DRAFT REPORT

ENVIRONMENTAL IMPACT ASSESSMENT REPORT

In terms of ***Section 24 and 24(D) of NEMA (Act No. 107 of 1998)***

for:

Integrated Environmental Impact Assessment for the proposed clearance of 40,537 hectares of indigenous vegetation in order to establish a Feed Mill, Agricultural Recreation Area, Solar Farm and Sheep Feedlot on Portion 15 of Portion 1 of the Farm Bultfontyn, Inxuba Yethemba Local Municipality, Eastern Cape Province. The proposed development will also entail the construction of three Sedimentation ponds and two Evaporation ponds.

Report Date: January 2022 **EC/131/CH/LN2/M/21-30**

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Compiled for:

De Heus (Pty) Ltd

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Report type	**Draft Environmental Impact Assessment Report (DEIAr)**		
Project Title	***Integrated Environmental Impact Assessment for the proposed clearance of 40,537 hectares of indigenous vegetation in order to establish a Feed Mill, Agricultural Recreation Area, Solar Farm and Sheep Feedlot on Portion 15 of Portion 1 of the Farm Bultfontyn, Inxuba Yethemba Local Municipality, Eastern Cape Province. The proposed development will also entail the construction of three Sedimentation ponds and two Evaporation ponds.***		
Competent Authority:	**Eastern Cape Department of Economic Development, Environmental Affairs and Tourism (DEDEAT)**		
Reference Number:	**EC131/CH/LN2/M/21-30**		
Assigned Officer	**Sinetemba Mduzana**		
Project applicant:	**De Heus (PTY) Ltd**		
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Contents

EXECUTIVE SUMMARY

The Applicant, De Heus (PTY) Ltd has appointed AB Enviro Consult CC, an independent environmental consultancy, to undertake an Integrated Environmental Impact Assessment for the proposed clearance of 40,537 hectares of indigenous vegetation in order to establish a Feed Mill, Agricultural Recreation Area, Solar Farm and Sheep Feedlot on Portion 15 of Portion 1 of the Farm Bultfontyn, Inxuba Yethemba Local Municipality, Eastern Cape Province. The proposed development will also entail the construction of three Sedimentation ponds and two Evaporation ponds.

The regulation and protection of the environment within South Africa occurs mainly through the application of various items of legislation, within the regulatory framework of the Constitution (Act 108 of 1996).

The primary legislation regulation for Environmental Impact Assessments (EIA) within South Africa is the National Environmental Management Act (NEMA, Act 107 of 1998). NEMA makes provision for the Minister of Environmental Affairs to identify activities that may not commence prior to authorisation from either the Minister or the provincial Member of the Executive Council (MEC). In addition, NEMA provides for the formulation of regulations in respect of such authorisations.

The EIA Regulations (2014) (amended 2017) allow for a Basic Assessment process for activities with limited environmental impact (listed in GN R. 327 and GN R.324, as amended in 2017) and a more rigorous two-tiered approach to activities with potentially greater environmental impact (listed in GN R. 325, 2017). This two-tiered approach includes both a Full Scoping and EIA Process.

The proposed development triggers a Full Scoping and EIA Process.

The purpose of this Application is to apply for authorization for the proposed establishment of a Feed Mill, Agricultural recreation area, Solar Farm and Sheep Feedlot on Portion 15 of Portion 1 of the Farm Bultfontyn, Inxuba Yethemba Local Municipality.

Based on the project description, a number of Listed Activities under Category A of the List of Waste Management Activities (GN R 921 of 2013) of the National Environment Management: Waste Act (NEM:WA) (Act No. 59 of 2008) are triggered. The proposed development will also trigger listed activities in terms of the Norms and Standards for organic waste composting, 2020 (GN No 561 of 25 June 2021). In terms of this Legislation: "*3 (2) The owner of an organic waste composting facility with a capacity to process less than 10 tonnes per day of organic waste must register in terms of clause 3(3) of these Norms and Standards, and align with the requirements of applicable integrated waste management by-laws, and comply with the principle of duty of care as contained in section 28 of the National Environmental Management Act, 1998 (Act No. 107 of 1998*)." A separate application for the registration of the composting facility will be submitted with DEDEAT.

In terms of the NEM:WA List of Waste Management Activities (GN R 921 of 2013), a *person who wishes to commence, undertake or conduct a waste management activity listed under* Category A*, must conduct a basic assessment process set out in the Environmental Impact Assessment Regulations made under section 24(5) of the National Environmental Management Act, 1998 (Act No. 107 of 1998) as part of a waste management licence application contemplated in section 45 read with section 20(b) of this Act.*

As such, a S&EIR process (Please note in this regard that this application is for a combination of the NEMA or NEM:WA activities and that S&EIR process applies for the NEMA Application) including an Environmental Management Programme (EMPr) is required for submission to the Competent Authority, DEDEAT, for the Licencing of the Waste Activities.

The National Water Act (Act no. 36 of 1998) is founded on the principle that the National Government has the overall responsibility and authority to ensure that the water resources of the Republic of South Africa are protected, equally allocated

and used in such a manner as to be beneficial to the general public. According to the Act, a person can only be entitled to use water beyond reasonable domestic use if the specific use is permissible under the Act.

Section 21 of the National Water Act (Act no. 36 of 1998) identifies water uses that cannot be performed without authorization from the Department of Water and Sanitation. A Consultant has been appointed, in terms of section 41(4) of the National Water Act (Act 36 of 1998) (NWA) to apply for a Water use licence. The proponent will apply for the use in terms of Sections 21 of the NWA for the (21(a)) abstraction of water from a ground water resource, via borehole. Additionally, run-off from site will be collected in an evaporation pond on site a 21 (g) – disposing of waste in a manner which may detrimentally impact a water resource.

The National Development 2030 mentions that South Africa can eliminate poverty and reduce inequality by 2030 and this will require change, hard work, leadership and unity. Its goal is to improve the life chances of all South Africans, but particularly those young people who presently live in poverty. In the past, we expected government to do things for us. What South Africa needs is for all of us to be active citizens and to work together – government, **business**, communities – so that people have what they need to live the lives they would like.

The White Paper on Local Government1 (1998) introduces the concept of "developmental local government" which is defined as: "Local government committed to working with citizens and groups within the community to find sustainable ways to meet their social, economic and material needs, and improve the quality of their lives." However, the same document makes it clear that:

"Local Government is not directly responsible for creating jobs. Rather, it is responsible for taking active steps to ensure that the overall economic and social conditions of the locality are conducive to the creation of employment opportunities."

The Chris Hani District Municipality developed and adopted a District Development Agenda that focuses on the development of all its Six Local Municipalities through the identification of competitive advantages of its local municipalities. This was later translated into an **Agro Industrial Plan** that has been used as a springboard to the proposed Special Economic Zone.

The Chris Hani Regional Development Strategy provides focused areas around which resources can be leveraged and mobilised in order to contribute to the broad overall objective of ensuring that all people in the district are able to benefit from the economy. The Competitive Advantage therefore for the district points to the broadly defined **agricultural sector** as the one with the most potential to contribute to job creation, promoting of livelihoods opportunities and contributing to sustained social and economic growth and development.

Whilst crop production and agro-processing sector remain important areas of intervention, the present cost of transport to high volume markets will most likely render local production uncompetitive until substantial economies of scale and consistent quality can be achieved.

Value chain integration implies looking at all the components of a particular sector and subsector and identifying what can be done or put in place to add value to what already exists, and in doing so, promote job creation and provide more livelihood opportunities.

While the districts' agricultural potential is obvious, primary agricultural projects have had a minimal impact on unemployment. This situation necessitates strategies to increase value-added production by exploiting opportunities that exist along the various crop and livestock value chains. (Chris Hani District Municipality 2021-2022 Draft IDP)

Agriculture is one of the main economic sectors within the area. Agricultural activities can be sub-divided into two groups – crop farming and livestock farming. The Applicant has identified gaps in the value chain for both of these economic sectors being Lucerne (Crop farming) and sheep (Livestock farming). It is the intension of the applicant to add value to both of these identified agricultural sectors and in doing so, create jobs and infrastructure. The increased employment in the area during both the construction and operational phase will also result in increased expenditure, which, in addition, will mean that more than just the proposed jobs required for the proposed development will be created due to economic spin-offs that will result.

Feed Mill

Feed mixing, pill making, packaging and ancillary works including grain and feed storage will form part of this operation. Lucerne that is produced extensively in the area will be used to produce feed, thus adding value to primary products that are produced in the region. Maize that is also produced in the region will also be incorporated into the production process and a limited amount of this produce will also be value added. At full production the Feed Mill will produce 9 000 tons of feed per month and will generate 100 employment opportunities.

Agricultural recreational area.

This part of the proposed development will be for Animal display and demonstrations, auctions and ancillary activities and will be Open to the public, thus providing a platform for the people of the region to sell and display their animals and to come together as a community.

Solar Farm

Greenhouse gases (GHG), including CO2 emissions are associated with the conventional provision of energy services and are a major cause of climate change. Globally, coal is the second largest primary energy source used worldwide (preceded by oil), and the first source for power generation. In terms of electricity generation or supply, South Africa is highly dependent on coal-fired power plants and therefore energy supply is carbon dioxide-intensive.

Renewable energy sources play a role in providing energy services in a sustainable manner, and in particular in mitigating climate change. Sustainable energy can be defined as energy that provides affordable, accessible and reliable energy services that meet economic, social and environmental needs within the overall developmental context of society, while recognising equitable distribution in meeting those needs. Sustainable energy is an element of sustainable development that is defined as development that meets the present needs and goals of the population without compromising the ability of future generations to meet theirs. On the overall sustainable development is underpinned by economic development (growth efficiency), social development (culture, heritage, poverty, and empowerment) and environmental development (pollution and natural resources).

