ❖ The feedlot will comprise two main feedlot facilities divided into smaller units,
- ❖ A Feed mixing facility (contained in an existing outbuilding),
- ❖ Animal processing facility (contained in the existing farm kraal),
- ❖ 2x Production boreholes feeding into a main concrete farm dam and associated water pipelines (existing),
- ❖ Water pipelines from the concrete dam to the feedlot,
- ❖ Existing farmhouse and facility outbuildings,
- ❖ Existing access road from the R708.

2.2 Small stock Units (SSU)

Small Stock Units or lambs are sources and bought in from the local market and are delivered to the feedlot with a body mass of between 3-5 kg. Between 40-60 lambs are housed per pen where they are fed a mixture of *eragrotis* spp. (cane grass, "oulandsgras" or tef) and lucerne feed pellets. Lambs require 11 litres of water per day. Thus 3000 lambs require 33 000 litres of water per day or 33m³. Refer to Figure 3 for a typical example of the sheep feedlot. Once they reach a body mass of between 27-30 kg, the small stock units are sold and removed from the feedlot for slaughter. All lambs are sold in the national market, and none are exported.



Figure 3: Typical Example of Sheep in the Upgraded Feedlot situated on the Original Feedlot Position

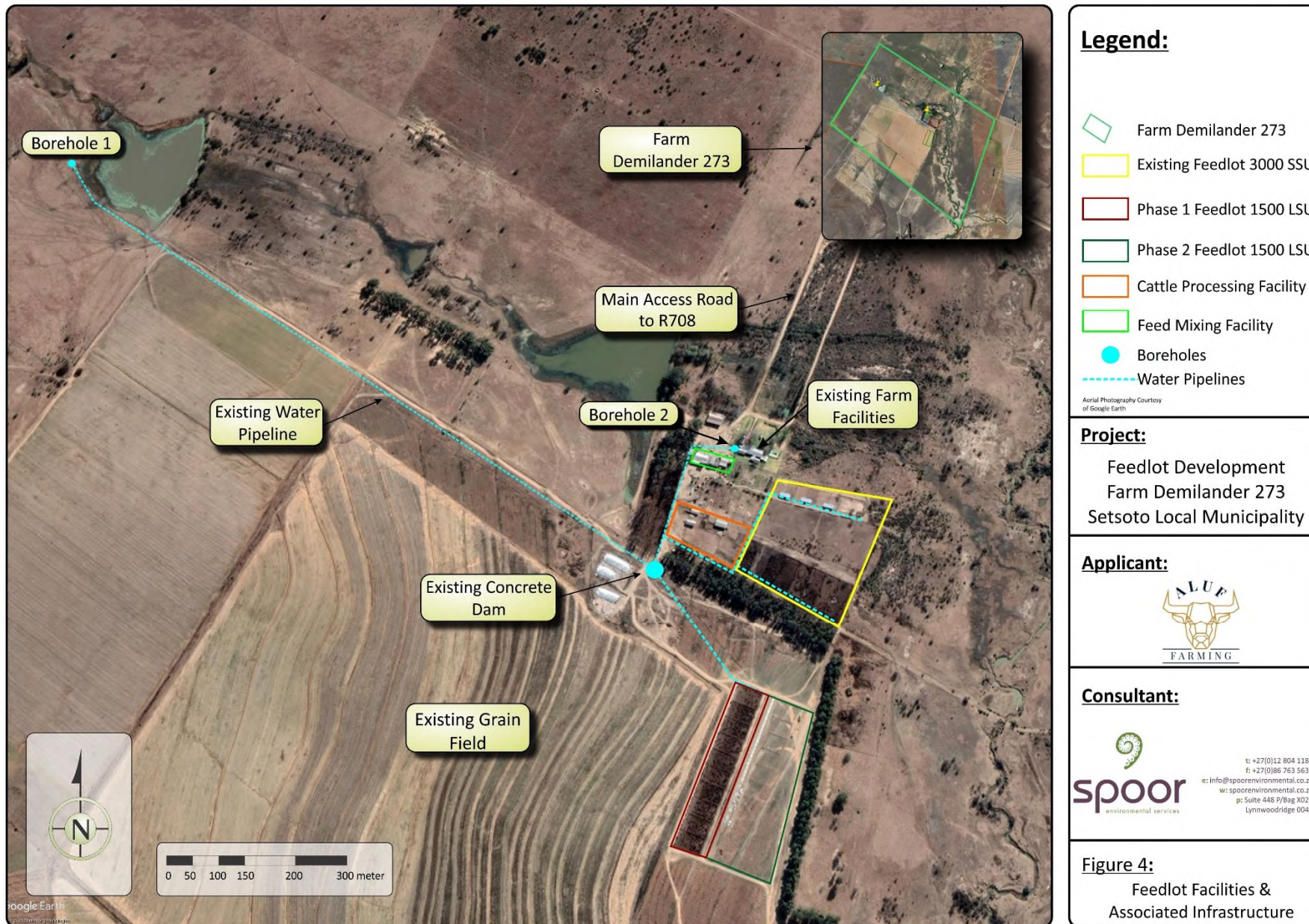


Figure 4: Aluf Farming Feedlot & Associated Facilities

2.3 Large Stock Units (LSU)

150 calves are delivered to the feedlot every month, at the age of 5 months. Calves are kept in the processing pen overnight to calm down. Thereafter the calves roam and feed extensively off the pasture areas for a period of one month. After they have reached the desired weight, the calves are relocated to the feedlot for 16 months where they are fed a mixture of *eragrostis* spp. (cane grass, “oulandsgras” or tef), maize, soybean cakes and silage. Calves/cattle require 40 litres of water per day; thus 3000 calves will require 120 000 litres of water per day or 120m³. Refer to Figure 5 for a typical example of the cattle feedlot.

30% of the calves are sold for the inland market (PicknPay, Checkers and boutique butcheries) and the remaining 70% are exported to international markets via meat agents for Saudi Arabia, China, Mauritius, Kuwait, and UAE.



Figure 5: Typical Example of Cattle in the Feedlot

2.4 Site Access

Site access is gained existing farm access road (farm gravel road) from the R708 Winburg – Marquard Road. The site is therefore well connected in terms of receiving and dispatching of the livestock and in turn the delivery after purchase. Being situated in an agricultural/rural area this also assists in the Aluf Farming operations in that the site can accept and dispatch medium to large cargo vehicles and the surrounding landowners are also used to this type of traffic.

2.5 Essential Services

As the Aluf Farming operations occupied an existing property, the required facilities were installed on the farm and very limited volumes of general construction waste was created (< 5m³). In addition, the site is situated in a rural area and is therefore not serviced by the normal municipal services. Electricity is supplied by ESKOM. No additional services are required to run the operations. General waste is carted to the Marquard landfill site on a weekly basis. No liquid effluent waste is generated, and the site is furthermore connected to septic tank.

2.5.1 Water Requirements

Water is sourced from boreholes and the existing surface water dams. The farm falls within the C41B quaternary drainage region where 75m³/ha/year of groundwater and 2 000m³/year of surface water abstraction is permitted under a general authorization in terms of the National Water Act, Act 36 of 1998. The operation currently utilizes in the order of 460m³ of water per month which is around 10% of the permitted water use volume.

2.6 Manure Handling

The manure stays in the feedlots and are collected twice yearly with a front end loader. The manure is then used as fertilizer on the crop/pasture fields.

2.7 Storm Water

The farmer employs stormwater management and soil conservation measures in the form of stormwater contours and grass planted swales on and around the crop fields as well as stormwater cut off drains on the farm roads to protect the infrastructure and to reduce erosion. Stormwater is channelled away and around from the feedlots via soil berms and drains via grassed swales towards the local spruit to the east of the facility.

2.7.1 Manure Dam

Stormwater falling inside of the feedlots is drained via grassed swales to an engineered manure dam. The proposed dam will consist of four sections each with a different function. The manure dam function was explained by the engineer as follows:

The design of the feedlot pens and the placing of the holding pens were done according to a site survey to ensure effective drainage from the holding pens toward the centre from the back row of holding pens. Down the centre the drainage waste flows downstream over well established and cut grass lawns. The soil is well protected by the grass therefore minimum erosion can be expected in the water course in the centre of the feedlot. Drainage takes place to a set of lagoons including a solid waste separator and catchment lagoon for storms, after which water trickles through to an anaerobic dam with a minimum depth of 3m. The trickle -flows through the anaerobic lagoon, takes place along the length of the anaerobic pond towards the aerobic lagoon where the oxidation process takes place. This lagoon has a maximum depth of 1.5m. At this stage of the design only one oxidation pond is necessary but according to future need a second one can be introduced. Water from the oxidation dam will not be allowed to enter the natural water course downstream. Water from the oxidation dam will be pumped and utilised as enriched irrigation water for fertilization.

The first section will consist of a receiving dam with where the water evaporates, and the remaining solids is collected and spread over the crop fields as fertilizer. (See Appendix 1)

3. LEGISLATIVE FRAMEWORK

The following section includes the primary list of legislation which is deemed relevant to the development on all levels of government, including the constitutional, national, provincial, and local level. Although the aim was to be as comprehensive as possible the list does not represent a complete legal review as this falls beyond the scope of this project application. The responsibility remains with the Applicant to ensure compliance with the required relevant legislation.

3.1 The Constitution of the Republic of South Africa, 1996 (Act 108 of 1996)

The Constitution of the Republic of South Africa is the principal legal source of the Republic's legislative framework, including its environmental law. The Bill of Rights is fundamental to the Constitution of South Africa and in, section 24 of the Act, it is stated that:

Everyone has the right (a) to an environment that is not harmful to their health or well-being; and (b) to have the environment protected, for the benefit of present and future generations through reasonable legislative and other measures that (i) prevent pollution and ecological degradation; (ii) promote conservation; and (iii) secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development.

Given that environmental management is founded partly on the principles of public participation, Section 195 of the Constitution is of primary relevance. This section states that:

(1) Public administration must be governed by the democratic values and principles enshrined in the constitution, including the following principles: (a) (b) (c) (d) (e) People's needs must be responded to, and the public must be encouraged to participate in policy making. (f) Public administration must be accountable. (g) Transparency must be fostered by providing the public with timely, accessible, and accurate information (Government Gazette, 1996).

3.2 Environment Conservation Act, 1989 (ECA) (Act 73 of 1989)

The primary objective of the ECA is to provide for the effective protection and control of the environment. Subsequent to the promulgation of the Act in 1989, a number of key regulations governing EIA's and identified activities that may be detrimental to the environment have also been promulgated. Section 8 of the Regulations regarding activities identified under section 21(1) of the Environmental Conservation Act (73 of 1989) – General EIA Regulations states that:

After a plan of study for the environmental impact assessment has been accepted, the applicant must submit an environmental impact report to the relevant authority, which must contain; (a) A description of each alternative including particulars on (i) The extent and significance of each identified environmental impact; and (ii) The possibility for mitigation of each identified impact. (b) A comparative assessment of all the alternatives; and (c) Appendices containing descriptions of (i) The environment concerned; (ii) The activities to be undertaken; (iii) The public participation process followed, including a list of interested parties and their comments; (iv) Any media coverage given to the proposed activity; and (v) Any other information included in the accepted plan of study.

3.3 National Environmental Management Act, 1998 (NEMA) (Act 107 of 1998)

The purpose of the Environmental Impact Assessment Amendment Regulations of 2014 (amended by GN 517 w.e.f. 11 June 2021) is to:

“The purpose of these Regulations is to regulate the procedure and criteria as contemplated in Chapter 5 of the Act relating to the preparation, evaluation, submission, processing and consideration of, and decision on, applications for environmental authorisations for the commencement of activities, subjected to environmental impact assessment, in order to avoid or mitigate detrimental impacts on the environment, and to optimise positive environmental impacts, and for matters pertaining thereto.”

The Act provides for the right to an environment that is not harmful to the health and well-being of South African citizens; the equitable distribution of natural resources, sustainable development, environmental protection, and the formulation of environmental management frameworks (Government Gazette, 1998).

3.4 National Environmental Management: Biodiversity Act, 2004 (NEM:BA) (Act 10 of 2004)

The purpose of the Biodiversity Act is to provide for the management and conservation of South Africa’s biodiversity within the framework of the NEMA and the protection of species and ecosystems that warrant national protection. As part of its implementation strategy, the National Spatial Biodiversity Assessment was developed. In terms of the Biodiversity Act, the developer has a responsibility for:

- ❖ The conservation of endangered ecosystems and restriction of activities according to the categorisation of the area (not just by listed activity as specified in the EIA regulations),
- ❖ Application of appropriate environmental management tools in order to ensure integrated environmental management of activities thereby ensuring that all developments within the area are in line with ecological sustainable development and protection of biodiversity,
- ❖ Limit further loss of biodiversity and conserve endangered ecosystems.

3.5 National Environmental Management: Air Quality Act, 2004 (NEM: AQA) (Act 39 of 2004)

In regulating air quality in South Africa, The NEM: AQA was introduced to protect the environment by introducing reasonable measures for the prevention of pollution and ecological degradation and for securing ecologically sustainable development whilst promoting justifiable economic and social development. In addition, the act aims to provide national norms and standards for regulating air quality monitoring as well as air quality management and control. The list of activities included in General Notice 248 must be considered for any activities that produces emissions. The following passages of the act bare relevance;

Section 22: No person may without a provisional atmospheric emissions licence conduct an activity;

- (a) listed on the national list anywhere in the Republic; or
- (b) listed on the list applicable in a province anywhere in the province.