The government of South Africa considers the use of renewable energy as a contribution to sustainable development. Sustainable development also implies the provision of electricity and other modern fuels to the commercial and industrial sectors to promote their economic competitiveness and future prosperity. (Department of Environmental Affairs (2015). EIA Guideline for Renewable Energy Projects. Department of Environmental Affairs, Pretoria, South Africa)

With the current situation of unreliable electricity provision in the Country, the Applicant has opted for the option of providing his own Electricity, thus ensuring a steady flow of electricity for his operations. In providing off-grid, renewable Electricity, the Applicant is also decreasing his Carbon footprint as he will not be using Electricity that has been generated from unrenewable energy sources.

Sheep Feedlot

The Sheep Feedlot will be designed for 10 880 head of sheep. Currently, only 24 sheep can be raised on the entire development site, as the area is very dry. The intensification of the Agricultural potential of the site is a huge advantage as the

production capacity of the site will be raised from 24 to 10 880 head of sheep. This operation will also result in an additional 10 employment opportunities that will be generated.

Treatment Facilities

In order to treat the manure and the carcasses that will originate from the Sheep Feedlot the construction of three Sedimentation ponds, two Evaporation ponds and a Manure Composting area is proposed. The need for these activities lies in the fact that in order to ensure that the proposed development does not cause any harm to the Environment, potential pollution has to be curbed. The purpose of the sedimentation system is to remove settleable solid material from the feedlot runoff and prevent it from entering the evaporation ponds. The Evaporation ponds are sized based on calculation of the annual water balance (Annual Rainfall versus Evaporation Statistics) and is designed to contain the runoff/ effluent from the feedlot site.

The manure composting area will have a concrete base and will be able to accommodate the composting activities. The composting facility will generate additional income as the compost will be sold, thus ensuring that a potential source of pollution has been processed to a usable product.

The activity is listed in terms of the Regulations (in force since 4 December 2014) in terms of Section 24(M) and 44 made under section 24(5) of the National Environmental Management Act (NEMA) 1998 (Act 107 of 1998) as amended and published in Government Notice No. R 326 of 2017 and the National Environmental Management: Waste Act, 2008 and the amendments to the environmental impact regulations, 2014 made in this regard. The proposed development triggers the following regulations and listed activities:

LISTED ACTIVITIES APPLIED FOR IN TERMS OF THE NATIONAL ENVIRONMENTAL MANAGEMENT ACT, 1998 AS AMENDED AND THE AMENDMENTS TO THE ENVIRONMENTAL IMPACT REGULATIONS, 2014

Indicate the number and date of the relevant notice:	**Activity No (s) (in terms of the relevant or notice) :**	**Describe each listed activity as per the detailed project description (and not as per wording of the relevant Government Notice):**
GN.R. 327, 7 April 2017	1 (ii)	The development of a PV Solar facility and infrastructure for the generation of electricity from a renewable resource where— (ii) the output is 2 megawatts but the total extent of the facility covers an area of 5 hectares; Although the development of the facilities and infrastructure is for photovoltaic installations the proposed development will occur— (a) outside of an urban area; and (b) not on existing infrastructure.
GN.R. 327, 7 April 2017	4 (ii)(a)	The development and related operation of facilities and infrastructure for the concentration of 10 880 sheep in a density of 4,1 square meters per head of sheep.
GN.R. 325, 7 April 2017	15	The clearance of 40,537 hectares of indigenous vegetation in order to establish a Feed Mill, Agricultural Recreation Area, Solar Farm and Sheep

		Feedlot on Portion 15 of Portion 1 of the Farm Bultfontyn, Inxuba Yethemba Local Municipality, Eastern Cape Province

ACTIVITIES APPLIED FOR IN TERMS OF THE NATIONAL ENVIRONMENTAL MANAGEMENT: WASTE ACT, 2008 AND THE AMANDMENTS TO THE ENVIRONMENTAL IMPACT REGULATIONS, 2014

INDICATE THE NO. & DATE OF THE RELEVANT NOTICE:	ACTIVITY NUMBERS (AS LISTED IN THE WASTE MANAGEMENT ACTIVITY LIST) :	DESCRIBE EACH LISTED ACTIVITY (and not as per the wording of the relevant Government Notice):
GN.R. 921, 29 November 2013	Category A: Activity (1)	The storage of storm water and wash water originating from the sheep feedlot in 3 sedimentation and 2 evaporation ponds.
GN.R. 921, 29 November 2013	Category A: Activity (12)	The construction of a facility that will store storm water and wash water originating from the sheep feedlot in 3 sedimentation and 2 evaporation ponds and is listed as Category A (1).

The identification, description, evaluation and comparison of alternatives are important for ensuring a sound environmental scoping process.

Alternative operational aspects of the activity were considered.

Sheep Feed lot Mortality – Biomass Waste Disposal

A predicted mortality rate of 2 sheep / day should be considered whereby each sheep could have a maximum estimated mass of 75kg. Therefore, an anticipated mass of 150kg / day will be considered when selecting a desired disposal process.

Alternatives were investigated based on these predictions and the following options have been considered for the carcass disposal:

Manure Composting (Alternative 1)
Carcasses will be disposed into the manure composting area, whereby it will take approximately 5-6 months to decompose, per carcass, with respect to mass.

Advantages
Composting ads value to the carcass as it can be sold as compost.

Incineration plant (Alternative 2)
The incineration process neutralises the danger of possible ground water pollution and converts the post-incineration residue into a sterile, easily disposable by-product which can be re-used.

The incineration units will be sized based on the above-mentioned mortality rate requirement for the site. The units are powered by either Diesel or Gas. In this instance, the viable option would be to adopt a diesel-operated unit due to the proposed diesel tank bunker facility located in the feed mill area of the site, and for efficient access. The stored diesel would be pumped into smaller tanks and transported via trucks to the Incineration facility, located near the manure composting area of the site.

Disadvantages
The incineration process causes air pollution and a licence will have to be obtained for this process. It will also require long-term external auditing that will render this option not viable in the end.

Mortality pit (Alternative 3)
A mortality pit entails the construction of a sealed container (normally an underground bunker) that the carcasses are disposed of in.

Disadvantages
It is envisaged that with a feedlot of this scale, the mortality pit will not be viable, as it will have to have a very large capacity.

No-go Alternative (Alternative 4)

The No-go Alternative has been considered for the proposed development as a hole. Should this Alternative be implemented the status quo will prevail and none of the advantages as listed in the "Need and desirability" section of this report will realise

From the full Public Participation Process that was followed, the Alternative of "***waste to energy*** *as an alternative for the coal to generate steam*" was suggested. As a result of this suggestion, this Alternative was also considered as **Alternative 5**. After evaluation of this Alternative, the following was concluded:

1. The volume of solid waste generated by the feed mill is low. Due to low volume, this was not considered as boiler feed stock.
2. The feedlot is relatively small and the stormwater containment dams are not considered a viable source of energy (methane gas).

Specialist studies were conducted. The information gathered from these Specialist Studies was used to generate a sensitivity map that was used to assess the sustainability of the design and layout plan for the proposed development

The **Geo-Technical Engineer** has concluded that most of the study area is considered suitable for development, provided suitable precautionary and/ or mitigation measures are implemented regarding the design and construction of foundations and roads, trafficability, material re-use, and excavatability during construction.
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The **Civil Engineer** has assessed the availability of services in the area and has made recommendations regarding upgrades that will have to be installed. No municipal Bulk Water lines are available to supply the site with its calculated water demand. As part of the development of the site, new borehole/s will be installed to supply the site's water demands. The Geo-hydrologist will provide a report on Borehole supply capacities, daily run times, and treatment of water (if required).

No Existing municipal Sewerage systems exist for the site. Sewerage generated by the site will discharge into the conventional pipe network and make its way to a new Waste water package plant. The Package plant will be designed to accommodate all the effluent generated from the human populated areas. A specialist company will be approached to provide a turn-key solution for the site. Treated greywater will discharge from the package plant and will be let out into the evaporation pond.

Access to the proposed development will be from the N10, from which there is an existing widening of the road and a splay for dedicated traffic to the site. Stormwater will be accommodated on the surface in the road prism. Shallow earth lined channels will be created to direct stormwater away from the roads and eventually discharge to the sedimentation pond and then the Evaporation Pond. For the Sheep feedlot area, a special stormwater management plan will be implemented to comply to guidelines

The **Fauna and Flora** study conducted also revealed that the vegetation type at the site is Eastern Upper Karoo (NKu 4) which is not listed as threatened according to the National List of Threatened Ecosystems (2011). Large parts of vegetation at the site have been transformed or modified. Remaining vegetation is mainly karroid with few individual trees. Exotic trees or alien invasive trees occur at the golf course section with its associated infrastructure as well as at some other parts of the site. The alien invasive succulent *Cylindropuntia imbricata* occurs at some parts of the site.

Ecological sensitivity at most of the site is currently low and at some parts, medium. Following the mitigations which will be upheld and planned footprint for development all the impact risks listed above are moderate or low.

No Threatened or Near Threatened plant or animal species are likely to be found at the site. Presence of other plant species of particular conservation concern at the site is unlikely. Ecological sensitivity at the site is medium-low at terrestrial zone and medium-high at the watercourse (consisting of a non-perennial river, two small in-channel dams and riparian zone) and its buffer zone (30 m).

The **Wetland Assessment** revealed that wetlands such as floodplain wetlands, channelled valley-bottom wetlands, un-channelled valley-bottom wetlands, depressions, seeps and wetland flats appear to be absent at the site. In conclusion no wetlands are found at the site. A low sensitivity from the SANBI EIA Screening Tool for relative aquatic biodiversity is indicated. If the site is developed there appears to be not threat to any wetland animal or plant species.

A **Heritage Impact Study** revealed that a number of archaeological & recent historical sites and features were identified and recorded in the study area during the assessment. The most extensive and significant of these are a number of open-air Stone Age sites with scatters of stone tools and associated material. Some recent historical features recorded include the remnants of an aqueduct (indicated on the 1957 map of Portion 15 of the farm) and possibly associated features and a Cricket field (oval). It is therefore recommended that Phase 2 Archaeological Mitigation measures be implemented before the development commences and the sites are destroyed.

A **Palaeontological Impact Assessment** concluded that it is extremely unlikely that the proposed development will affect palaeontological heritage. The underlying Permian rocks of the Karoo Super group are not exposed in the study area and it is unlikely that fossils will be preserved in the overlying Quaternary calcrete and alluvial deposits.

The **Agricultural Study** conducted concluded that according to the screening tool, the site has a high sensitivity. More detailed analyses, however, found that this assessment is incorrect and for the following reasons:

- Middelburg is in the Karroo Region that has an arid climate, it has a low and erratic rainfall and high summer temperatures. Crop production is not practiced unless it is under irrigation.
- There is no irrigated cropping on the site and no water license as far as we are aware.
- The soils are mostly moderately deep and deep Clovelly soils that are arable but with no irrigation water available, has low arable potential

It is our professional view that no high potential land will be lost and that the development proposed will only benefit farming as a land use and as an industry.

A Specialist was also appointed to assess the impact of the proposed development on the **Civil Aviation Installations** in the area. After an assessment performed by a radio frequency and radar specialist the site was rated as a "Low" sensitivity site for the civil aviation theme. Therefore according to the Government Gazette No. 43110 no further assessment requirements are identified.

Consistent with national priorities, environmental authorities must support *"increased economic growth and promote social inclusion",* whilst ensuring that such growth is *"ecologically sustainable".* In the National Spatial Development Perspective (NSDP) it is highlighted that, to achieve the goal of stimulating sustainable economic activities and to create long-term employment opportunities, it is required that spending on economic infrastructure is focused in priority areas with potential for economic development, with development to serve the broader societies' needs equitably.

The study is being conducted according to normal scientific practices. A theoretical background review was compiled for the different variables by using available information from the literature. Field verification was undertaken and visits paid to the site to gather further information and/or to verify information. It also includes the identification of *key interest groups*, both governmental and non-governmental, and to establish good lines of communication. Specialist studies were undertaken to determine the impacts on sensitive areas and to determine whether the proposed project can be sustainably implemented. The specialists have advised on mitigation measures where applicable.

1. INTRODUCTION

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Solar Farm

Greenhouse gases (GHG), including CO2 emissions are associated with the conventional provision of energy services and are a major cause of climate change. Globally, coal is the second largest primary energy source used worldwide (preceded by oil), and the first source for power generation. In terms of electricity generation or supply, South Africa is highly dependent on coal-fired power plants and therefore energy supply is carbon dioxide-intensive.

Renewable energy sources play a role in providing energy services in a sustainable manner, and in particular in mitigating climate change. Sustainable energy can be defined as energy that provides affordable, accessible and reliable energy services that meet economic, social and environmental needs within the overall developmental context of society, while recognising equitable distribution in meeting those needs. Sustainable energy is an element of sustainable development that is defined as development that meets the present needs and goals of the population without compromising the ability of future generations to meet theirs. On the overall sustainable development is underpinned by economic development (growth efficiency), social development (culture, heritage, poverty, and empowerment) and environmental development (pollution and natural resources).

The government of South Africa considers the use of renewable energy as a contribution to sustainable development. Sustainable development also implies the provision of electricity and other modern fuels to the commercial and industrial sectors to promote their economic competitiveness and future prosperity. (Department of Environmental Affairs (2015). EIA Guideline for Renewable Energy Projects. Department of Environmental Affairs, Pretoria, South Africa)

With the current situation of unreliable electricity provision in the Country, the Applicant has opted for the option of providing his own Electricity, thus ensuring a steady flow of electricity for his operations. In providing off-grid, renewable Electricity, the Applicant is also decreasing his Ecological footprint as he will not be using Electricity that has been generated from unrenewable energy sources.

Sheep Feedlot

The Sheep Feedlot will be designed for 10 880 head of sheep. Currently, only 24 sheep can be raised on the entire development site, as the area is very dry. The intensification of the Agricultural potential of the site is a huge advantage as the production capacity of the site will be raised from 24 to 10 880 head of sheep. This operation will also result in an additional 10 employment opportunities that will be generated.

Treatment Facilities

In order to treat the manure and the carcasses that will originate from the Sheep Feedlot the construction of three Sedimentation ponds, two Evaporation ponds and a Manure Composting area is proposed. The need for these activities lies in the fact that in order to ensure that the proposed development does not cause any harm to the Environment, potential pollution has to be curbed. The purpose of the sedimentation system is to remove settleable solid material from the feedlot runoff and prevent it from entering the evaporation ponds. The Evaporation pond is sized based on calculation of the annual water balance (Annual Rainfall versus Evaporation Statistics) and is designed to contain the runoff/ effluent from the feedlot site.

The manure composting area will have a concrete base and will be able to accommodate the composting activities. The composting facility will generate additional income as the compost will be sold, thus ensuring that a potential source of pollution has been processed to a usable product.

Consistent with national priorities, environmental authorities must support *"increased economic growth and promote social inclusion",* whilst ensuring that such growth is *"ecologically sustainable".* In the National Spatial Development Perspective (NSDP) it is highlighted that, to achieve the goal of stimulating sustainable economic activities and to create long-term employment opportunities, it is required that spending on economic infrastructure is focused in priority areas with potential for economic development, with development to serve the broader societies' needs equitably.

1.1 THE ENVIRONMENTAL IMPACT ASSESSMENT PROCESS

The purpose of this document is to adhere to the requirements for compilation of Environmental Impact Assessment Reports as amended and published in Government Notice R. 326 of 7 April 2017, Appendix 3, and the National Environmental Management Act (Act 107 of 1998) (NEMA).

1.2 DESCRIPTION OF THE PROCESS FOLLOWED

In order to assess a proposed development it is important to take into consideration the principles of NEMA. These principles are outlined in Chapter 1 and read as follows:

1) *"The principles set out in this section apply throughout the Republic to the actions of all organs of state that may significantly affect the environment and—*
   a. *shall apply alongside all other appropriate and relevant considerations, including the State's responsibility to respect, protect, promote and fulfil the social and economic rights in Chapter 2 of the Constitution and in particular the basic needs of categories of persons disadvantaged by unfair discrimination;*
   b. *serve as the general framework within which environmental management and implementation plans must be formulated:*
   c. *serve as guidelines by reference to which any organ of state must exercise any function when taking any decision in terms of this Act or any statutory provision concerning the protection of the environment;*
   d. *serve as principles by reference to which a conciliator appointed under this Act must make recommendations; and*
   e. *guide the interpretation administration and implementation of this Act, and any other law concerned with the protection or management of the environment.*
2) *Environmental management must place people and their needs at the forefront of its concern, and serve their physical, psychological, developmental, cultural and social interests equitably.*
3) *Development must be socially, environmentally and economically sustainable.*
4) *(a) Sustainable development requires the consideration of all relevant factors including the following:*
   - *(i) That the disturbance of ecosystems and loss of biological diversity are avoided, or, where they cannot be altogether avoided, are minimised and remedied:*
   - *(ii) that pollution and degradation of the environment are avoided, or, where they cannot be altogether avoided, are minimised and remedied;*
   - *(iii) 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;*
   - *(iv) 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;*
   - *(v) that the use and exploitation of non-renewable natural resources is responsible and equitable, and takes into account the consequences of the depletion of the resource;*
   - *(vi) that the development use and exploitation of renewable resources and the ecosystems of which they are part do not exceed the level beyond which their integrity is jeopardised;*
   - *(vii) 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; and*

(viii) that negative impacts on the environment and on people's environmental rights be anticipated and prevented, and where they cannot be altogether prevented, are minimised and remedied.

(b) Environmental management must be integrated, acknowledging that all elements of the environment are linked and interrelated, and it must take into account the effects of decisions on all aspects of the environment and all people in the environment by pursuing the selection of the best practicable environmental option.

(c) Environmental justice must be pursued so that adverse environmental impacts shall not be distributed in such a manner as to unfairly discriminate against any person, particularly vulnerable and disadvantaged persons.

(d) Equitable access to environmental resources, benefits and services to meet basic human needs and ensure human well-being must be pursued and special measures may be taken to ensure access thereto by categories of persons disadvantaged by unfair discrimination.

(e) Responsibility for the environmental health and safety consequences of a policy, programme, project, product, process, service or activity exists throughout its life cycle.

(f) The participation of all interested and affected parties in environmental governance must be promoted, and all people must have the opportunity to develop the understanding, skills and capacity necessary for achieving equitable and effective participation and participation by vulnerable and disadvantaged persons must be ensured.

(g) Decisions must take into account the interests, needs and values of all interested and affected parties, and this includes recognizing all forms of knowledge, including traditional and ordinary knowledge.

(h) Community wellbeing and empowerment must be promoted through environmental education, the raising of environmental awareness, the sharing of knowledge and experience and other appropriate means.

(i) The social, economic and environmental impacts of activities, including disadvantages and benefits must be considered, assessed and evaluated and decisions must be appropriate in the light of such consideration and assessment.

(j) The right of workers to refuse work that is harmful to human health or the environment and to be informed of dangers must be respected and protected.

(k) Decisions must be taken in an open and transparent manner, and access to information must be provided in accordance with the law.

(l) There must be intergovernmental co-ordination and harmonisation of policies, legislation and actions relating to the environment.

(m) Actual or potential conflicts of interest between organs of state should be resolved through conflict resolution procedures.

(n) Global and international responsibilities relating to the environment must be discharged in the national interest.