3.6 National Environmental Management: Waste Act, 2008 (Act 59 of 2008)

Act no 59 of 2008 provides for the control of waste management activities which have or is likely to have a detrimental effect on the environment. The act aims to;

- ❖ Reform the law regulating waste management in order to protect health and the environment by providing reasonable measures to prevent pollution and ecological degradation and for securing ecologically sustainable development,
- ❖ To provide for institutional arrangements and planning matters,
- ❖ To provide for national norms and standards for regulating the management of waste by all spheres of government,
- ❖ To provide for specific waste management measures,
- ❖ To provide for the licencing and control of waste management activities,
- ❖ To provide for the remediation of contaminated land,
- ❖ To provide for a national waste information system,
- ❖ To provide for compliance and enforcement, and
- ❖ to provide for all matters related to the above aspect.

Importantly the act furthermore includes requirements that stipulate that no person may commence, undertake, or conduct a waste management activity listed in the act unless a licence is issued in respect of that activity.

On the 3rd of July 2009 the minister published a publish a List of Waste Management Activities which have or are likely to have a detrimental effect on the environment. This document defines animal manure as: *“a by-product of animal excreta which is bio-degradable in nature and could further be used for fertilisation purposes”*.

Section 19 of the Act describes categories of Waste management activities of which a waste management licence is required for which an application for a Waste Management Licence will need to be submitted in terms of NEM: WA:

“Storage, treatment, and processing of animal waste

The storage, treatment, or processing of animal manure, including the composting of animal manure, at a facility that has a throughput capacity in excess of 10 tonnes per month, including the construction of a facility and associated structures and infrastructure for such storage, treatment, or processing.”

As Aluf Farming will not store, treat, or process animal manure in excess of 10 tonnes per month, no waste management license is required but norms and standards might be applicable. Animal manure will however be used as a resource for fertilisation of pastures or cultivated areas and is thus not regarded as waste.

3.6.1 Listed Activities Applicable to the Aluf Farming (PTY) Ltd Feedlot Facility

The table below provides a summary of the listed activities specified in the EIA Regulations of June 2014 (amended in 2021) and which is applicable to the proposed development.

Table 2: Listed Activities in terms of the June 2014 NEMA EIA Regulations

Listed Activity in terms of Listing Notice 1 of 2014 GNR 517 of 2021 published in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998)	Activity details and GPS Coordinates
<p>Listing Notice 1: Activity No. 4: <i>The development and related operation of facilities or infrastructure for the concentration of animals in densities that exceed-</i> <i>(i) 20 square metres per large stock unit and more than 500 units per facility;</i> <i>(ii) 8 square meters per small stock unit and;</i> <i>a. more than 1 000 units per facility excluding pigs where (b) applies; or</i> <i>b. more than 250 pigs per facility excluding piglets that are not yet weaned;</i></p>	<p><i>Application is made for the Aluf Farming (PTY) Ltd. feedlot facility with the capacity to process 6000 SSU & LSU at a time comprising 3000 SSU's and 3000 SSU's</i></p> <p><i>Coordinates are indicated in section 1.2.</i></p>

SPOOR Environmental Services Environmental Services has subsequently been appointed by the Applicant, as the independent Environmental Assessment Practitioner (EAP) to undertake this Environmental Impact Assessment process and to ensure compliance with all the relevant Environmental Legislation, Regulations and Guidelines.

3.7 Hazardous Substances Act (Act No. 15 of 1973)

The Hazardous Substances Act (15 of 1973) is regulated by the Department of Health. The Act and its regulations regulate the transportation of defined hazardous

3.8 National Water Act, 1998 (NWA) (Act 36 of 1998)

The National Water Act (NWA) identifies 11 consumptive and non-consumptive water uses in terms of section 21 of the act which must be authorized. The authorization system includes scheduled uses, general authorizations, and licences. It allows for the reserve of the specific water resource to be determined and also includes a public involvement process in the establishment of strategies and decision-making and guarantees the right to appeal against such decisions. The reserve is defined by the quality and quantity of the water resource in order to meet basic human needs as well the ecological requirements.

Section 27 of the NWA specifies that the following factors regarding water use authorization be taken in consideration:

- ❖ The efficient and beneficial use of water in the public interest,
- ❖ the socio-economic impact of the decision on whether or not water use is authorized,
- ❖ alignment with the catchment management strategy,
- ❖ the impact of the water uses, and possible resource directed measures,
- ❖ investments made by the applicant in relation with the water resource in question.

Schedule 1 Water Use constitutes -

- ❖ water taken for reasonable domestic use in a person's household from any source
- ❖ small gardening (but not for commercial purposes)

- ❖ **watering of livestock (excluding feedlots)** that graze on that land (within the carrying capacity of that property)
- ❖ storing and using run-off water from a roof (rainwater harvesting)
- ❖ in emergencies, e.g., firefighting
- ❖ recreation, e.g., swimming, angling, etc.

As discussed above, the current feedlot and farming activities uses in the order of 10% of its permitted water in terms of the volume allowed under a GA. The proposed development might require a Water Use Licence in terms of Section 21 (a) for the taking of water from a water resource for watering of livestock, as the watering of livestock in a feedlot is excluded from the Schedule 1 use.

The storage of run off with water containing manure may also constitute a section 21 water use and this will be confirmed with the Department of Water and Sanitation.

3.9 National Heritage Resources Act, 1999 (NHRA) (Act 25 of 1999)

Section 38(1) of the South African Heritage Resources Act (25 of 1999) requires that a heritage study be undertaken for:

- (a) construction of a road, wall, power line, pipeline, canal or other similar form of linear development or barrier exceeding 300 m in length;*
- (b) construction of a bridge or similar structure exceeding 50 m in length; and*
- (c) any development, or other activity which will change the character of an area of land, or water –*
 - (1) exceeding 10 000 m² in extent;*
 - (2) involving three or more existing erven or subdivisions thereof; or*
 - (3) involving three or more erven, or subdivisions thereof, which have been consolidated within the past five years; or*
 - (d) the costs of which will exceed a sum set in terms of regulations; or*
 - (e) any other category of development provided for in regulations.*

A Phase 1 Heritage Impact Assessment were completed and submitted on SAHRIS for comment from the Free State Heritage Resources Authority (FSHRA).

3.10 Conservation of Agricultural Resources Act, 1983 (Act 43 of 1983)

The main aim of this act is to provide a legal vehicle for the protection of productive agricultural resources. The act provides for the control and protection of wetlands, soil conservation matters, control and prevention of veld fires, control of weeds and invader plants, and the control of pollution via agricultural practices. The act therefore focusses on fighting of soil erosion, the protection of water resources, and combatting the degradation of indigenous vegetation conducive to agricultural practices through the control of invasive alien vegetation.

3.11 Municipal Systems Act, 2000 (Act 32 of 2000)

The Municipal Systems Act form part of a string of other legislation which aims at empowering local government to fulfil its constitutional obligations. As part of this objective the SA government published the Local Government White Paper in 1998, which outline the policy framework for local government structures. In addition, government furthermore published the Municipal Demarcation Act, 1998 (Act 27 of 1998) which allowed for the demarcation of new municipal boundaries, the Municipal Structures Act,

2000 (Act 33 of 2000) which outlines the required structures of a local authority and the Municipal Financial Management Act, 2003 (Act 56 of 2003) which must secure sound and sustainable management of the fiscal and financial affairs of municipalities and municipal entities by establishing norms and standards and other requirements for the lawful financial management of these entities.

The Municipal Systems Act work in unison with these sets of legislation by regulating key municipal organizational, planning, participatory and service delivery systems. In combination these sets of legislation provide a framework for the democratic, accountable, and developmental local government system as envisaged by the Constitution.

3.12 Integrated Environmental Management

The term Integrated Environmental Management (IEM) has been used in South Africa since the 1980's. Documentation on how IEM would assist the EIA process was originally produced in 1992 by the then National Environmental Management Competent Authority. The need has since arisen for more comprehensive inputs in the EIA process, and this paved the way for the development of the Integrated Environmental Management Series in 2002 which consisted of a set of booklets providing more detailed insights in the approach and methodologies associated with EIA. In brief the IEM seeks to achieve the following;

“Integration of environmental considerations across the full lifecycle of the activity: for example, for a project this implies consideration of environmental issues through pre-feasibility, feasibility, planning and design, construction, operation and decommissioning” (DEAT 2002).

3.13 Occupational Health and Safety Act, 1993 (Act 85 of 1993)

The Occupational Health and Safety Act, 1993 (Act 85 of 1993) provides for the health and safety of individuals in the workplace as well as for the health and safety of individuals working near or with of plant and machinery. The Act also protects people, other than persons at work, against hazards to health and safety due to the activities of people at work.

3.14 Sustainable Development

The principle of Sustainable Development has been established in the Constitution of the Republic of South Africa (108 of 1996) and given effect by NEMA and the ECA. Section 1(29) of NEMA states that sustainable development means the integration of social, economic, and environmental factors into the planning, implementation, and decision-making process so as to ensure that development serves present and future generations. Thus, Sustainable Development requires that:

- ❖ The disturbance of ecosystems and loss of biological diversity are avoided, or, where they cannot be altogether avoided, are minimised and remedied; That pollution and degradation of the environment are avoided, or, where they cannot be altogether avoided, are minimised and remedied;
- ❖ That the disturbance of landscapes and sites that constitute the nation's cultural heritage is avoided, or where it cannot be altogether avoided, is minimised and remedied;
- ❖ That waste is avoided, or where it cannot be altogether avoided, minimised, and re-used or recycled where possible and otherwise disposed of in a responsible manner
- ❖ That a risk-averse and cautious approach is applied, which takes into account the limits of current knowledge about the consequences of decisions and actions;

- ❖ Negative impacts on the environment and on people's environmental rights be anticipated; and, prevented and where they cannot altogether be prevented, are minimised and remedied.

3.15 Regional Policies

The following Regional strategies were considered;

- ❖ Thabo Mofutsanyane District Municipal Integrated Development Plan (IDP) 2016
- ❖ Setsoto Municipality Integrated Waste Management Plan 2016,
- ❖ Setsoto Municipality Integrated Environmental Management Plan, undated,
- ❖ Setsoto Municipality Waste Management Bylaw 2012,
- ❖ Setsoto Municipality Draft Spatial Development Framework 2017,
- ❖ Setsoto Municipality Draft Integrated Development Plan (IDP) 2022-2023, and
- ❖ Setsoto Municipality Keeping of Animals, Poultry and Bees Bylaw, 2008.

4. DESCRIPTION OF THE ENVIRONMENT

BIO-PHYSICAL ENVIRONMENT

4.1 Climate

The study area is located in the summer rainfall zone of the Republic of South Africa, with an expected mean annual precipitation (MAP) of Rainfall averages between 600 mm and 750 mm in Setsoto Local Municipality which is more or less the same as the whole district. Rainfall is recorded where highest rainfall occurs in the summer season and least amount of rain in winter period. The highest rainfall in the central and southern parts of the municipality creates a favourable environment for agricultural activities and could assist in water demand in times where there is less amount of rain (SLM, undated).

The area has a climate characterised by warm to hot summers and cold winters. It experiences snowfalls some years. The highest temperatures are experienced between November and February when an average temperature of up to 29°C have been recorded (SLM, undated).

Then the coldest average daily temperature is experienced in June and July when average minimum temperatures are below 0°C (SLM, undated).

4.2 Topography

The topography of the area is generally diverse with the steeper areas located in the south around Ficksburg, and features strong elements, namely mountainous areas, river valleys and floodplains, sloping hills and grasslands.

The elevation is between 1400m and 1500m above sea level in the development area. Marquard is located in the general Highveld plain. The site is representative of the local topography with no prominent topographical features. The local area of the site slopes in a south-to-south easterly direction (SLM, undated).

4.3 Geology and Soils

According to the Map data from Council for Geoscience, sourced on CapeFarmMapper the study area is classified as Balfour geology formation. This formation is classified by greenish- to bluish-grey and greyish-red mudstone, siltstone, subordinate sandstone. See **Figure 7** (WCDoA, 2022). The Heritage Specialist indicated the following: *“The geology is made up of mudrock and subordinate sandstone of the Adelaide Subgroup of the Beaufort Group of the Karoo Supergroup.”* The ENPAT soils database furthermore describe the local soils as of the Plinthic catena, with undifferentiated upland duplex and/or marginalithic soils common.

The soils are reported to have clay content of between 15-35% which is ideal for feedlots in terms of the containment of subsurface soils and water contamination.

4.4 Surface Level Drainage

The study area is drained by means of surface flow. Storm water flows over the site in a south-south easterly direction to ultimately collect in an unnamed drainage line east of the site. The only prominent drainage features are to the southeast and Northwest of the site.

The nearest surface water bodies or natural drainage features are located within 195 metres east and 200m north-west of the existing feedlot that was expanded (see **Figure 6**). The project area is located in the C41B quaternary drainage regions which is included in the Middle Vaal Water Management Area (WCDoA, 2022).

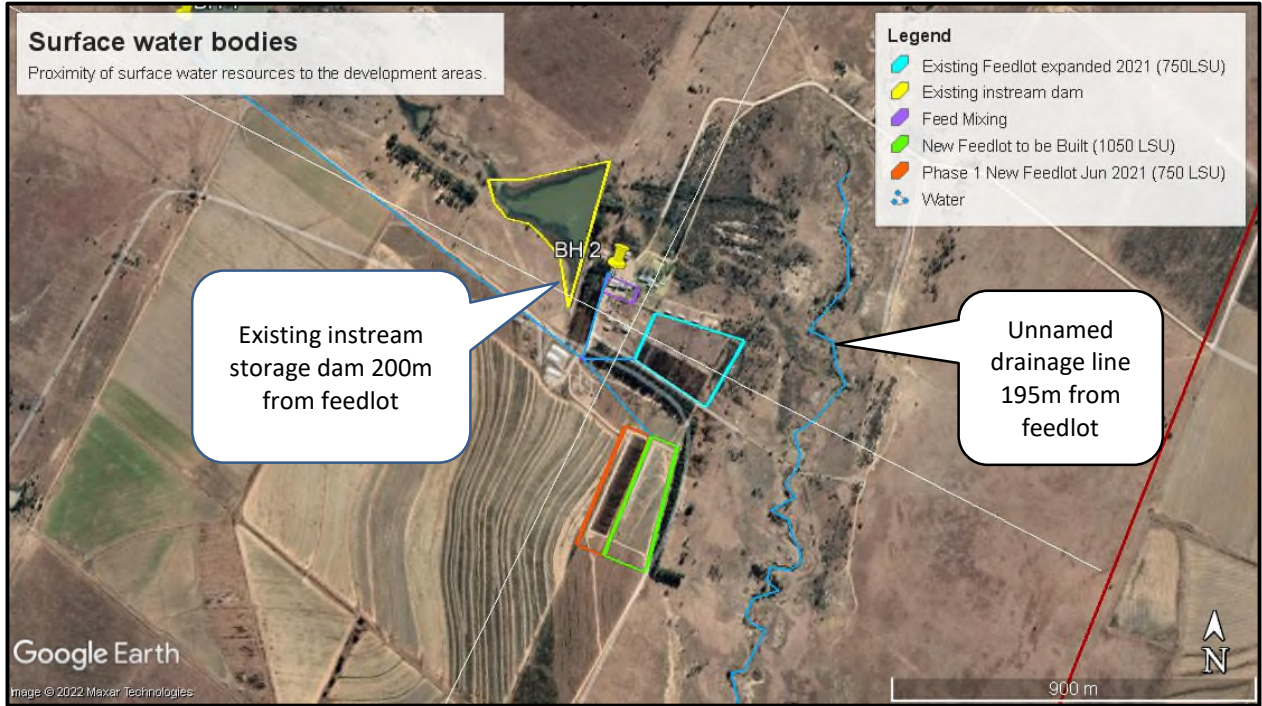


Figure 6: Proximity of surface water bodies to the development area

4.5 Groundwater

Map data from Chief Surveyor-General (DRDLR) & Department of Water & Sanitation (DWS), sourced with the CapeFarmMapper tool indicates that the groundwater depth is 15.46 mbgl and the recharge rate is 22.97mm/a. The aquifer is classified as Intergranular and fractured 0.1 - 0.5 l/s and is moderately vulnerable and has a susceptibility of medium to high (WCDoA, 2022).

Detailed groundwater studies were not conducted at the site as a result of the site being totally transformed due to previous activities as well as the low contamination risk of the activities and facilities due to the groundwater depth.

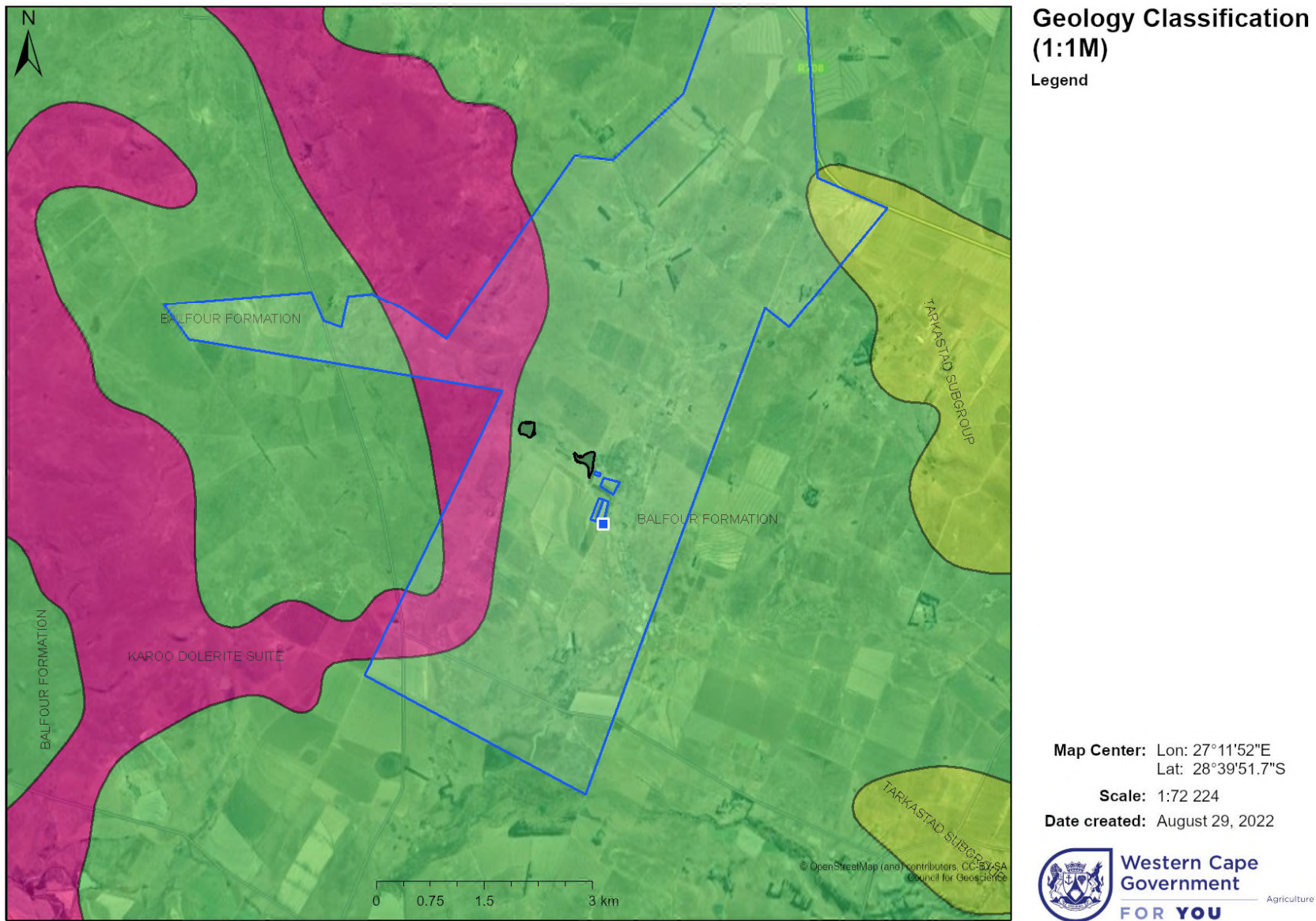


Figure 7: Geology (WCDa, 2022)

4.6 Vegetation and Animal Life

4.6.1 Desktop Assessment

Ecological Importance and Flora Assessment

Site specific ecological investigations or a Terrestrial Biodiversity Compliance Statement was undertaken by The Biodiversity Company in April 2022. This is included in Appendix 4. The project area is situated within the Grassland Biome and on a fine-scale vegetation type, the project area overlaps with two vegetation types: the Marikana Thornveld and the Northern Drakensberg Highland Grassland.

The desktop assessment indicates that the development area overlaps with an Ecosystem Threat Status that is Vulnerable, and the Ecosystem Protection Level is classified as Not Protected. In terms of Critical Biodiversity Areas and Ecological Support Areas, the development area overlaps mainly with a Degraded Area, and is located adjacent to an ESA1.

National Protected Area Expansion Strategy 2016 (NPAES) areas were identified through a systematic biodiversity planning process and the development area overlaps with a priority focus NPAES area. No Important Bird and Biodiversity areas overlap the development areas, and the nearest area is 29km north (The Biodiversity Company, 2022).

Faunal Assessment

Based on the South African Bird Atlas Project, Version 2 (SABAP2) database, 157 bird species have the potential to occur in the vicinity of the project area. The IUCN Red List Spatial Data (IUCN, 2017), and other references, lists 78 mammal species, 40 reptile species and 17 amphibian species have the potential to occur in the project area (The Biodiversity Company, 2022).

4.6.2 Fieldwork findings

Flora Assessment

As stated in the Terrestrial Biodiversity Compliance Statement, Appendix 4:

“The species composition of the assessment area was characteristic of a disturbed and overgrazed area. Most of the indigenous flora recorded during the site visits consisted of Increaser 2 grasses which co-occurred with numerous alien invasive plants. Increaser 2 grasses are abundant in overgrazed veld and include pioneer and subclimax species which increase in response to the disturbances of overgrazing (Van Oudtshoorn, 2015). Increaser 2 grass species were recorded mainly in two habitat units, namely Transformed and Degraded. The proposed development area consists mainly of these two habitat units.”

*Seventeen species of Alien Invasive Plants were recorded in the assessment area. The most dominant examples include *Alternanthera pungens*, *Argemone ochroleuca* subsp. *ochroleuca*, *Bidens pilosa*, *Cosmos bipinnatus*, *Datura ferox*, *Eucalyptus camaldulensis*, *Hibiscus trionum*, *Opuntia ficus-indica* and *Tagetes minuta*. Alien invasive grasses include *Digitaria sanguinalis* and *Paspalum dilatatum*.*

*Eight species, namely *Agave americana*, *Argemone ochroleuca* subsp. *ochroleuca*, *Datura ferox*, *Eucalyptus camaldulensis*, *Gleditsia triacanthos*, *Opuntia ficus-indica*, *Verbena bonariensis* and *Xanthium strumarium*, are listed under the Alien and Invasive Species List 2021, Government Gazette No. 44182 as Category 1b. Category 1b species must be controlled by implementing an IAP Management Programme, in compliance of section 75 of the NEMBA, as stated above (The Biodiversity Company, 2022).*

Faunal Assessment

As stated in the Terrestrial Biodiversity Compliance Statement, Appendix 4.

“No herpetofauna or mammals were observed.

Seventeen species were recorded in the project area during the survey based on either direct observation, vocalisations, or the presence of visual tracks, nests, and signs. Nine species were listed as protected provincially.” (The Biodiversity Company, 2022).

4.6.3 Habitat Assessment and Site Ecological Importance

Habitat Assessment

As stated in the Terrestrial Biodiversity Compliance Statement, Appendix 4:

“The habitats observed largely do not coincide with the vegetation types as described by Mucina & Rutherford (2006) due to large-scale transformation and degradation.

Grassland Habitats consist mainly of Increaser 3 species, namely Sporobolus africanus. The dominance of Increaser 3 grasses indicates that the Grassland has been impacted by species-specific overgrazing (Van Oudtshoorn, 2015). It has also been impacted by dirt roads, livestock trampling as well as the development of a windpump where the habitat borders with the wetland.

The Wetland Habitat consists of the shallow, sedge-dominated banks of a small freshwater lake. The lake itself provides a valuable water resource for both wetland birds and cattle. It is connected to streams which act as corridors to similar wetlands in the project area. One visible impact on the Wetland Habitat is the development of a windpump, located in the Grassland Habitat, which utilizes the lake’s water.

Degraded Habitats consist of natural patches of grassland that have been disturbed by human activities, most notably alien plant invasion, but still retain a substantial cover of indigenous vegetation. Fieldwork observations found other disturbances in the Degraded Habitats such as disturbances by livestock (trampling and defecation) and the burning of Zea mays.

Transformed Habitats have been heavily modified, largely due to previous and current clearing of vegetation for agricultural activities. As a result, Transformed Habitats contain little to no natural areas. These habitats are in a constant disturbed state and thus cannot recover to a more natural state due to ongoing disturbances and impacts. Activities that have led to the transformation of previously natural habitats within the assessment area include overgrazing and trampling by livestock; establishment of buildings, dirt roads, fences, and lawns; cultivation of crops and exotic timber trees; dumping of scrap metal, building rubble and rocks; littering; and vegetation clearing for future feedlot developments.”

Site specific environmental management measures are included in the Environmental Management Programme (EMPr) to limit and reduce activities that could cause harm to faunal and floral species. See Appendix 6.

4.7 Cultural Heritage

A Phase 1 Cultural Heritage Impact Assessment was undertaken by J A van Schalkwyk in June 2022 (see Appendix 4). This report will be submitted via the South African Heritage Resources Agency (SAHRA) or relevant Provincial Heritage Resources Agency (PHRA) by means of the online SAHRIS System. The report states the following:

“The Palaeontological Sensitivity Map (<http://www.sahra.org.za/sahris/map/palaeo>) indicate that the project area has a very high sensitivity of fossil remains to be found and therefore a field assessment and protocol for finds is required.