(o) The environment is held in public trust for the people, the beneficial use of environmental resources must serve the public interest and the environment must be protected as the people's common heritage.

(p) The costs of remedying pollution, environmental degradation consequent adverse health effects and of preventing, controlling or minimizing further pollution, environmental damage or adverse health effects must be paid for by those responsible for harming the environment.

(q) The vital role of women and youth in environmental management and development must be recognised and their full participation therein must be promoted.

(r) Sensitive, vulnerable, highly dynamic or stressed ecosystems, such as coastal shores, estuaries, wetlands and similar systems require specific attention in management and planning procedures, especially where they are subject to significant human resource usage and development pressure."

The above mentioned principals and the applicable legislation, Policies and Guidelines as described in Paragraph 5 of this Report were taken into account in the assessment of the Environmental Impacts for the proposed development. The process followed can be described as follows:

1) The EAP was contracted by the land owner, De Heus (PTY) Ltd as their Independent Environmental Assessment Practitioner.
2) A Geotechnical Engineer was appointed to determine whether the Geology and Soils of the site is suitable for the proposed development
3) The Civil Engineer has been appointed to determine the capability of existing infrastructure to be linked to proposed development and readily available bulk services. He will also design the proposed infrastructure.
4) A SAHRA Specialist has been appointed to determine the possible impact of the development on Archaeological and Cultural features.
5) A Paleontological specialist was appointed to determine the impact of the proposed development on the fossils that might be found on site.
6) A Fauna and Flora Habitat specialist has been appointed to determine the impact of the proposed development on the Fauna and Flora of the area.
7) A Wetland Specialist was appointed to assess the status of the canal/drainage line that intersects the site.
8) An Aviation Specialist was appointed to assess the impact of the proposed development on the airfield that is located towards the south of the site. His assessment also included a "glint and glare" visual impact assessment to determine if the proposed development will have any negative impacts in this regard.
9) An Agricultural Specialist was appointed to assess the agricultural potential of the site.
10) A Geohydrology report has been compiled by the specialist to determine borehole positioning for the proposed development's water supply.
11) A Town and Regional Planner has been appointed to obtain the necessary rezoning approvals from the Local Municipality.
12) An Environmental Screening Process was conducted by the EAP to ensure that all the relevant Environmental Legislation is taken into consideration.
13) Desk top studies were conducted and alternatives assessed.
14) Site inspections were carried out to verify the outcomes of the desktop studies, and the preferred alternative defined.
15) A full Public Participation Process is being followed to obtain inputs from interested and affected parties.
16) All the information obtained from the above mentioned processes is being used to assess the Environmental Impact that the proposed development may have on the Environment and vice versa.
17) The inputs from Specialists, interested and affected parties, together with the knowledge of the EAP is being used to determine measures to avoid, mitigate and manage potential impacts. These measures are described in the Environmental Management Programme.

1.3 SCOPING PHASE

The Scoping phase included the necessary investigations to assess the suitability of the identified site and its surrounding environment, for the development proposal. The scoping phase described the "status quo" of the bio-physical, social, economic and cultural environment, and identifies the anticipated environmental aspects associated with the proposed development. Scoping included the identification of *key interest groups*, (both government and non-government), and strived to establish efficient and effective communication. Identifying and informing Interested and affected parties of the proposed development may have an impact on the focus of the EIA. (*S. Cliff, 2015*)

The purpose of the Scoping Report was to document the outcome of the Scoping Phase of the project. The report fulfilled the requirements of the EIA Regulations (2014) for the documentation of the scoping phase. The Scoping Report was compiled in accordance with Section 21(3) of NEMA's 2014 EIA Regulation (GN R. 982) as amended and published in Government Notice R. 326 of 7 April 2017.

The Final Scoping report and Plan of Study for EIA was submitted to the Department on 06 October 2021 and was approved on 18 November 2021.

1.4 EIA PHASE

The EIA phase determines the *significance of the impact* of the proposed activity on the surrounding Environment. During the EIA phase, an Environmental Impact Assessment Report (EIAR) is compiled, and, following public review, is submitted to the approving authority – the DEDEAT.

The EIA process is undertaken in accordance with the NEMA's 2014 EIA Regulation (GN R. 982) as amended and published in Government Notice R. 326 of 7 April 2017.

The EIAr (including all specialist reports) will be made available to all registered interested and affected parties (I&APs), providing them an opportunity to comment and to verify that the issues raised through the process have been captured and adequately addressed and considered within the study.

1.4.1 Objective of the environmental impact assessment process

The objective of the environmental impact assessment process is to, through a consultative process-

1. determine the policy and legislative context within which the activity is located and document how the proposed activity complies with and responds to the policy and legislative context;
2. describe the need and desirability of the proposed activity, including the need and desirability of the activity in the context of the development footprint on the approved site as contemplated in the accepted scoping report;
3. identify the location of the development footprint within the approved site as contemplated in the accepted scoping report; based on an impact and risk assessment process inclusive of cumulative impacts and a ranking process of all the identified development footprint alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects of the environment;
4. determine the –

    i. nature, significance, consequence, extent, duration and probability of the impacts occurring to inform identified preferred alternatives; and
    ii. degree to which these impacts-

        (aa) can be reversed;
        (bb) may cause irreplaceable loss of resources, and
        (cc) can be avoided, managed or mitigated;

5. identify the most ideal activity within the development footprint of the approved site as contemplated in the accepted scoping report based on the lowest level of environmental sensitivity identified during the assessment;
6. identify, assess, and rank the impacts the activity will impose on the development footprint on the site as contemplated in the accepted scoping report through the life of the activity;
7. identify suitable measures to avoid, manage or mitigate identified impacts; and identify residual risks that need to be managed and monitored.

1.4.2 Scope of assessment and content of environmental impact assessment reports

The EIA assesses those identified potential environmental impacts and benefits (direct, indirect and cumulative impacts) associated with the project design, construction, and operation phases, and recommends appropriate mitigation measures for potentially significant environmental impacts. The Environmental impacts are assessed both before and after mitigation to determine:

- The significance of the impact despite mitigation; and
- The effectiveness of the proposed mitigation measures.

The EIA addresses potential environmental impacts and benefits associated with all phases of the project, including design, construction and operation, and aims to provide the environmental authorities with sufficient information to make an informed decision regarding the proposed project.

Table 1 below provides a summary of the legislative requirements in terms of an EIA Report as stipulated in Section 23 of the 2014 EIA Regulation (GN R. 982) as amended and published in Government Notice R. 326 of 7 April 2017. Cross-references are provided in terms of the relevant section within this DEIA Report where the NEMA and DEIA Report requirements have been addressed.

Table 1: DEIA Report content as per Section 23 of NEMA's 2014 EIA Regulation (GN R. 982) as amended and published in Government Notice R. 326 of 7 April 2017 Appendix 3.

3. (1) An environmental impact assessment report must contain the information that is necessary for the competent authority to consider and come to a decision on the application, and must include:

Section of the EIA Regulations, 2014	Description of EIA Regulations Requirements for EIA Reports	Location in this EIA report
Appendix 3, section 3 (a)	Details of the EAP who prepared the report; and the expertise of the EAP, including a curriculum vitae;	Paragraph 2
Appendix 3, section 3 (b)	The location of the development footprint of the activity on the approved site as contemplated in the accepted scoping report, including – (i) The 21 digit Surveyor General code of each cadastral land parcel; (ii) Where available, the physical address and farm name; (iii) Where the required information in items (i) and (ii) is not available, coordinates of the boundary of the property or properties	Paragraph 4 Paragraph 4 Paragraph 4
Appendix 3, section 3 (c)	A plan which locates the proposed activity or activities applied for, at an appropriate scale, or, if it is – (i) A linear activity, a description and coordinates of the corridor in which the proposed activity or activities is to be undertaken; or (ii) On land where the property has not been defined, the coordinates within which the activity is to be undertaken;	Appendix A1 and Appendix A2 Paragraph 4
Appendix 3, section 3 (d)	A description of the scope of the proposed activity, including – (i) all listed and specified activities triggered and being applied for; and (ii) a description of the associated structures and infrastructure related to the development;	Paragraph 3 Paragraph 3

Section of the EIA Regulations, 2014	Description of EIA Regulations Requirements for EIA Reports	Location in this EIA report
Appendix 3, section 3 (e)	A description of the policy and legislative context within which the development is located and an explanation of how the proposed development complies with and responds to the legislation and policy context	Paragraph 5
Appendix 3, section 3 (f)	A motivation for the need and desirability for the proposed development including the need and desirability of the activity in the context of the preferred development footprint within the approved site as contemplated in the accepted scoping report.	Paragraph 6
Appendix 3, section 3 (g)	a motivation for the preferred development footprint within the approved site as contemplated in the accepted scoping report	Paragraph 4
Appendix 3, section 3 (h)	A full description of the process followed to reach the proposed development footprint within the approved site as contemplated in the accepted scoping report, including-	
	(i) Details of all alternatives considered;	Paragraph 8
	(ii) Details of the public participation process undertaken in terms of regulation 41 of the Regulations, including copies of the supporting documents and inputs;	Paragraph 10
	(iii) A summary of the issues raised by interested and affected parties, and an indication of the manner in which the issues were incorporated, or the reasons for not including them;	Paragraph 10
	(iv) The environmental attributes associated with the alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects;	Paragraph 8
	(v) The impacts and risks identified for each alternative, including the nature, significance, consequence, extent, duration, and probability of the impacts, including the degree to which the impacts-	Paragraph 9
	(aa) can be reversed;	Paragraph 9
	(bb) may cause irreplaceable loss of resources; and	Paragraph 9
	(cc) can be avoided, managed, or mitigated.	Paragraph 9
	(vi) The methodology used in deterring and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks associated with the alternatives;	Paragraph 9
	(vii) Positive and negative impacts that the proposed activity and alternatives will have on the environment and on the community that may be affected focusing on the geographic, physical, biological, social, economic, heritage and cultural aspects;	Paragraph 9
	(viii) The possible mitigation measures that could be applied and level of residual risk;	Paragraph 9
	(ix) If no alternatives, including alternative footprints for the activity were investigated, the motivation for not considering such and;	Not Applicable
	(x) A concluding statement indicating the location of the preferred alternatives, including preferred footprint within the approved site as contemplated in the accepted scoping report.	Paragraph 12
Appendix 3, section 3 (i)	A full description of the process undertaken to identify, assess and rank the impacts the activity and associated structures and infrastructure will impose on the preferred development footprint on the approved site as contemplated in the accepted scoping report through the life of the activity, including-	Paragraph 9
	(i) a description of all environmental issues and risks that were identified during the environmental impact assessment process; and	Paragraph 8