The cultural landscape qualities of the region essentially consist of two components. The first is a rural area in which the human occupation is made up of a very limited pre-colonial Stone Age and Iron Age occupation. The second and much later component is a colonial farmer one, with a very limited urban component consisting of a number of smaller towns, most of which developed during the last 100 to 120 years.

From the Deed of Transfer (fig. 7), it is determined that the farm Demilander was partitioned on 18 June 1913 in favour of a H.J.E. van Schalkwyk (born Moolman), from the original farm Weltevrede 435.

Based on an analysis of old topographic maps and aerial photographs, it can be seen that the project area has always been used for agricultural (crop farming) purposes. The main changes that took place was the re-alignment of internal roads and that orientation of the various agricultural fields.

During the survey, the following sites, features, and objects of cultural significance were identified in the project area.

Stone Age

- ❖ *No sites, features or objects of cultural significance dating to the Stone Age were identified in the project area.*

Iron Age

- ❖ *No sites, features or objects of cultural significance dating to the Iron Age were identified in the project area.*

Historic Period

- ❖ *No sites, features or objects of cultural significance dating to the historic period were identified in the project area. “*

SOCIO-ECONOMIC ENVIRONMENT

4.8 Provincial and Municipal Context

4.8.1 General

Setseto Local Municipality is situated in the Eastern Free State within the boundaries of the Thabo Mofutsanyane District Municipality. The local municipality area measures 5 948,35 km² and comprises four urban areas namely Ficksburg/Meqheleng, Senekal/Matwabeng, Marquard/Moemaneng and Clocolan/Hlohlolwane, as well as some surrounding rural areas (SLM, 2022)

4.8.2 Demographics

As per the community survey conducted by Statistic South Africa in October of 2016, there were 55 402 males and 61 962 females in the municipal area. This translates into 47% males and 53% females; the majority of the population is between 15 to 40 years old. Marquard self has a population of 15 502 where 7254 are male and 8248 are female. 95.3% of the population are Black African (Statistics South Africa, 2011).

The majority of the population, that is 62%, is between 15 and 64 years of age. The age group 0 to 14 years accounts for 32% of the population. Of those aged 20 years and above, approximately 8,7% have no formal schooling, 22,6% have completed matric, and 6,9% have some form of higher education (Statistics South Africa, 2011).

4.8.3 Health

The municipality has three hospitals, one in each town except in Marquard, there are thirteen clinics spread all over the four towns of the municipality. The challenges are with the rural/farming areas that need mobile facilities, as most of these people travel more than five kilometres to reach a clinic.

Poor conditions of roads also contribute to these situations as some of the areas are inaccessible. The shortage of staff at the clinics also plays a role in our incapacity to provide sustainable health services to our communities. Doctors are also not available full time at the clinics as they only visit on certain days.

Most of the people infected with Human Immunodeficiency Virus/ Acquired Immunodeficiency Syndrome put a strain on the health system within our municipal area, and our locality with Lesotho also aggravates the situation as more Lesotho citizens' uses facilities that are in our area for their health. There are only two anti-retroviral assessment and treatment sites in the municipality, the one is situated in Marquard and the other in Ficksburg (SLM, 2022).

The Covid-19 pandemic has put a further strain on the health service within the municipality. A lot of people have also lost their loved ones as a result of this disease. The department of health is continuing to provide vaccination services to members of the community, although the response was higher at the beginning, people are no longer vaccinating at the high rate as it was in the beginning (SLM, 2022).

In addition to the quantitative standards, other demand drives, which have impact on the provision of clinics, include the department of health's regulations, the medical expenditure of households and existing clinics in the area. The facility at the rural service centre should be a Primary Health Care Centre; a mobile clinic could be operated from here to the outlying areas. Emergency Medical Services is under the control of the Free State Provincial Government Department of Health, this service is under capacitated in terms of human resources and equipment (SLM, 2022).

4.8.4 Living Conditions

There are 33 687 households in Setsoto, with an average household size of 3,3 persons per household in the municipality, 1,9% have no access to piped water; 31,4% have access to piped water in the dwelling, and 59,4% of households have access to piped water in the yard. 70% of the households live in formal dwellings.

4.8.5 Unemployment

The official unemployment rate was 34,9% in the third quarter of 2021. The results of the Quarterly Labour Force Survey for the third quarter of 2021 show that the number of employed persons decreased by 660 000 in the third quarter of 2021 to 14.3 million (SLM, 2022).

The Community Survey of 2016 figures are not disaggregated to a municipal level, hence the usage of the 2011 figures as they are the ones recognised as official statistics for planning.

Of the 33 411 economically active (employed or unemployed but looking for work) people in the municipality, 35,7% are unemployed (Statistics South Africa, 2011).

Of the 17 173 economically active youth (aged 15–34) in the area, 46,1% are unemployed (Statistics South Africa, 2011).

Agriculture is the main economic activity in the municipality.

4.9 Existing Land Use

Properties directly adjacent to the site to the north, east and west are also agricultural/rural areas and are basically similar in function and visual appearance. Further afield the area consists predominantly of undulating hills and mountainous areas. See Figure 8.

4.10 Agricultural Potential

According to the DAFF data set accessed via CapeFarmMapper the portion of land under the development area has a grazing capacity of 6 ha/large stock unit. The land and capability are classified as low-moderate (WCDoA, 2022).

As the proposed activity increases the agricultural potential of the property by supporting higher numbers of livestock, the proposed development is therefore not deemed to impact negatively on the agricultural potential of the site itself or the local area.

4.11 Visual Environment

Aesthetically the area of the Aluf Farming activities and facilities consist of a rural and agricultural area. The fact that these land uses will just be repeated in the form of the feedlot development causes the land uses to remain similar in nature to the surroundings which will make it to it blend into the surroundings and limit any visual impact.

4.12 Noise

As the activities and facilities will not undergo the construction phase, there will be no construction related noise impacts. Operational noises will be as previously and as associated with agricultural activities.

4.13 Air Quality

Air emissions from animal operations beyond the feedlot boundary are partly of concern due to possible effects of human health and nuisance odour. According to literature there is little scientific evidence that exposure to humans outside feedlots has significant effects on human health because the concentration is usually below threshold levels. Of most concern however, from a human health and nuisance odour perspective are ammonia, hydrogen sulphide, and particulate matter (dust).

Ammonia is formed when nitrogen contained in animal manure is converted through a combination of processes such as hydrolysis, mineralisation, and volatilisation. Ammonia has a strong, sharp odour, detectable at concentrations 50 parts per million (ppm). The lowest concentrations at which health effects are observed over the short-term exposure is 0.5 ppm. Health exposure limits for ammonia indicate that there is little likelihood of even minimal health effects of long-term exposure to ammonia at concentrations less than 0.3 ppm and even at levels up to 50 ppm, serious health consequences are unlikely.

Hydrogen sulphide is produced in anaerobic environments from the microbial reduction of sulfate in water and the decomposition of sulfur-containing organic matter in manure. The respiratory system is the main route of human exposure to hydrogen sulphide both in workplaces and in the ambient air. Typical symptoms and signs of hydrogen sulfide intoxication are most often caused by relatively high concentrations in occupational exposures (concentrations in the ppm range found within some places of work) and not in the general environment. The first noticeable effect of hydrogen sulfide at low concentrations is its unpleasant odour. Conjunctival irritation is the next subjective symptom and can cause so-called “gas eye” at hydrogen sulfide concentrations above 50 to 100 ppm (WHO, 2000). Hydrogen sulphide is a colourless gas with a strong, characteristic “rotten egg” smell that can be detected at concentrations as low as 0.5 parts per billion (ppb). Odour nuisance therefore occurs at concentrations far below those that cause health hazards.

Particulate matter specifically PM₁₀ (particulate matter with an aerodynamic diameter less than 10 µm) and PM_{2.5} (particulate matter with an aerodynamic diameter less than 2.5 µm) have been linked to health effects at both long- and short-term exposures. The effects of PM_{2.5} are most severe since these particles can be composed of elemental carbon, adsorbed complex organic molecules, heavy metals, bioaerosols, acid aerosols, ammonium nitrate, and other materials. PM_{2.5} can reach and be deposited in the smallest airways (alveoli) in the lungs, whereas larger particles tend to be deposited in the upper airways of the respiratory tract.

Odour from animal feedlots is not caused by a single pollutant but rather a vast number of contributing compounds such as ammonia, hydrogen sulphide and volatile organic compounds (VOC). Although odour involves a subjective human response, it is a common source of complaints from people living near feedlots.

Sources of odour and dust are reported to include:

- ❖ The surface of holding pens
- ❖ Feed storage
- ❖ Run-off collection and treatment
- ❖ Storage and processing of solids

- ❖ Land application of effluent and solids, and
- ❖ Disposal of carcasses.

The project site is within a rural area and surrounded by scattered farmsteads. The closest of-site farmstead appears to be around 1,5 km from the farm boundary. Given the above description of pollutants, emissions, odour is likely to be the most notable impact on human receptors within the area.

It should be noted however that air pollutants from animal feedlots may also have environmental impacts not directly associated with human health. Nitrous oxide and methane from animals contribute to contribute to the greenhouse effect in the troposphere. Some VOCs participate in atmospheric photochemical reactions, while others play an important role as heat trapping gases. Nitric oxide and ammonia also contribute to a wide variety of environmental impacts such as the greenhouse effect and as they are converted to other chemical species and cycle through environmental reservoirs.

4.14 Traffic

The anticipated traffic volumes and types of traffic which is expected as a result of feedlot facility are deemed to be in keeping with the agricultural/rural land use.

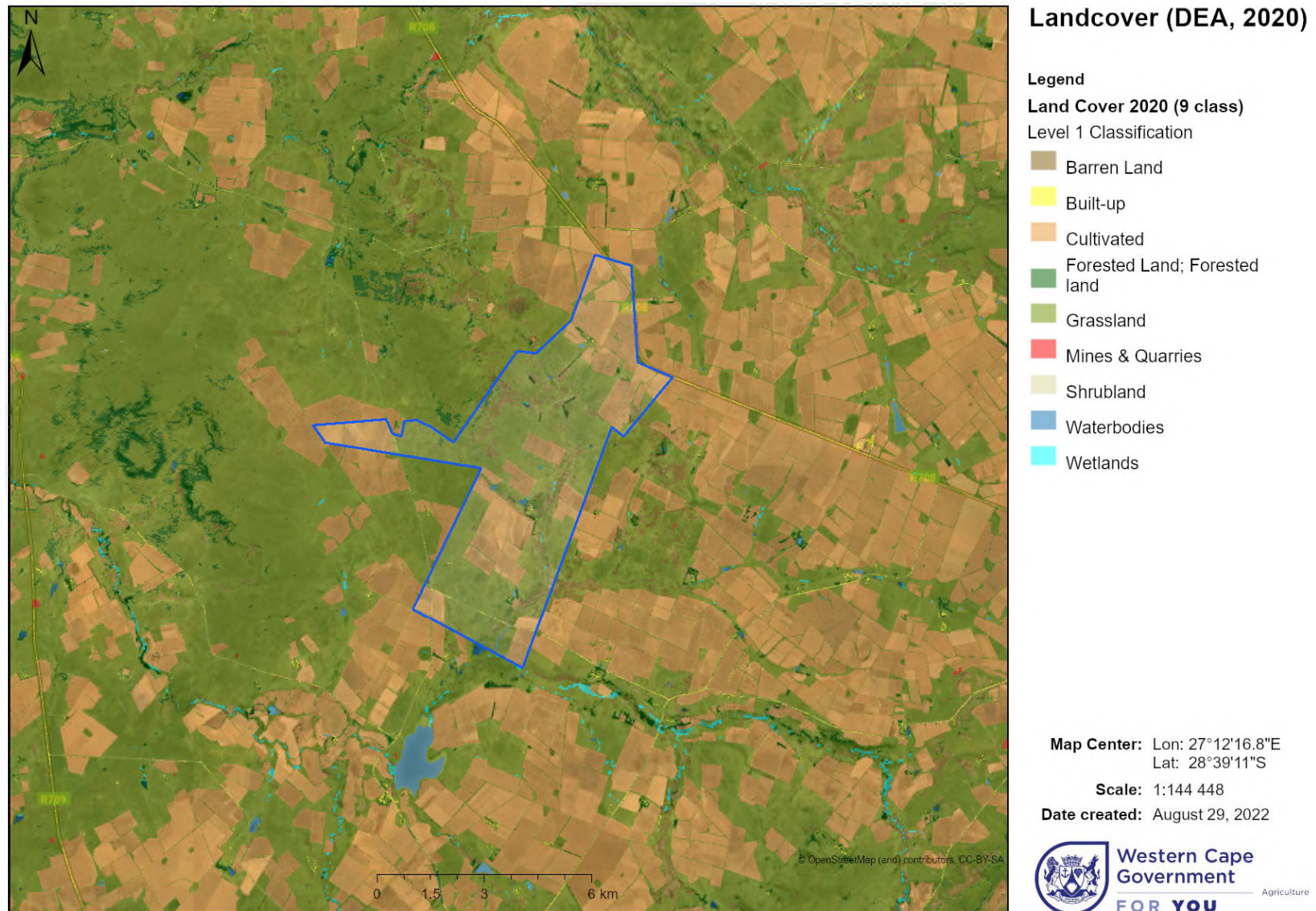


Figure 8: Surrounding Land Use

5. THE PUBLIC PARTICIPATION PROCESS

5.1 Introduction

The objective of the public involvement process is to provide interested and affected parties (I&AP's) e.g., all local and provincial authorities, adjacent landowners, community leaders, service providers and other stakeholders, with the opportunity to identify issues and concerns regarding the proposed project. The participation process also assists in the identification of ways in which concerns can be addressed and alternatives considered. The DESTEA was consulted prior to the start of the public participation process in order to establish their requirements in this regard. The prescribed process entailed inter alia the process as set forth in Chapter 6 of the EIA Regulations R543 of the NEMA (Act No. 107 of 1998).

The basic elements of the public participation process consist of the advertisement of the project in the press, as well as on site whereby the intent of the proposed project is described. These advertisements also disclose the environmental assessment practitioners' contact details to enable I&APs to register and to express any interest or concern which they may harbour. I&APs are also invited to a public meeting (to be held should the proposed project evoke sufficient interest). A Background Information Document (BID) is drafted and distributed to all of the I&APs via registered mail, e-mail, or other communication method. This document again explains the intent of the applicant as well as what the full extent of the project will include. Contact details are again provided in order to assist I&APs in forwarding their comments. Any and all of the positive and negative comments are thereby obtained and dealt with on a case-by-case basis.

5.2 Identification of Interested and Affected Parties

Advertisements regarding the activities and facilities was placed on the site boundary (See Appendix 5_1) as well as being published in the Ficksburg, Senekal & Clocolan Rekord and the & Brandford, Theunissen & Winburg Rekord of the 2nd and 3rd of June 2022. (See Appendix 5_2).

All of the implicated Local, Provincial and National Government Departments and their relevant sub sections were contacted, and their contact details obtained. Other non-government organizations and institutions as well as the local and provincial service providers in the area were informed in the same manner (See Appendix 5_5). The BID regarding the project was drafted in English and was distributed via e-mail to all of the abovementioned parties. The BID was also distributed to all the surrounding landowners. Some of the surrounding landowners were contacted by telephone and the project discussed. This was followed up by providing them with the BID document. (See Appendix 5_5).

5.3 Summary of Comments Received During Phase 1

Immediate Neighbours, Adjacent Landowners and Landowners

In short, the following aspects were noted by adjacent landowners:

- ❖ On receipt and initial discussions, the project was discussed with a local landowner who registered during the phased 1 PPP notifications. The landowner is not an adjacent landowner, but they communicated legitimate concerns regarding the impacts of stormwater coming into contact with the manure in the feedlots and how this might affect the water quality in the local watercourses and in the Mushroom Valley Dam downstream.

Ward Councillors

- ❖ No comments were received to date.

Government Departments

- ❖ The Free State Department of Agriculture, Rural Development and Land Reform contacted the EAP and requested to be registered as an I&AP.
- ❖ The SAHRA responded to the Heritage Impact Report submitted to them and requested copies of the EIR.

Local Authorities

- ❖ No comments were received from any Municipal Department. The Marquard Police Station sent a read receipt of the email sent to them.

NGOs, CBOs, Conservancies, Farmers Associations, Service Providers

- ❖ Transnet pipelines, Sasol Satellite Operations, and Eskom all replied to the submissions. A telephonic discussion was also held with a representative of the Marquard Farmers Association and the project discussed. They assisted with contact information of some of the local municipal officials in the area but did not have any further comment at the time.

The EAP responded to each of the aspects raised above and the responses are summarised in the paragraph below.

5.4 Summary of Responses During Phase 1

The summary below provides an overview of the responses made by the EAP on the principal comments raised by the stakeholders. Feedback in this section represents that included up to the submission of the S24G EIR Report.

Immediate Neighbours, Adjacent Landowners and Landowners

- ❖ The EAP thanked the owner of The Inca Farm Cc. (Portion 3 of the Farm Blesbokfontein 2355) for their response and also notified them that The Aluf Feedlot Development had instructed an Agricultural Engineer to design a manure handling dam which would manage the impacts related to contaminated stormwater flows to the local streams and the Mushroom Valley Dam. The Draft S24G report will also be distributed to them for review.

Government Departments

- ❖ The EAP thanked the Free State Department of Agriculture, Rural Development and Land Reform and registered them as an I&AP. The Draft S24G report will also be distributed to the Department for review.
- ❖ The Draft S24G report will also be distributed to the Department for review.

Other NGOs, CBOs, Conservancies, Farmers' Associations, Service Providers

The EAP thanked all that replied on the submissions.

5.5 Conclusion

The overarching aim of the PPP is not only to adhere to the required legislation, but also to give as many stakeholders as possible an opportunity to be actively involved in this process. SPOOR Environmental Services (Pty) Ltd. identified and contacted the relevant I&APs as far as possible to inform them of the proposed development and relevant procedures as well as to provide opportunity to raise issues and

concerns about the proposed hydrogen development.

SPOOR believes that I&APs were given sufficient opportunity to participate in the environmental process to date. I&APs that registered because of the advertisements and subsequent notices were logged and provided with additional information where this was requested. All of these responses (to and from the EAP) were included in the assessment to guide the studies to reach the most productive solutions for the Aluf Feedlot facility. Where I&AP's could not be contacted during the initial stages of the public involvement process, the EAP continues attempts to reach these parties to be able to involve them in the process.

6. DESCRIPTION OF ALTERNATIVES

The concept of the weighing of different alternatives in a proposed development is defined in the Department of Environmental Affairs and Tourism's (DEAT) 2004 Integrated Environmental Management (IEM) Information Series as: *"a possible course of action, in place of another, that would meet the same purpose and need"*.

Additionally, the role of alternatives is explained to be: *"to find the most effective way of meeting the need and purpose of the proposal, either through enhancing the environmental benefits of the proposed activity, and or through reducing or avoiding potentially significant negative impacts."* (DEAT, 2004).

The following alternatives will be considered for the development of the Aluf Farming Feedlot Development.

6.1 Proposal: Environmental Authorisation Application – Section 24G of NEMA , Act 107 of 1998, Rectification in terms of the Feedlot Facility for Aluf Farming (Pty) Ltd.

This alternative is the preferred property, layout, design, and activity alternative. As per the abovementioned motivations, the proposed facility will comprise of a feedlot facility and is located on an agricultural zoned property - Farm Demilander 273, Marquard area, in an existing agricultural/rural area. The Applicant understands that the existing feedlot has surpassed the number of animals to be produced in this manner as per the NEMA (Act 107 of 1998) regulations and that a rectification application is required. The current activities are however a product of an organically grown operation, and not of wilful disregard of the Act and regulations. As indicated above, the Applicant needs to apply for inter alia environmental authorization.

Aluf Farming started a feedlot in an existing kraal on the farm, which has grown into a new facility that is able to feed 3000 small stock units (SSU) and 3000 large stock units (LSU) at a time. The farm also cultivates maize on existing crop fields for use on the farm and the national market. The proposed infrastructure include:

- ❖ A feedlot facility with the capacity to process 3000 SSU & LSU at a time,
 - ❖ Small stock units consist of 3000 Mutton Merino's; and
 - ❖ Large Stock Units consist of 3000 Wagyu cattle.
- ❖ The feedlot will comprise two main feedlot facilities divided into smaller units,
- ❖ A Feed mixing facility (contained in an existing outbuilding),
- ❖ Animal processing facility (contained in the existing farm kraal),
- ❖ 2x Production boreholes feeding into a main concrete farm dam and associated water pipelines (existing),
- ❖ Water pipelines from the concrete dam to the feedlot,
- ❖ Existing farmhouse and facility outbuildings,
- ❖ Existing access road from the R708.

Small Stock Units (SSU's)

Small Stock Units or lambs are sources and bought in from the local market and are delivered to the feedlot with a body mass of between 3-5 kg. Between 40-60 lambs are housed per pen where they are fed a mixture of *eragrotis* spp. (cane grass, "oulandsgras" or tef) and lucerne feed pellets. Lambs require 11 litres of water per day. Thus 3000 lambs require 33 000 litres of water per day or 33m³.

Once they reach a body mass of between 27-30kg, the small stock units are sold and removed from the feedlot for slaughter. All lambs are sold in the national market, and none are exported.

Large Stock Units (LSU's)

150 Large Stock Units of calves are delivered to the feedlot every month, at the age of 5 months. Calves are kept in the processing pen overnight to calm down. Thereafter the calves roam and feed extensively off the pasture areas for a period of one month. After they have reached the desired weights the calves are relocated to the feedlot for 16 months where they are fed a mixture of *eragrostis* spp. (cane grass, "oulandsgras" or tef), maize, soybean cakes and silage. Calves/cattle require 40 litres of water per day; thus 3000 calves will require 120 000 litres of water per day or 120m³.

30% of the calves are sold for the inland market (PicknPay, Checkers and boutique butcheries) and the remaining 70% are exported to international markets via meat agents for Saudi Arabia, China, Mauritius, Kuwait, and UAE.

No harmful contaminants are released into the surrounding environment. The manure stays in the feedlots and are collected twice yearly with a front loader. The manure is then used as fertilizer on the crop/pasture fields.

Stormwater is channelled away from the feedlots via soil berms and drains via grassed swales towards the local spruit to the east of the facility. Stormwater falling inside of the feedlots is captured in the manure dam where the water evaporates, and the remaining solids is collected and spread over the crop fields as fertilizer.

6.2 The "NO-GO" Alternative

This alternative involves maintaining the status quo by not developing this feedlot facility. This alternative is not considered to be viable at this stage. With the growing population worldwide the associated demand for meat increases yearly. Diversifying and increasing capital opportunities are also important to increase the economic landscape in South Africa and the Free State which has a high unemployment rate and can have a low carrying capacity in certain areas on agricultural land. The proposed feedlot for Aluf Farming will contribute positively towards all of these challenges. Additionally, the site where the feedlot was expanded is situated on disturbed and cultivated areas, thus not leading the removal of additional virgin indigenous vegetation. The development can therefore be supported if due consideration is made of all the recommendations prescribed in section 7 as well as the mitigation measures laid down in the EMPr (Appendix 6) for the proposed development.

6.3 Key reasons why no other alternatives were considered:

- ❖ The site where the facility is located is within an existing agricultural/rural area with the same land use zoning (See Appendix 7),
- ❖ The surrounding land uses adjacent to the site are all agricultural or rural uses,
- ❖ The facility is partially located on the area where the old kraal was situated, and the additional new feedlots were developed on previously cultivated crop fields. These areas were ideal for the required activities and facilities and existing infrastructure was only adapted to incorporate the feedlots. No new buildings needed to be constructed,

- ❖ The Aluf Farming operations currently provides 37 permanent employment opportunities on the farm with 13 directly linked to the feedlots,
- ❖ With the growing economic pressures on the agricultural sector, the high purchase pricing for additional land coupled with the scarcity of nearby available land, the Aluf Farming operation will not be able to operate in a financially viable manner without the feedlot facilities,
- ❖ No natural or indigenous vegetation had to be removed for the development to proceed,
- ❖ Clean surface water run-off is diverted to discharge in natural surface water areas,
- ❖ Stormwater containing manure, from the feedlots are diverted separately to a wastewater pond where it evaporates and the manure is used as a resource on cultivation areas,
- ❖ Manure in feedlots is collected twice yearly and used as a fertilizer resource on the crop fields increasing the overall sustainability of the project.

7. DESCRIPTION OF ENVIRONMENTAL ISSUES IDENTIFIED

7.1 Introduction

Environmental Issues Identified in the impact assessment section of the report were identified in accordance with the guidelines as set forth by Section 21(1) of the Environment Conservation Act, (Act No. 73 of 1989), as well as the regulations described in the DEAT IEM Information Series (DEAT, 2004).

7.2 Key Environmental Issues

The National Web based Environmental Screening Tool was used to generate a Screening Tool Report. The report is included in Appendix 3. The Screening Tool identifies related exclusions and/ or specific requirements including specialist studies applicable to the proposed site and/or development, based on the national sector classification and the environmental sensitivity of the site.

The Screening Tool allows for the generating of a Screening Report referred to in Regulation 16(1)(v) of the Environmental Impact Assessment Regulations 2014, as amended whereby a Screening Report is required to accompany any application for Environmental Authorisation and as such the tool has been developed in a manner that is user friendly and no specific software or specialised GIS skills are required to operate this system. The gazetted protocols in **Table 3** are applicable to the proposed development according to the screening report.

Anticipated environmental issues were further determined by superimposing the various elements of the proposed activity over the existing environment. This information was screened and used to inform the specialist studies where relevant. Detailed information from the specialists was used to develop a site sensitivity analysis. Further planning and design decisions and recommendations were made based on this site sensitivity analysis. Impacts will be discussed in terms of the criteria mentioned in the following section.