Section of the EIA Regulations, 2014	Description of EIA Regulations Requirements for EIA Reports	Location in this EIA report
	(ii) an assessment of the significance of each issue and risk and an indication of the extent to which the issue and risk could be avoided or addressed by the adoption of mitigation measures;	Paragraph 9
Appendix 3, section 3 (j)	An assessment of each identified potentially significant impact and risk, including- (i) cumulative impacts; (ii) the nature, significance and consequences of the impact and risk; (iii) the extent and duration of the impact and risk; (iv) the probability of the impact and risk occurring; (v) the degree to which the impact and risk can be reversed; (vi) the degree to which the impact and risk may cause irreplaceable loss of resources; and (vii) the degree to which the impact and risk can be mitigated;	 Paragraph 9 Paragraph 9 Paragraph 9 Paragraph 9 Paragraph 9 Paragraph 9 Paragraph 9
Appendix 3, section 3 (k)	Where applicable, a summary of the findings and recommendations of any specialist report complying with Appendix 6 to these Regulations and an indication as to how these findings and recommendations have been included in the final assessment report;	Paragraph 11
Appendix 3, section 3 (l)	An environmental impact statement which contains- (i) a summary of the key findings of the environmental impact assessment: (ii) a map at an appropriate scale which superimposes the proposed activity and its associated structures and infrastructure on the environmental sensitivities of the preferred development footprint on the approved site as contemplated in the accepted scoping report indicating any areas that should be avoided, including buffers; and (iii) a summary of the positive and negative impacts and risks of the proposed activity and identified alternatives;	 Paragraph 12.2 and 12.2 Figure 2 Paragraph 12
Appendix 3, section 3 (m)	Based on the assessment, and where applicable, recommendations from specialist reports, the recording of proposed impact management outcomes for the development for inclusion in the EMPr as well as for inclusion as conditions of authorisation	Paragraph 11 and 12
Appendix 3, section 3 (n)	The final proposed alternatives which respond to the impact management measures, avoidance, and mitigation measures identified through the assessment	Paragraph 12
Appendix 3, section 3 (o)	Any aspects which were conditional to the findings of the assessment either by the EAP or specialist which are to be included as conditions of authorisation	Paragraph 3.1.2.1
Appendix 3, section 3 (p)	A description of any assumptions, uncertainties and gaps in knowledge which relate to the assessment and mitigation measures proposed	Paragraph 1.4.3
Appendix 3, section 3 (q)	A reasoned opinion as to whether the proposed activity should or should not be authorised, and if the opinion is that it should be authorised, any conditions that should be made in respect of that authorisation	Paragraph 12.4
Appendix 3, section 3 (r)	Where the proposed activity does not include operational aspects, the period for which the environmental authorisation is required and the date on which the activity will be concluded and the post construction monitoring requirements finalised	Not Applicable
Appendix 3, section 3 (s)	An undertaking under oath or affirmation by the EAP in relation to- (i) The correctness of the information provided in the report; (ii) The inclusion of the comments and inputs from stakeholders and interested and affected parties; and (iii) the inclusion of inputs and recommendations from the specialist reports where relevant; and	 Paragraph 13 Paragraph 13 Paragraph 13 Paragraph 13

Section of the EIA Regulations, 2014	Description of EIA Regulations Requirements for EIA Reports	Location in this EIA report
	(iv) Any information provided by the EAP to interested and affected parties and any responses by the EAP to comments or inputs made by interested and affected parties.	
Appendix 3, section 3 (t)	Where applicable, details of any financial provision for the rehabilitation, closure, and ongoing post decommissioning management of negative environmental impacts.	Not Applicable
Appendix 3, section 3 (u)	An indication of any deviation from the approved scoping report, including the plan of study, including- (i) any deviation from the methodology used in determining the significance of potential environmental impacts and risks; and (ii) a motivation for the deviation;	Not Applicable
Appendix 3, section 3 (v)	Any specific information that may be required by the competent authority.	Not Applicable
Appendix 3, section 3 (w)	Any other matters required in terms of section 24(4)(a) and (b) of the Act	Not Applicable

1.4.3 Assumptions, uncertainties, limitations and gaps in knowledge:

This report is based on current available information and, as a result, the following limitations and assumptions are implicit –

The report is based on the *project description* provided by NEP Consulting Engineers as a result of reports that was compiled by the following Specialists:

- A Geotechnical Engineer was appointed to determine whether the Geology and Soils of the site is suitable for the proposed development.
- A Town and Regional Planner designed the proposed development in such a way that the layout of the proposed development, takes into account the measures described by the Civil Engineer and that the layout satisfies the needs of future occupiers of the site
- The Civil Engineer was appointed to determine the capability of existing infrastructure to be linked to proposed development and readily available bulk services. He also designed the proposed infrastructure.
- The Agricultural Specialist assessed the impact of the proposed development on this aspect.
- A SAHRA Specialist has been appointed to determine the possible impact of the development on Archaeological and Cultural features.
- A Paleontological Specialist has been appointed to assess the impact of the proposed development on the palaeontological heritage.
- An Ecologist as well as a Wetland specialist has been appointed to determine the impact of the proposed development on the Fauna and Flora and wetlands of the area.
- A Hydrogeologist has been appointed to determine the optimal borehole positioning to ensure adequate water supply to the proposed development based on available geological; geohydrological and existing borehole data and information.
- An Environmental Screening Process was conducted by the EAP to ensure that all the relevant Environmental Legislation is taken into consideration.
- Desktop studies were conducted and alternatives assessed.

Descriptions of the biophysical and social environments are based on specialist fieldwork, investigations, and the Public Participation Process.

2. DETAILS AND EXPERTISE OF THE ENVIRONMENTAL ASSESSMENT PRACTITIONER

AB Enviro Consult (CC) is a registered consultancy, owned and operated as an independent unit by the registered owner and consultant**: Prof. A.B. de Villiers**

- **Mr J.P. De Villiers** joined the consultancy during 2004
- **Mrs J.E. du Plooy** is a consultant since 2001

Over a period of 26 years (1996-2022) this consultancy has successfully applied for, and obtained positive ROD's and EA's for more than 390 projects. Environmental Control Officer's duties are also performed on various projects.

The company was involved (from 1992-1994) in evaluation of 114 applications for the subdivision of land, 23 applications for resort developments, and 54 applications for business rights for the Department of Agriculture, Conservation and the Environment - North West Province.

ACADEMIC AND PROFESSIONAL QUALIFICATIONS PROF DE VILLIERS

Post–Matric Qualifications

YEAR	Qualification	Institution	Field of Study
1968	B.Sc.	PU FOR CHE	Geography, Geology
1970	HONNS. B.Sc.	PU FOR CHE	Soil Science
1974	M.Sc.	PU FOR CHE	Geography
1981	Ph.D.	UOFS	Geography

PROFESSIONAL QUALIFICATIONS AND REGISTRATIONS

YEAR	Qualification/ Registration	Institution	Field of Study
1986	Professional Natural Scientist	S.A. Council for Natural Scientific Professions (400099/86)	Environmental Science
1994	Quality Auditor	ESKOM	Auditing
1998	Personnel & Verifying Auditor	SAATCA	Environmental Auditing
2006-2017	Environmental Assessment Practitioner	Interim Certification Board EAPSA	Environmental Science

MEMBERSHIP AND PARTICIPATION IN SOCIETIES, COUNCILS, ETC.

Name of professional societies	**YEAR**	**Capacity**
S.A. Geographical Society.	1967-1996	Board Member
Society for Geography	1968-2004	Member
SAGS Western Transvaal	1985-1989 1987-1989 1996	Chairman
Africa Geographical Association	1993-1995	Vice-President.
Society for the Vaal River Catchment	1980-1999	Member
S.A. Society for Photogrammetry, Remote Sensing and Cartography	1984-1996	Member
Dendrological Society	1986-2005	Member
BirdLife South Africa	2003-present	Member
British Geomorphological Research Group	1985-1997	Member
Int Com on Water Resource Systems	1985-1997	Member
Int Com on Continental Erosion	1986-1990	Member

Int Com on Remote Sensing and Data Transmission	1986-1991	Member
Society for S.A. Geographers	1995-2005	Member
SA Photogrammetrical and Geo. Info.	1995-2003	Member
S.A. Association of Geomorphologists	1994-1999	Board Member and member
SADC Mine Dump Study Group	1996-2005	Member

ACADEMIC AND PROFESSIONAL QUALIFICATIONS MR J.P. DE VILLIERS

YEAR	Qualification	Institution	Field of Study
1993	BA	PU FOR CHE	Geography, Economics
1994	HED	PU FOR CHE	Geography Economics
2006	B.Sc.(Honns) Cum Laude	North-West University	Environmental Management
2007	M.Sc.	North-West University	Geography

PROFESSIONAL QUALIFICATIONS AND REGISTRATIONS

YEAR	Qualification/ Registration	Institution	Field of Study
2008	Basic Principles of Ecological Rehabilitation and Mine Closure	Centre for Environmental Management (North West University)	Ecological Rehabilitation
2019	Registered as Environmental assessment Practitioner	EAPASA Registration number: 2019/808	