Table 3: Summary of Screening Tool Report Findings and Reasons of Inclusion or Exclusion of Specialist Assessment

No.	Specialist Assessment	Screening Report Sensitivity Rating	Inclusion or Exclusion	Reasons
1	Agricultural Theme & Agricultural Impact Assessment	Medium	Exclusion	The property is zoned for agricultural purposes, it is actively farmed, and this development will enable the applicant to utilize the property to the maximum potential. As such, a Compliance Statement will not be conducted.
2	Landscape/ Visual Impact Assessment	No rating	Exclusion	The proposed development is for feedlot development on agricultural land, which will have a very low impact on the visual landscape as the property is in line with the surrounding a rural area. As such, no visual or landscape assessment will be included in the EIAR.
3	Archaeological and Cultural Heritage	Low	Inclusion	Phase I Cultural Heritage Impact Assessment has been completed and will be submitted to the South African Heritage Resources Agency

No.	Specialist Assessment	Screening Report Sensitivity Rating	Inclusion or Exclusion	Reasons
	Theme & Impact Assessment			(SAHRA) or relevant Provincial Heritage Resources Agency (PHRA) by means of the online SAHRIS System. which will indicate whether any specialist assessments are required.
4	Palaeontology Theme & Impact Assessment	Very High	Inclusion	Phase I Cultural Heritage Impact Assessment has been completed and will be submitted to the South African Heritage Resources Agency (SAHRA) or relevant Provincial Heritage Resources Agency (PHRA) by means of the online SAHRIS System. which will indicate whether any specialist assessments are required.
5	Terrestrial Biodiversity Theme & Impact Assessment	Very High	Inclusion	The EAP does not concur with the finding of the screening report that the area is very highly sensitive for biodiversity, since most of affected area has been disturbed by agricultural practices, for this reason the EAP regards the area to have a medium sensitivity. A Terrestrial Biodiversity Compliance Statement was conducted.
6	Plant Species Theme	Low	Inclusion	The EAP agrees with the medium sensitivity for plant species. A Terrestrial Plant Species Compliance Statement was conducted.
7	Animal Species Theme	Medium	Inclusion	The species mentioned in the screening report were not observed during the visual inspection and due to the property already being disturbed by agricultural activities it is expected that these species would have migrated to adjacent, less disturbed areas. The EAP does not concur with the rating and is of the opinion that the site is of low sensitivity. A Terrestrial Biodiversity Compliance Statement was conducted.
8	Aquatic Biodiversity Theme & Impact Assessment	Low	Exclusion	There are no surface water resources within 100m of the development area. The EAP concurs with the findings of the screening report and is of the opinion that the rating should be low. No aquatic biodiversity compliance statement will be done for the EIAR.
9	Civil Aviation Theme	Medium	Exclusion	The EAP does not concur with the finding of the screening report and is of the opinion that the sensitivity is low to insignificant. As such, no further studies will be conducted.
10	Defence Theme	Low	Exclusion	The development will not impact on defence installation. As such, no further assessment is required.

7.3 Impact Significance Criteria and Rating Scales

In accordance with the requirements of the NEMA, 1998 (Act 107 of 1998) the potential and anticipated impacts will be assessed in terms of the criteria and rating scales listed below. Table 3 provides a summary of the impact criteria and rating scales used to determine the significance of potential impacts.

Table 4: Impact Criteria and Rating Scales

Criteria	Rating Scales	Notes
Nature	❖ Positive	This is an evaluation of the type of effect the construction, operation and management of the proposed development would have on the affected environment.
	❖ Negative	
	❖ Neutral	
Extent	❖ Low	Site-specific, affects only the development footprint.
	❖ Medium	Local (limited to the site and its immediate surroundings, including the surrounding towns and settlements within a 10 km radius).
	❖ High	Regional (beyond a 10 km radius) to national.
Duration	❖ Low	0-4 years (i.e., duration of construction phase).
	❖ Medium	5-10 years.
	❖ High	More than 10 years to permanent.
Intensity	❖ Low	Where the impact affects the environment in such a way that natural, cultural, and social functions and processes are minimally affected.
	❖ Medium	Where the affected environment is altered but natural, cultural, and social functions and processes continue albeit in a modified way; and valued, important, sensitive, or vulnerable systems or communities are negatively affected.
	❖ High	Where natural, cultural, or social functions and processes are altered to the extent that the impact will temporarily or permanently cease these functions and processes; and valued, important, sensitive, or vulnerable systems or communities are substantially affected.
Frequency of Occurrence	❖ Continuous	Where Impact will occur without interruption
	❖ Intermittent	Impact occurring from time to time without any periodicity
	❖ Periodic	Impact occurring at more or less regular intervals
	❖ Time-linked	Impact occurring only or mostly at specific times e.g., at night or during office hours

Criteria	Rating Scales	Notes
Probability (the likelihood of the impact occurring)	❖ Low	It is highly unlikely or less than 50 % likely that an impact will occur.
	❖ Medium	It is between 50 and 70 % certain that the impact will occur.
	❖ High	It is more than 75 % certain that the impact will occur, or it is definite that the impact will occur.
Reversibility	❖ Low	Low ability of environment to be reverted to pre-impact state if cause of impact is removed
	❖ Medium	Medium ability of environment to be reverted to pre-impact state if cause of impact is removed
	❖ High	High ability of environment to be reverted to pre-impact state if cause of impact is removed
Potential for impact on irreplaceable resources	❖ Low	No irreplaceable resources will be impacted.
	❖ Medium	Resources that will be impacted can be replaced, with effort.
	❖ High	There is no potential for replacing a particular vulnerable resource that will be impacted.
Consequence (A combination of extent, duration, intensity, and the potential for impact on irreplaceable resources).	❖ Low	A combination of any of the following: - Intensity, duration, extent, and impact on irreplaceable resources are all rated low. - Intensity is low and up to two of the other criteria are rated medium. - Intensity is medium and all three other criteria are rated low.
	❖ Medium	Intensity is medium and at least two of the other criteria are rated medium.
	❖ High	Intensity and impact on irreplaceable resources are rated high, with any combination of extent and duration. Intensity is rated high, with all of the other criteria being rated medium or higher.
Significance (all impacts including potential cumulative impacts)	❖ Low	Low consequence and low probability. Low consequence and medium probability. Low consequence and high probability.
	❖ Medium	Medium consequence and low probability. Medium consequence and medium probability. Medium consequence and high probability. High consequence and low probability.
	❖ High	High consequence and medium probability.

Criteria	Rating Scales	Notes
		High consequence and high probability.
Confidence (Degree of confidence in the predictions, based on the availability of information and the specialist's knowledge and expertise)	❖ High	High degree of confidence in the predictions
	❖ Medium	Medium degree of confidence in the predictions
	❖ Low	Low degree of confidence in the predictions

An explanation of the above-mentioned impact criteria is provided below. Only the above-mentioned criteria will be taken into account during the assessment of impact significance. In addition, the degree of confidence in the prediction of impacts, the nature of applicable mitigation measures and legal requirements applicable to the impacts will also be described.

7.3.1 Nature

This is an evaluation of the type of effect the construction, operation and management of the proposed development would have on the affected environment. Will the impact change in the environment be positive, negative, or neutral? This description will include that which will be affected and the manner in which the effect will transpire. There may be a number of possible activities contributing to the same impact. Vice versa there may be a number of different impacts resulting from a single activity.

7.3.2 Extent or Scale

This refers to the spatial scale at which the impact will occur. Extent of the impact is described as: low (site-specific - affecting only the footprint of the development), medium (limited to the site and its immediate surroundings and closest towns) and high (regional and national). This refers to the actual physical footprint of the impact, not to the spatial significance. It is acknowledged that some impacts, even though they may be of small extent, are of very high importance, e.g., impacts on species of very restricted range.

7.3.3 Duration

The lifespan of the impact is indicated as low (short-term: 0-4 years, typically impacts that are quickly reversible within the construction phase of the project), medium-term: (5-10 years, reversible over time) and high (long-term: greater than 10 years and continue for the operational life span of the proposed development).

7.3.4 Intensity or Severity

This is a relative evaluation within the context of all the activities and the other impacts within the framework of the project. Does the activity destroy the impacted environment, alter its functioning, or render it slightly altered? The EAP will quantify the magnitude of the impacts and outline the rationale used.

7.3.5 Impact on Irreplaceable Resources

This refers to the potential for an environmental resource to be replaced, should it be impacted. A resource could possibly be replaced by natural processes (e.g., by natural colonisation from surrounding areas), through artificial means (e.g., by re-seeding disturbed areas or replanting rescued species) or by providing a substitute resource, in certain cases. In natural systems, providing substitute resources is usually not possible, but in social systems substitutes are often possible (e.g., by constructing new social facilities for those that are lost). Should it not be possible to replace a resource, the resource is essentially irreplaceable e.g., red data species that are restricted to a particular site or habitat of very limited extent.

7.3.6 Consequence

The consequence of the potential impacts is a summation of above criteria, namely the extent, duration, intensity, and impact on irreplaceable resources.

7.3.7 Probability of Occurrence

The probability of the impact actually occurring based on professional experience of the EAP with environments of a similar nature to the site and/or with similar projects. Probability is described as low (improbable), medium (distinct possibility), and high (most likely). It is important to distinguish between probability of the impact occurring and probability that the activity causing a potential impact will occur. Probability is defined as the probability of the impact occurring, not as the probability of the activities that may result in the impact.

7.3.8 Significance

Impact significance is defined to be a combination of the consequence (as described below) and probability of the impact occurring. The relationship between consequence and probability highlights that the risk (or impact significance) must be evaluated in terms of the seriousness (consequence) of the impact, weighted by the probability of the impact actually occurring. In simple terms, if the consequence and probability of an impact is high, then the impact will have a high significance. The significance defines the level to which the impact will influence the proposed development and/or environment. It determines whether mitigation measures need to be identified and implemented and whether the impact is important for decision-making.

7.3.9 Degree of Confidence in Predictions

The EAP will provide an indication of the degree of confidence (low, medium, or high) that there is in the predictions made for each impact, based on the available information and their level of knowledge and expertise. Degree of confidence is not taken into account in the determination of consequence or probability.

7.4 Environmental Issues Identified

Please Note:

The Feedlot Facility is already operational and requires licencing as a result of an increase in the number of livestock raised. No construction related impact will therefore result.

7.4.1 Climate

The following potential climate related impacts have been identified:

- ❖ Precipitation in this area tends to be in the form of thunderstorms, which may result in large volumes of rain falling in a relatively short space of time. This in turn results in high volumes of storm water runoff. Large, exposed areas will result in loss of topsoil (important in terms of the habitable substrate for fauna and flora) and the subsequent siltation of the nearby water bodies. This will in turn impact negatively on the water quality and on the aquatic life in the downstream watercourses.
- ❖ Lightning, which generally accompanies these thunderstorms, could also impact negatively on the project area especially as the project area is surrounded by large tracts of open grass veld which is susceptible to veld fire.

Table 5: Impact Rating of Possible Climate Related Impacts

Activity/Impact	Nature	Extent	Duration	Intensity	Frequency	Probability	Reversibility	Potential for Impact on Irreplaceable Resources	Consequence	Significance	Confidence
High volumes of precipitation	Phase: Operation										
Without Mitigation	Negative	Low	High	Low	Periodic	Medium	High	Low	Low	Low	High
With Mitigation	Neutral	Low	High	Low	Periodic	Low	High	Low	Low	Low	High
Lightning strikes	Phase: Operation										

Activity/Impact	Nature	Extent	Duration	Intensity	Frequency	Probability	Reversibility	Potential for Impact on Irreplaceable Resources	Consequence	Significance	Confidence
Without Mitigation	Negative	Low	High	High	Intermittent	Medium	Low	High	High	High	High
With Mitigation	Neutral	Low	High	Low	Intermittent	Low	Low	Low	Low	Low	Medium

Management and Mitigation Measures

1. Special attention must be given to the stormwater design. The channels and the drain must be checked on a regular basis and always be clean and free of waste or debris in order for it to be in perfect working condition.
2. The entire site must be checked in order for no pooling or damming up of water to occur which may cause unsafe site conditions.
3. The feedlot management staff must be made aware of the incidence of lightning. The relevant health and safety measures must be implemented as per the Occupational Health and Safety Act (OHS, Act 85 of 1993) and Regulations.

7.4.2 Geology and Soils

The following potential impacts have been identified with regards to geology and soils:

- ❖ Surface and sub-soils may be contaminated during the operational phase resulting from the build-up of the manure itself,
- ❖ leaks of fuels and lubricants of farm vehicles and from the operations via accidental spills.

Table 6: Impact Rating of Potential Geology & Soil Related Impacts

Activity/Impact	Nature	Extent	Duration	Intensity	Frequency	Probability	Reversibility	Potential for Impact on Irreplaceable Resources	Consequence	Significance	Confidence
Surface and sub-soils contamination via manure	Phase: Operation										
Without Mitigation	Negative	Low	High	Medium	Continuous	Low	High	Low	Medium	High	High
With Mitigation	Positive	Medium	High	Low	Continuous	Low	High	Low	Low	Low	High
Surface and sub-soils contamination via hydrocarbons	Phase: Operation										
Without Mitigation	Negative	Low	High	Low	Intermittent	High	High	Low	Medium	Medium	High
With Mitigation	Neutral	Low	High	Low	Intermittent	Low	High	Low	Low	Low	High

Management and Mitigation Measures

1. Manure in the feedlot footprints must be replaced as required but at least on a bi-annual basis.
2. The plant workshop and storage areas must be provided with a spill kit and staff must be trained to use it during a spill event.

7.4.3 Hydrology

Surface Water Contaminations

The following potential Stormwater Contamination related impacts have been identified:

- ❖ Possible impacts include the contamination of storm water as a result of oil and fuel leaks or spillages from vehicles,
- ❖ Possible contamination of storm water via the manure on site.

Groundwater Contaminations

The following potential Stormwater Contamination related impacts have been identified:

- ❖ Possible groundwater contaminations as a result of oil and fuel leaks or spillages from vehicles.

Table 7: Impact Rating of Possible Storm Water Contamination Related Impacts

Activity/Impact	Nature	Extent	Duration	Intensity	Frequency	Probability	Reversibility	Potential for Impact on Irreplaceable Resources	Consequence	Significance	Confidence
Possible contamination of stormwater as a result of oil and fuel leaks on vehicles	Phase: Operation										
Without Mitigation	Negative	Low	High	Low	Intermittent	High	High	Low	Medium	Medium	High
With Mitigation	Neutral	Low	High	Low	Intermittent	Low	High	Low	Low	Low	High
Activity/Impact	Nature	Extent	Duration	Intensity	Frequency	Probability	Reversibility	Potential for Impact on Irreplaceable Resources	Consequence	Significance	Confidence
Possible contamination of stormwater as a result of run-off water from feedlots	Phase: Operation										

Activity/Impact	Nature	Extent	Duration	Intensity	Frequency	Probability	Reversibility	Potential for Impact on Irreplaceable Resources	Consequence	Significance	Confidence
Without Mitigation	Negative	Low	High	Medium	Intermittent	Medium	High	Medium	Medium	Medium	Medium
With Mitigation	Neutral	Low	High	Low	Intermittent	Low	High	Low	Low	Low	High
Possible contamination of groundwater as a result of oil and fuel leaks on vehicles											
Without Mitigation	Negative	Low	High	High	Intermittent	Medium	High	High	High	High	High
With Mitigation	Neutral	Low	High	Low	Intermittent	Low	High	Low	Low	Low	High

Management and Mitigation Measures

1. Vehicles and equipment must be checked and maintained on a regular basis (weekly) to ensure that no environmental contamination is brought about by oil, fuel, or hydraulic fluid leakages.
2. Vehicles should be stored in a specified paved area containing the necessary equipment including an oil and fuels cleaning spill kit.
3. Should vehicles be serviced on the farm, an area should be specified for this purpose and fitted accordingly.
4. Only emergency maintenance should be done on vehicles on site and any spillages must be cleared away appropriately immediately after the emergency maintenance event.
5. Run-off from the feedlots should be separated and stored in lined evaporation ponds. The ponds should be able to accommodate run-off in the case of a 1:100-year flood.
6. The evaporation ponds should be situated 100m away from surface water resources and outside of the 1:100-year flood line.
7. The entire site area of the feedlot facility must be kept in a neat state at all times. This will ensure that the site itself and the adjacent areas are not polluted with the waste materials swept off the site via wind or storm water run-off.
8. Stormwater and pond infrastructure must be inspected and maintained on a regular basis.

7.4.4 Biodiversity Impacts

The following potential impacts related to visual aspects have been identified:

- ❖ The loss and fragmentation of the wetland and the ESA near the vicinity of the proposed development
- ❖ The negative fragmentation effects of the development and enable safe movement of faunal species; and
- ❖ The direct and indirect loss and disturbance of faunal species and community (including potentially occurring species of conservation concern).

Table 8: Impact Rating Relating to Possible Terrestrial Biodiversity Impact

Activity/Impact	Nature	Extent	Duration	Intensity	Frequency	Probability	Reversibility	Potential for Impact on Irreplaceable Resources	Consequence	Significance	Confidence
Potential loss and fragmentation of the wetland and the ESA near the vicinity of the proposed development.	Phase: Operation										
Without Mitigation	Negative	Low	High	Low	Intermittent	Medium	High	Low	Low	Low	High
With Mitigation	Neutral	Low	High	Low	Intermittent	Low	High	Low	Low	Low	High
The negative fragmentation effects of the development and enable safe movement of faunal species.	Phase: Operation										
Without Mitigation	Negative	Low	High	Low	Intermittent	Medium	High	Low	Low	Low	High
With Mitigation	Neutral	Low	High	Low	Intermittent	Low	High	Low	Low	Low	High
The direct and indirect loss and disturbance of faunal species and	Phase: Operation										

Activity/Impact	Nature	Extent	Duration	Intensity	Frequency	Probability	Reversibility	Potential for Impact on Irreplaceable Resources	Consequence	Significance	Confidence
community (including potentially occurring species of conservation concern).											
Without Mitigation	Negative	Low	High	Low	Intermittent	Medium	High	Low	Low	Low	High
With Mitigation	Neutral	Low	High	Low	Intermittent	Low	High	Low	Low	Low	High

Management and Mitigation Measures

1. The areas to be developed must be specifically demarcated to prevent movement into surrounding environments, especially any wetlands. The wetland area must be avoided, a 30 m buffer is recommended for the wetland.
2. Areas of indigenous vegetation, even secondary communities outside of the direct project footprint, should under no circumstances be fragmented or disturbed further. Clearing of vegetation should be minimized and avoided where possible.
3. Where possible, existing access routes and walking paths must be made use of, and the development of new routes limited.
4. All livestock (including cattle, sheep, and domestic dogs) must be kept out of the project area at all times.
5. All storage areas should be restricted to low sensitivity areas, i.e., old agricultural areas. No storage of vehicles or equipment must be allowed outside of the designated project areas.
6. Stormwater runoff must be diverted around the feedlot and maintenance areas.
7. No plant species whether indigenous or exotic should be brought into/taken from the project area, to prevent the spread of exotic or invasive species or the illegal collection of plants.
8. Appropriate speed humps, enforcing of speed limits and mitre drains must be constructed along the access roads (every three metres of elevation) in order to slow the flow of water run-off from the road surface if this does not already exist. Reducing the dust generated by the listed activities above, especially the earth moving machinery, through wetting the soil surface (with "dirty water") and putting up signs to enforce speed limits as well as speed bumps built to force slow speeds.
9. The areas to be developed must be specifically demarcated to prevent movement of staff or any individual into surrounding areas, i.e., wetlands.
10. No trapping, killing, or poisoning of any wildlife is to be allowed. Signs must be put up to enforce this

11. Outside lighting should be designed and limited to minimize impacts on fauna. Fluorescent and mercury vapor lighting should be avoided, and sodium vapor (yellow) lights should be used wherever possible.
12. All construction and maintenance motor vehicle operators should undergo an environmental induction that includes instruction on the need to comply with speed limits, to respect all forms of wildlife. Speed limits must still be enforced to ensure that road killings and erosion is limited.
13. A pest control strategy aimed at indigenous fauna (e.g., rodents and flies) should be implemented. However, poisons should be avoided due to the likely presence of indigenous fauna, including species of conservation concern.
14. The footprint area must be clearly demarcated to avoid unnecessary disturbances to adjacent areas.
15. A pest control plan must be put in place and implemented. It is imperative that poisons not be used due to the likely presence of indigenous fauna
16. All personnel and contractors to undergo Environmental Awareness Training. A signed register of attendance must be kept for proof. Discussions are required on sensitive environmental receptors within the project area to inform contractors and site staff of the presence of Red / Orange List species, their identification, conservation status and importance, biology, habitat requirements and management requirements of the Environmental Authorisation and within the EMPr.
17. Where possible, existing access routes and walking paths must be made use of, and the development of new routes limited.

7.4.5 Employment

The following potential impacts related to job creation has been identified:

- ❖ 37 permanent jobs are provided for on the farm, 13 directly linked to the feedlots during the operation phase for the operational procedures of the feedlot as well as maintenance and cleaning.

Table 9: Impact Rating Related to Job Creation

Activity/Impact	Nature	Extent	Duration	Intensity	Frequency	Probability	Reversibility	Potential for Impact on Irreplaceable Resources	Consequence	Significance	Confidence
37 Permanent jobs created	Phase: Operation										
Without Mitigation	Positive	Low	High	High	Continuous	High	High	Low	High	High (Positive)	High
With Mitigation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Management and Mitigation Measures

1. Members of the local community should be employed as far as possible to increase the positive socio-economic effect in the local area.

7.4.6 Noise

The following potential noise related impacts have been identified:

- ❖ Increase of ambient environmental noise levels.
- ❖ Increase of occupational noise levels.

Table 10: Impact Rating Related to Possible Noise Pollution

Activity/Impact	Nature	Extent	Duration	Intensity	Frequency	Probability	Reversibility	Potential for Impact on Irreplaceable Resources	Consequence	Significance	Confidence
Possible increase of environmental noise	Phase: Operation										
Without Mitigation	Negative	Low	High	Low	Periodic	Medium	Medium	Low	Low	Low	High
With Mitigation	Neutral	Low	High	Low	Periodic	Medium	Medium	Low	Low	Low	High
Possible increase of occupational noise	Phase: Operation										
Without Mitigation	Negative	Low	High	Medium	Periodic	Medium	Medium	Medium	Medium	Medium	High
With Mitigation	Neutral	Low	High	Low	Periodic	Low	High	Low	Low	Low	High

Management and Mitigation Measures

1. The necessary personal protective equipment must be worn by feedlot staff and those working with noisy plant on a permanent basis.
2. The human resources manager must review Regulation 4 of the Noise-Induced Hearing Loss Regulations of the Occupational Health and Safety Act (Act no. 85 of 1993) and implement the necessary protective measures where relevant.
3. Perform regular maintenance, such as lubrication of moving machine parts of the feedlot machines and motors to reduce noise and vibration levels.
4. A complaints register can be kept on site where adjacent landowners can lodge complaints if required.

7.4.7 Air Quality

The following potential air quality related impacts have been identified:

- ❖ Potential health impacts on workers and locally sensitive receptors.
- ❖ Odour nuisance.
- ❖ Impacts of the additions to greenhouse gasses on the global scale.

Table 11: Impact Rating Related to Air Quality

Activity/Impact	Nature	Extent	Duration	Intensity	Frequency	Probability	Reversibility	Potential for Impact on Irreplaceable Resources	Consequence	Significance	Confidence
Potential Impacts on sensitive receptors, surrounding farmsteads and dwellings.	Operational Phase										
Without Mitigation	Negative	Low	High	Low	Continuous	Medium	Medium	Low	Low	Low	Medium
With Mitigation	Negative	Low	High	Low	Continuous	Low	High	Low	Low	Low	Medium
Nuisance odour impacts	Operational Phase										
Without Mitigation	Negative	Medium	High	Medium	Continuous	High	High	Low	Medium	Medium	Medium
With Mitigation	Negative	Low	High	Low	Continuous	Medium	High	Low	Low	Low	Medium
Contributions to global greenhouse gasses	Operational Phase										
Without Mitigation	Negative	High	High	Low	Continuous	Medium	High	Medium	Medium	Medium	Medium
With Mitigation	Neutral	High	High	Low	Continuous	Medium	High	Low	Low	Low	Medium

Management and Mitigation Measures

1. Maintain complaints register on site. The register should provide staff, neighbours and other affected parties with an opportunity to report a nuisance in the event of an odour or air pollution incident. The register should contain contact details of complainant, date and time of event, location at which event was observed, and the nature of the event e.g., if it was odour, any characteristic smells. Complaints must be resolved with a combination of corrective action and/or monitoring and communicated with the complainant.
2. Maintenance of the feedlot components that can cause air quality related impacts on sensitive and other receptors must be done concurrently.
3. The schedule of removal of manure from the feedlots and the manure dams must be monitored and altered where complaints and site conditions requires this.
4. The measures below are general good practice but will become essential in the event of odour and dust complaints:
 - a) As generally one of the largest sources of odour in a feedlot, emissions from the feedlot surfaces must be minimised. This is primarily achieved with moisture control and is dependent on feedlot design (e.g., slope), feedlot stocking density, surface cleaning frequency, feedlot, and water through maintenance etc.
 - b) Measures aimed at reducing odours are linked to good housekeeping, maintaining dry surfaces, well-managed run-off, and preventing water logging of materials.
 - c) Measures that may aid in reducing odour emissions from feedlot storage include controlling the moisture content, aeration, temperature control, and avoiding wastage.
 - d) Dust control measures include but are not limited to covering of dry materials, rehabilitation of exposed areas, reducing drop heights of dry materials such as feed and dried manure etc., maintaining road surfaces.
 - e) Servicing of vehicles and plant on a regular basis will ensure that the minimum levels of exhaust gasses are released during operations.
5. In terms of the reduction of the effect that this feedlot operation can have on the global contribution to greenhouse gasses and the related impacts the following mitigation measures must be implemented:
 - a) Maintain as much as possible vegetation cover to promote increased CO² sequestration.
 - b) Introduce as much as possible indigenous vegetation with heightened CO² sequestration capabilities (i.e., *Potulacaria affra*) in close proximity to the feedlot operation to increase CO² sequestration.

7.4.8 Traffic Safety

The following potential traffic safety impacts have been identified:

- ❖ Possible impacts include unsafe traffic conditions during the arrival and departure of large vehicles.