ACADEMIC AND PROFESSIONAL QUALIFICATIONS MRS J.E. DU PLOOY

YEAR	Qualification	Institution	Field of Study
1999	BA	PU FOR CHE	Geography, Tourism
2000	BA (Honns) Cum Laude	PU FOR CHE	Geography
2003	Masters degree in Environmental Management	PU FOR CHE	Environmental Management
2001	Aquabase Intro	AQUABASE	Hydrology
2001	Geomedia Professional	INTERTECH	GIS
2001	Map Info	SPATIAL TECHNOLOGY	GIS
2019	Registered as Environmental assessment Practitioner	EAPASA Registration number: 2019/1573	

3. DESCRIPTION OF THE ACTIVITY

The proposed development will be for the establishment of a Feed Mill, Agricultural Recreation Area, Solar Farm and Sheep Feedlot on Portion 15 of Portion 1 of the Farm Bultfontyn, Inxuba Yethemba Local Municipality, Eastern Cape Province. The proposed development will also entail the construction of three Sedimentation ponds, two Evaporation ponds and a Manure Composting area in order to treat the manure and the carcasses that will originate from the Sheep Feedlot. The proposed Composting area will trigger listed activities in terms of the Norms and Standards for organic waste composting, 2020 (GN No 561 of 25 June 2021). In terms of this Legislation: "*3 (2) The owner of an organic waste composting facility with a capacity to process less than 10 tonnes per day of organic waste must register in terms of clause 3(3) of these Norms and Standards, and align with the requirements of applicable integrated waste management by-laws, and comply with the principle of duty of care as contained in section 28 of the National Environmental Management Act, 1998 (Act No. 107 of 1998*)." A separate application for the registration of the composting facility will be submitted with DEDEAT.

Please see Figure 1 below for a copy of the proposed Layout Plan. Please note that the Golf Club that is indicated on the Layout Plan is an existing feature on site and no eradication of indigenous vegetation will take place on this erf. Also note that the blue line on the Layout plan is a furrow that was used (Prior to 1990) to divert water that overflowed from a reservoir that was built in the Groot Brak River towards a farm dam that is situated south west of the proposed development. The dam wall of the reservoir was broken down in the early 1990's and no water has since flown in this furrow. The servitude that was registered for this furrow has also since been cancelled.

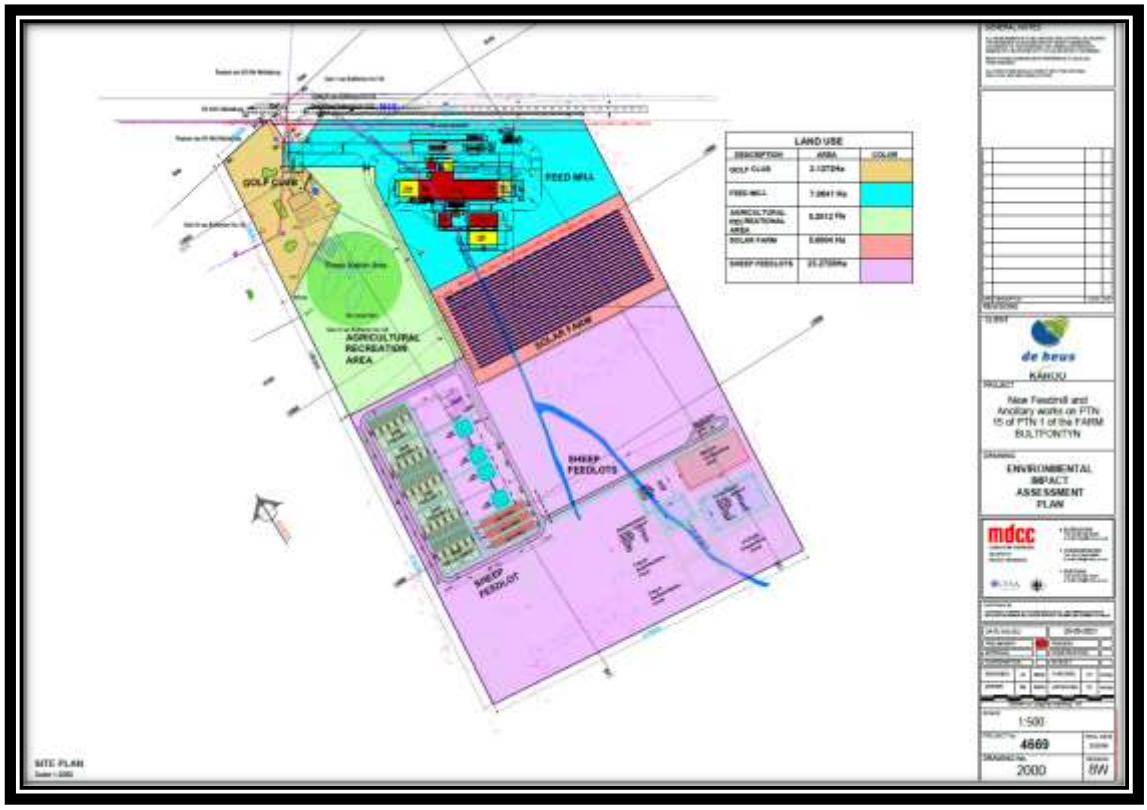


Figure 1: Proposed Layout Plan

The proposed **Feed Mill** will consist of an Industrial building covering an area of approximately 55m x 170m. This structure will be housing the following activities: Feed mixing, pill making, packaging and ancillary works including grain and feed

storage. This area will be a Bio secure area with entrance control. Please see Figure 2 below for a copy of the proposed layout of the Feed Mill.

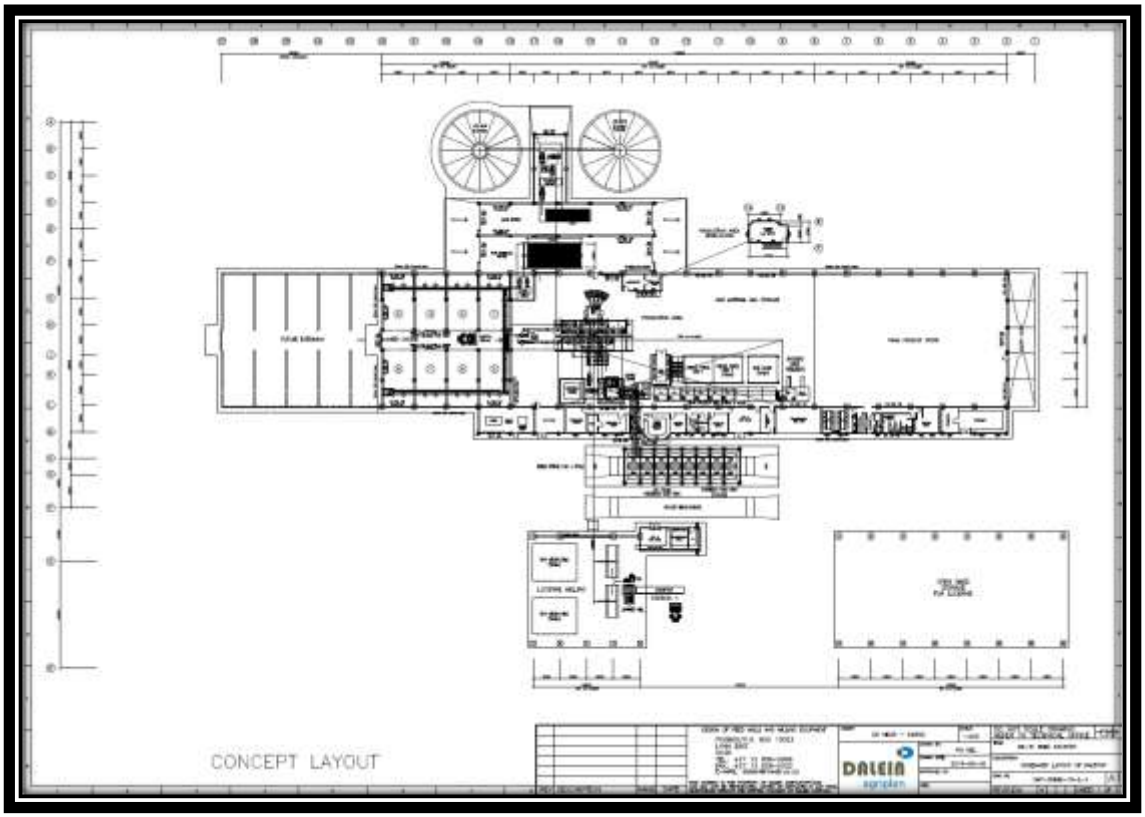


Figure 2: Layout Plan of the Feed Mill

As part of the operations of the Feed Mill, steam will have to be generated. This will be done means of a 2,5 ton, 10 bar coal boiler. The thermal output of the boiler is 1.567 MWA. A sealed bunker for the storage of coal has been designed to ensure that it will not cause any soil or water pollution. See Figure 3 for a copy of the design details for the coal storage area.

It is also proposed to store 23 000 litres of diesel and 800 litres of oil on site for the purpose of refuelling of trucks and machinery. Please see Figure 4 for the storage area designed for the oil and Figure 5 for the design of the proposed diesel tank and bunker.