Table 12: Impact Rating of Possible Traffic Related Impacts

Activity/Impact	Nature	Extent	Duration	Intensity	Frequency	Probability	Reversibility	Potential for Impact on Irreplaceable Resources	Consequence	Significance	Confidence
Movement of large vehicles on and off the facility	Phase: Operation										
Without Mitigation	Negative	Low - high	High	Medium	Periodic	High	High	High	High	High	High
With Mitigation	Neutral	Low - high	High	Low	Periodic	Low	High	Low	Low	Low	High

Management and Mitigation Measures

1. Drivers of vehicles must hold the relevant licencing and permits for the class of vehicle that they drive.
2. The Aluf Farming management or delegated staff member must perform periodic assessments of the road infrastructure at the entrance to the facility and repair any damage caused by Aluf Farming operations.
3. Due to the locality of the main entrance to the farm on a curve at the R708 it is recommended that warning signs be erected notifying road users of slow moving heavy vehicles entering and exiting the farm at this point.

7.4.9 Fire

The following potential impacts related to the incidence of fire have been identified:

- ❖ Potential fire hazard.

Table 13: Impact Rating Related to Possible Fire Hazard

Activity/Impact	Nature	Extent	Duration	Intensity	Frequency	Probability	Reversibility	Potential for Impact on Irreplaceable Resources	Consequence	Significance	Confidence
Potential fire hazard	Phase: Operation										
Without Mitigation	Negative	Low	High	High	N/A	Medium	High	High	High	High	High
With Mitigation	Neutral	Low	High	Low	N/A	Low	High	Low	Low	Low	High

Management and Mitigation Measures

1. Designated smoking areas must be created.
2. All activities and facilities where flammable fuels, liquids and other solvents are stored must be equipped with appropriate fire distinguishing equipment which must be monitored and serviced by a qualified service operator on the recommended schedule.
3. Training must be provided on the site fire hazards and an appropriate procedure developed to manage the potential incidence of a fire at the farm.

7.4.10 Heritage Features Impacts

The following potential impacts related to visual aspects have been identified:

- ❖ Direct or physical impacts, implying alteration or destruction of heritage features within the project boundaries;
- ❖ Indirect impacts, e.g., restriction of access or visual intrusion concerning the broader environment;
- ❖ Cumulative impacts that are combinations of the above.

Table 14: Impact Rating Relating to Possible Heritage Features Impact

Activity/Impact	Nature	Extent	Duration	Intensity	Frequency	Probability	Reversibility	Potential for Impact on Irreplaceable Resources	Consequence	Significance	Confidence
Alteration or destruction of heritage features	Phase: Operation										
Without Mitigation	Neutral	Low	High	Low	Periodic	Low	Not applicable	Low	Low	Low	High
With Mitigation	Neutral	Low	High	Low	Periodic	Low	Not applicable	Low	Low	Low	High

Management and Mitigation Measures

1. For the current study, as no sites, features or objects of cultural significance were identified, no mitigation measures are proposed.

7.5 Impact Summary

The following table serves as a summary of the identified impacts associated with the Aluf Farming feedlot facility. The significance of the impacts discussed in Table 15 is of that without any mitigation measures added. To view the significance of the possible impacts with mitigation added see Section 7.4.1 – 7.4.10

Table 15: Impact Summary

Potential Impacts	Impact Significance (Without Mitigation)
Climate	
High volumes of precipitation.	High
Lightning strikes.	Medium
Geology and Soils	
Surface and sub-soils contamination via manure.	High
Surface and sub-soils contamination via hydrocarbons.	Medium
Hydrology	
Possible contamination of stormwater as a result of oil and fuel leaks on vehicles.	Medium
Possible contamination of stormwater as a result of run-off water from feedlots.	Medium
Possible contamination of groundwater as a result of oil and fuel leaks on vehicles.	High
Biodiversity	
Potential loss and fragmentation of the wetland and the ESA near the vicinity of the proposed development.	Low
The negative fragmentation effects of the development and enable safe movement of faunal species.	Low
The direct and indirect loss and disturbance of faunal species and community.(including potentially occurring species of conservation concern).	Low
Employment	
37 Permanent jobs created.	High (Positive)
Noise	
Possible increase of environmental noise.	Low
Possible increase of occupational noise.	Medium
Air Quality	
Potential Impacts on sensitive receptors, surrounding farmsteads and dwellings.	Low
Nuisance odour impacts	Medium
Contribution to greenhouse gases.	Medium

Potential Impacts	Impact Significance (Without Mitigation)
Traffic	
Movement of large vehicles on and off the facility.	High
Fire	
Potential fire hazard	High
Heritage Features	
Potential alteration or destruction of heritage features within the project boundaries and broader area	Low

8. CUMULATIVE AND REGIONAL IMPACTS

A cumulative impact may result from changes to the environment caused by an action/impact in combination with other past, present, and future actions or impacts. Cumulative impacts can arise from one or more activities. The assessment of cumulative impacts on a study area is difficult; as many of the impacts occur on a much wider scale than the site being assessed and evaluated. It is often difficult to determine at which point the accumulation of many small impacts reaches the point of an undesired or unintended cumulative impact that should be avoided or mitigated. There are often factors which are uncertain when potential cumulative impacts are identified.

The primary cumulative impact which may occur as a result of the feedlot development consist of the methane gas and CO² emissions emitted from the SSU's, the LSU's and biological breakdown of the manure in the feedlots. These factors will add to the local and global greenhouse gas emissions and the impact this has in terms of global warming and climate change. In stark contrast to an urbanised locality the majority of the surrounding areas are covered in typical Free State highveld grassland and cultivated fields which will act as a significant carbon sequestrator in this locality Furthermore, mitigation measures were also included in the impact assessment section to manage air quality impacts related to the optimal operation of the farm vehicles and plant.

To a lesser degree and on a much more local scale, a reduction in surface water quality might also occur where insufficient stormwater management may result in the siltation of waterbodies in the event of heavy downpours and the resultant erosion and sedimentation. Furthermore, should the manure dams not function properly this may also result in high nutrient loads washing into the local waterbodies. The manure dams must therefore be maintained and cleaned regularly.

9. CONCLUSION

It is believed that the most noteworthy, anticipated impacts and other relevant issues have been identified at the conclusion of this, the draft EIAR phase of the Aluf Farming Feedlot Development. The receiving environment of the proposed development have been scrutinized in terms of the most pertinent impacts revealed by specialist studies, maps, and other literature as well as discussions with representatives of local authorities and interested and affected parties.

Possible negative impacts which may occur during the operational phase were identified and their significance rated accordingly. Pertinent impacts identified include:

- ❖ Impacts as a result of inclement weather conditions,
- ❖ Surface and subsurface soil contaminations,
- ❖ Surface and groundwater contaminations,
- ❖ Limited disturbances to faunal species,
- ❖ Occupational noise levels,
- ❖ Limited reduction in air quality and contributions to greenhouse gasses,
- ❖ Potential fire related impacts,
- ❖ On a positive note, the socio-economic benefits created by local employment and the associated benefits to the local economy.

A thorough Public Participation Process was also conducted to date. Responses received from local I&APs and other stakeholders, as well as the proofs of newspaper and onsite adverts have been included in this report. The issues and response report serves as a summary of the comments and responses received from I&APs to date and is also be included in this report. The EAP addressed comments on a case by case basis.

9.1 Environmental Management Programme (EMPr)

In accordance with the Integrated Environmental Management Guidelines published by the Department of Environmental Affairs and Tourism in 2004, Guideline document 12, the purpose of the EMPr is to *“describe how negative environmental impacts will be managed, rehabilitated and monitored and how positive impacts will be maximized”*

It is a detailed plan of action prepared to organise and coordinate environmental mitigation, rehabilitation, and monitoring. A Draft EMPr will be submitted with the EIAR and when authorized must be adopted in conjunction with the mitigation measures and recommendations as included in the EIAR. As such the EMPr must be viewed as a dynamic document that may require updating and revision where necessary.

10. ENVIRONMENTAL IMPACT STATEMENT

In terms of the information evaluated the EAP is of the opinion that the impacts identified can be successfully mitigated to acceptable levels. The feedlot can also make a substantial positive socio-economic impact especially on the local level but also on a regional and national scale, and it is therefore recommended that the proposed development be approved.

It will be imperative to implement the mitigation measures and recommendations stipulated by this EIAR and the various specialist studies. These mitigation measures and recommendations are included and refined in the project EMPr of which adherence must form part of the contractual agreement with any subcontractor or service provide appointed and especially with the feedlot and larger farming operational management. A copy of the draft EMPr is included in Appendix 6 and changes will be made to the document once feedback has been received from DESTEA and the public consultation process have been completed.

11. S24G IMPACT EVALUATION

A	Social Benefit Index	Selection
	Description of Variable	
A.1	The activity provides no social service/infrastructure to the affected community	<input checked="" type="checkbox"/>
A.2	The activity provides indirect social service/infrastructure to the affected community	<input type="checkbox"/>
A.3	The activity provides some social service/infrastructure to the affected community	<input type="checkbox"/>
A.4	The activity provides important social service/infrastructure to the affected community	<input type="checkbox"/>
A.5	The activity provides an essential social service/infrastructure to the affected community	<input type="checkbox"/>
<p>Reason for Selection:</p> <p>The activity includes a feedlot development on a farm outside of Marquard. No social services or infrastructure is associated with the development. All though it will not provide services, it will also not take away from services to the affected community.</p>		

B	Socio Economic Benefit Impact Index	Selection
	Description of Variable	
B.1	The Activity will not give rise to any negative socio-economic impacts	<input checked="" type="checkbox"/>
B.2	The Activity could give rise to negative socio-economic impacts	<input type="checkbox"/>
B.3	The Activity could give rise to significant negative socio-economic impacts	<input type="checkbox"/>
B.4	The Activity could result in wide-scale socio economic impacts	<input type="checkbox"/>
<p>Reason for Selection:</p> <p>The Aluf Farming facility provides up to 37 employment opportunities, 13 directly to the feedlot, to mostly the local community and also makes use of local services and amenities which results in local expenditure.</p>		

C	Biodiversity Impact Index	Selection
	Description of Variable	
C.1	The Activity will not give rise to any impacts on biodiversity	<input checked="" type="checkbox"/>
C.2	The Activity could give rise to localised biodiversity impacts	<input type="checkbox"/>
C.3	The Activity could give rise to significant biodiversity impacts	<input type="checkbox"/>
C.4	The Activity is likely to transform/destroy a recognised biodiversity “hot-spot” permanently/irreversibly or threaten the existence of a species or sub species	<input type="checkbox"/>
<p>Reason for Selection:</p>		

The site is located in an existing agricultural area, which was already disturbed and degraded with minor sensitive areas from a biodiversity point of view. The feedlot activities will also not cause impact to the receiving environment or faunal or floral resources.

The terrestrial biodiversity specialist indicated the following:

“It is the opinion of the specialist that the project may proceed in all habitat units except for the Wetland. The Transformed, Degraded and Grassland habitat units have already been significantly impacted by anthropogenic activities and as a result have a low to very low SEI. By contrast, the Wetland habitat unit has a high SEI and any developments in or near this habitat should be avoided.”

D	Sense of Place/Heritage Impact Index	Selection
	Description of Variable	
D.1	The activity is in keeping with the surrounding environment and/or does not negatively impact on the affected area’s sense of place and/or heritage	
D.2	The activity is not in keeping with the surrounding environment and will have a localized impact on the affected area’s sense of place and/or heritage	
D.3	The activity is not in keeping with the surrounding environment and will have a significant impact on the affected area’s sense of place and/or heritage	
D.4	The activity is completely out of keeping with the surrounding environment and will have a significant impact on the affected area’s sense of place and/or heritage	

Reason for Selection:

The Aluf Farming are agricultural by nature and situated in an agricultural/rural area. No sites, features or objects of cultural significance were identified by the specialist.

E	Pollution Impact Index	Selection
	Description of Variable	
E.1	The Activity will not give rise to any pollution	
E.2	The Activity could give rise to pollution with low impacts	
E.3	The Activity could give rise to pollution with moderate impacts	
E.4	The Activity could give rise to pollution with high impacts	
E.5	The Activity could give rise to pollution with major impacts	

Reason for Selection:

It is possible that manure can be blown from the site during incidents of strong wind and input materials as well as manure may be swept into the storm water drain. Management and mitigation measures have been developed to curb these possibilities and manure is not hazardous by nature.

12. REFERENCES

12.1 Published Resources

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- ❖ DEAT. 2004. Integrated Environmental Management, Integrated Environmental Management, Information Series 0. Pretoria: Department of Environmental Affairs and Tourism (DEAT).
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- ❖ DEAT. 2004. Criteria for determining Alternatives in EIA, Integrated Environmental Management, Information Series 11. Pretoria: Department of Environmental Affairs and Tourism (DEAT).
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12.2 Un Published Resources

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- ❖ The Biodiversity Company, 2022. Proposed Feedlot Development on Aluf Farm near Marquard – Terrestrial Biodiversity Compliance Statement
- ❖ Western Cape Department of Agriculture, 2022. CapeFarmMapper. Online. Accessed 27/8/2022 at <https://gis.elsenburg.com/apps/cfm/?sl=info-agri-1&x=2525514.26&y=-3989320.48&z=10&bm=ghyb>