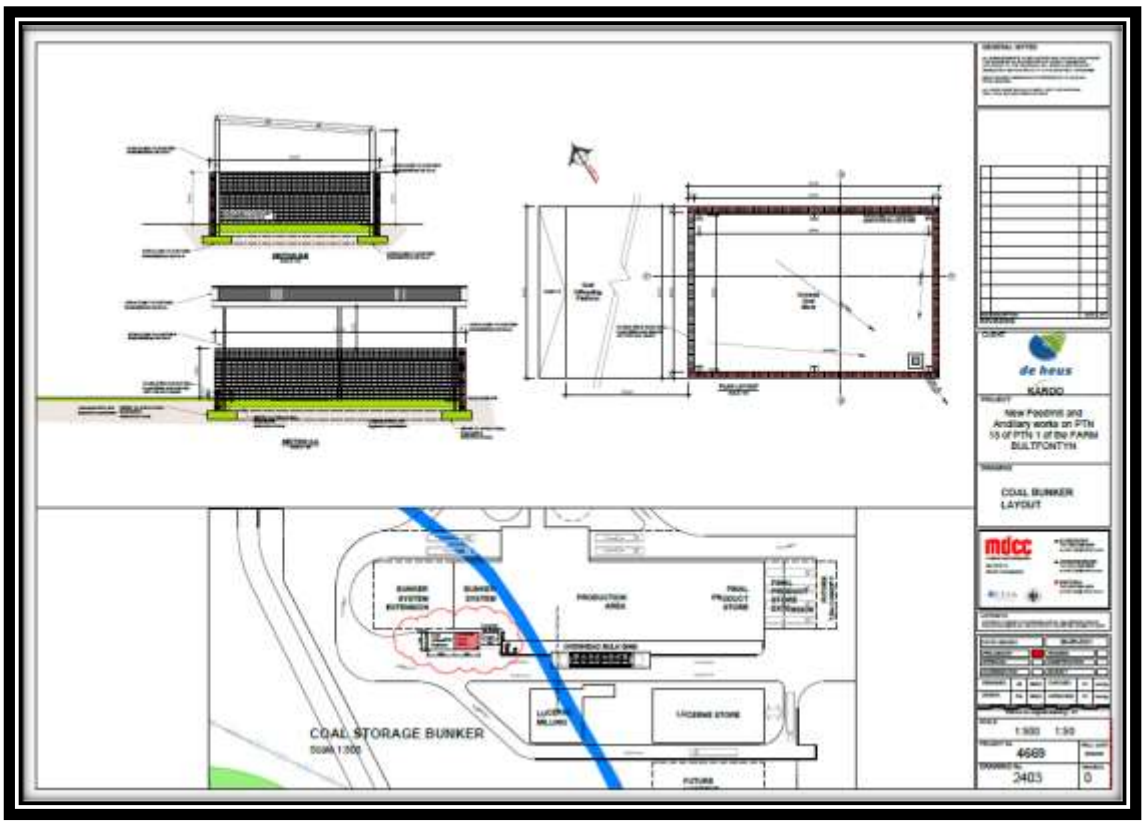


Figure 3: Storage facility for coal.

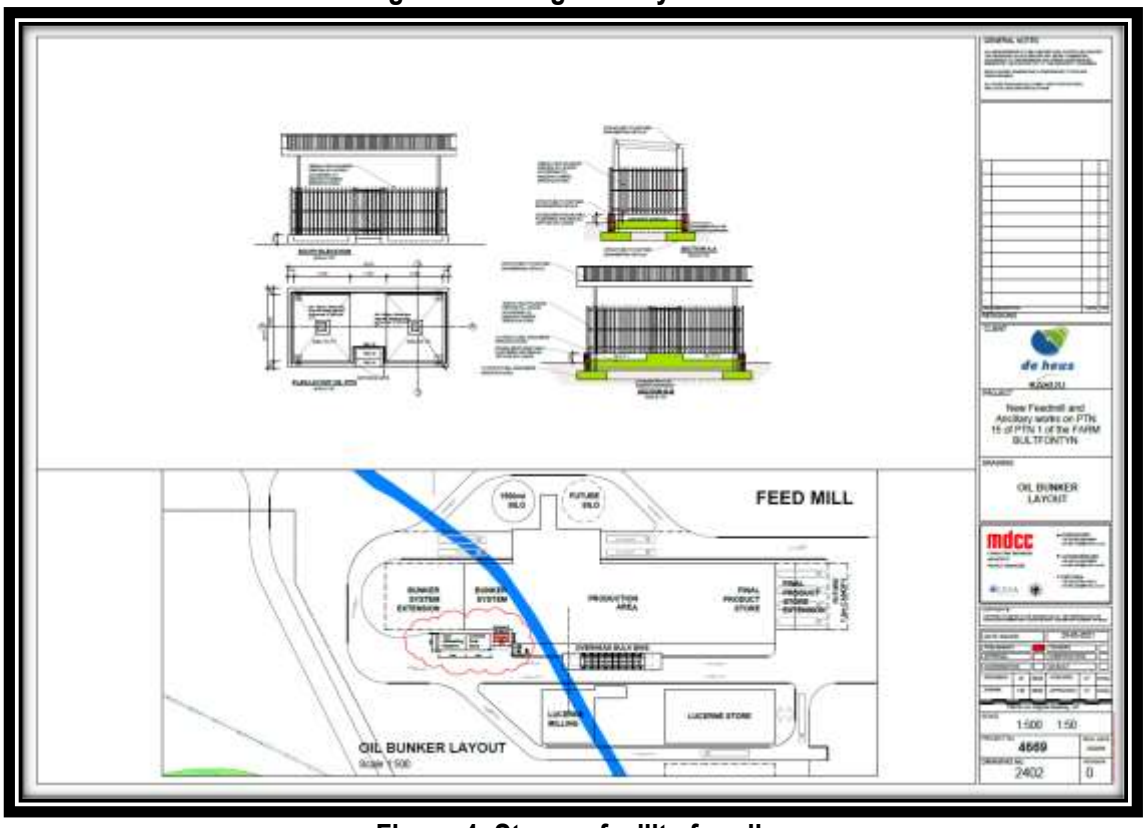


Figure 4: Storage facility for oil.

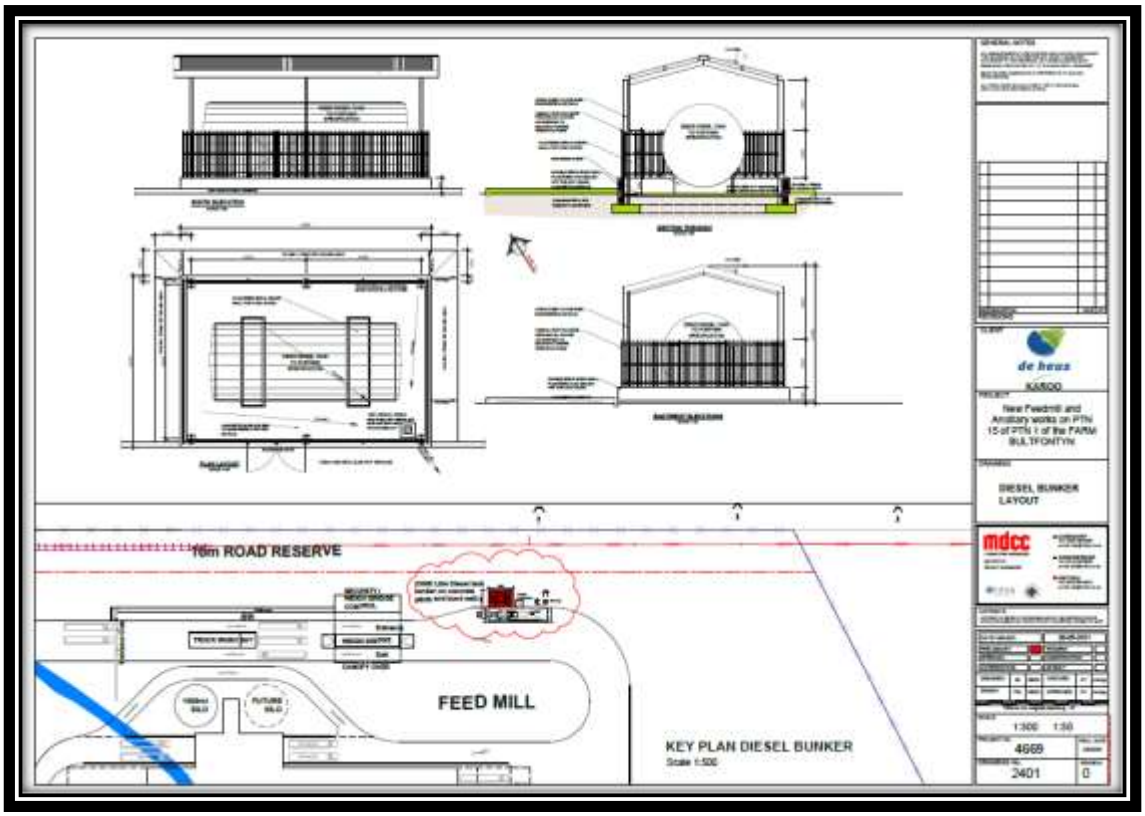


Figure 5: Storage facility for Diesel.

The **Agricultural recreational area** will be for Animal display and demonstrations, auctions and ancillary activities and will be Open to the public.

The proposed **Solar Farm** will be constructed to ensure sufficient, sustainable electricity for the development. The PV Solar plant can be described as follows:

- Grid-tied topology connected on the internal electrical network
- 2000kVA (0.8pf) = 2,500kW installed maximum PV output capacity
- PV panels to be used is 550W Monocrystalline (all required approval obtained for this implementation)
- Inverter equipment (DC to AC converting) will be SMA, Fronius or ABB
- Plant will function either on 400V or 11kV
- PV panels will be mounted on steel solar mounting system with casted concrete foundation blocks (see sample image on layout drawing, Figure 6)
- Crusher rock will be used for topsoil underneath the mounted PV panels

The proposed layout is illustrated in figure 6.

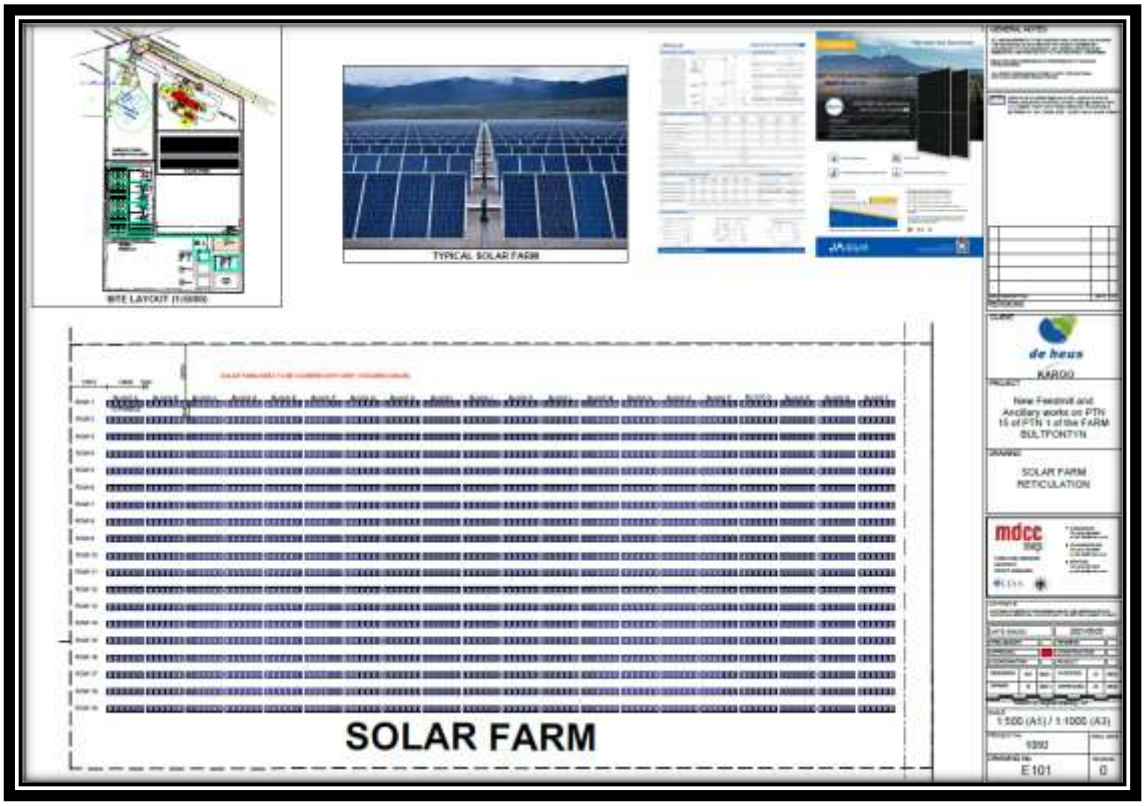


Figure 6: Proposed Layout plan for the Solar Farm.

The **Sheep Feedlot** will be designed for 10 880 head of sheep. Figure 7 is a copy of the proposed layout plan for the sheep feedlot.

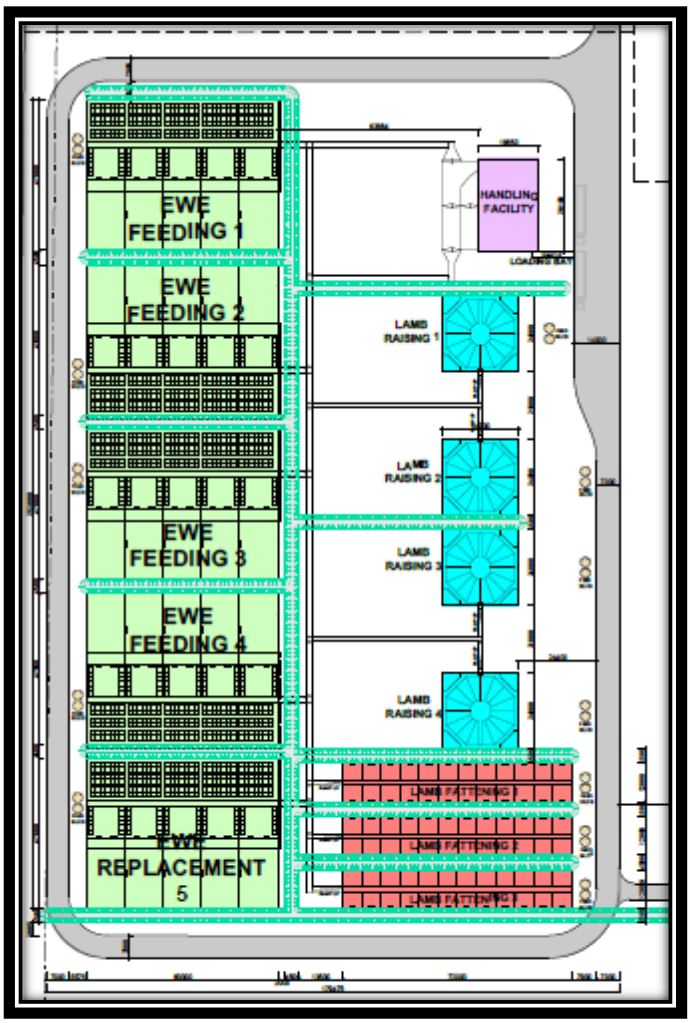


Figure 7: Layout Plan for proposed sheep feedlot.

In order to treat the manure and the carcasses that will originate from the Sheep Feedlot the construction of three **Sedimentation ponds**, two **Evaporation ponds** and a Composting area is proposed.

Sedimentation ponds

- The purpose of the sedimentation system is to remove settleable solid material from the feedlot runoff and prevent it from entering the evaporation ponds.
- The sedimentation pond is designed to have an overflow weir structure to discharge to the Evaporation pond.
- The sedimentation pond is sized, based on the number of head of sheep the facility will operate at and the peak rainfall (1:20 year return) characteristics of the area.
- The pond will have a volume of 1520m^3,
- Bank Height 1.0m
- Bank Slopes 1V:3H
- 2.5m
- Length 46m
- Width 40m

- Depth 1.2m
- Constructed using Cut to Fill method, with selected material from site (Excluding Topsoil and Vegetation) Cut to Form the base of the pond and fill to form the side embankments. Each pond to receive a 300mm thick clay liner or Synthetic equivalent to provide a design permeability of less than 0.1mm/d. The Earth embankment shall also have a clay core.

Evaporation ponds

- The Evaporation pond is sized based on calculation of the annual water balance (Annual Rainfall versus Evaporation Statistics) and is designed to contain the runoff/ effluent from the feedlot site.
- Only in extreme rainfall events will the pond discharge treated effluent via an overflow spillway, designed to comply with a 1:50 year return.
- The pond will have a volume of 4500m^3,
- Bank Height 1.0m
- Bank Slopes 1V:3H
- 2.5m
- Length 90m
- Width 55m
- Depth 1.2m
- Free Board 0.375m
- Constructed using Cut to Fill method, with selected material from site (Excluding Topsoil and Vegetation) Cut to Form the base of the pond and fill to form the side embankments. Each pond to receive a 300mm thick clay liner or Synthetic equivalent to provide a design permeability of less than 0.1mm/d. The Earth embankment shall also have a clay core.
- Water from this pond can be utilised for irrigation purposes.

The manure composting area will have a concrete base and will be able to accommodate the composting activities. The area allowed is 100x50m (0,5ha).

Please see Figure 8 for a copy of the proposed layout plan for the treatment facilities described above and Figure 9 for a flow chart of this facility.

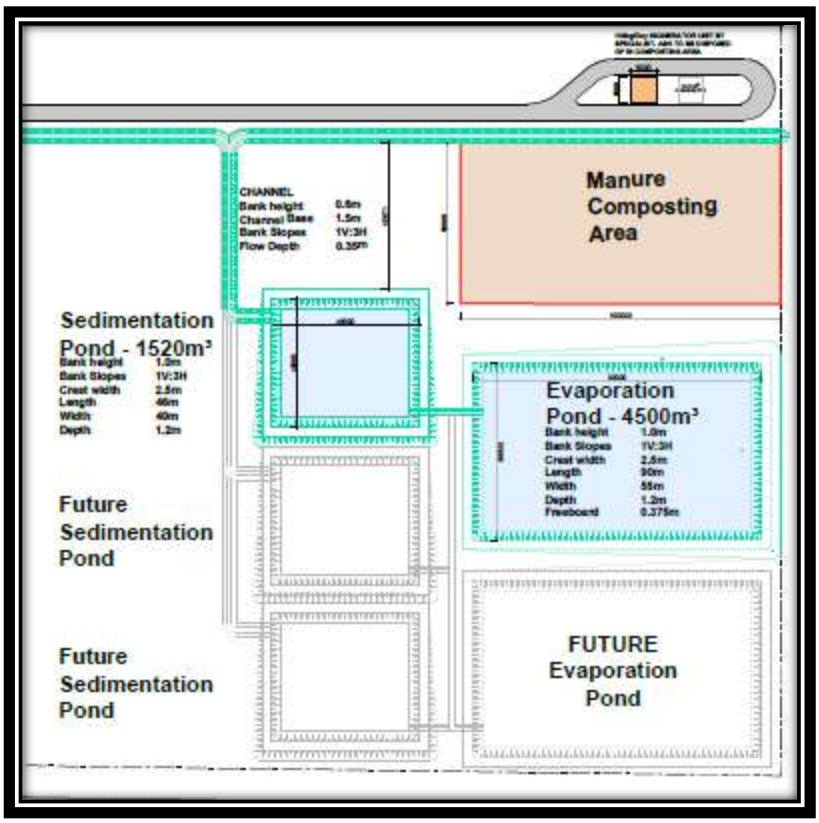


Figure 8: Layout Plan for proposed treatment facilities

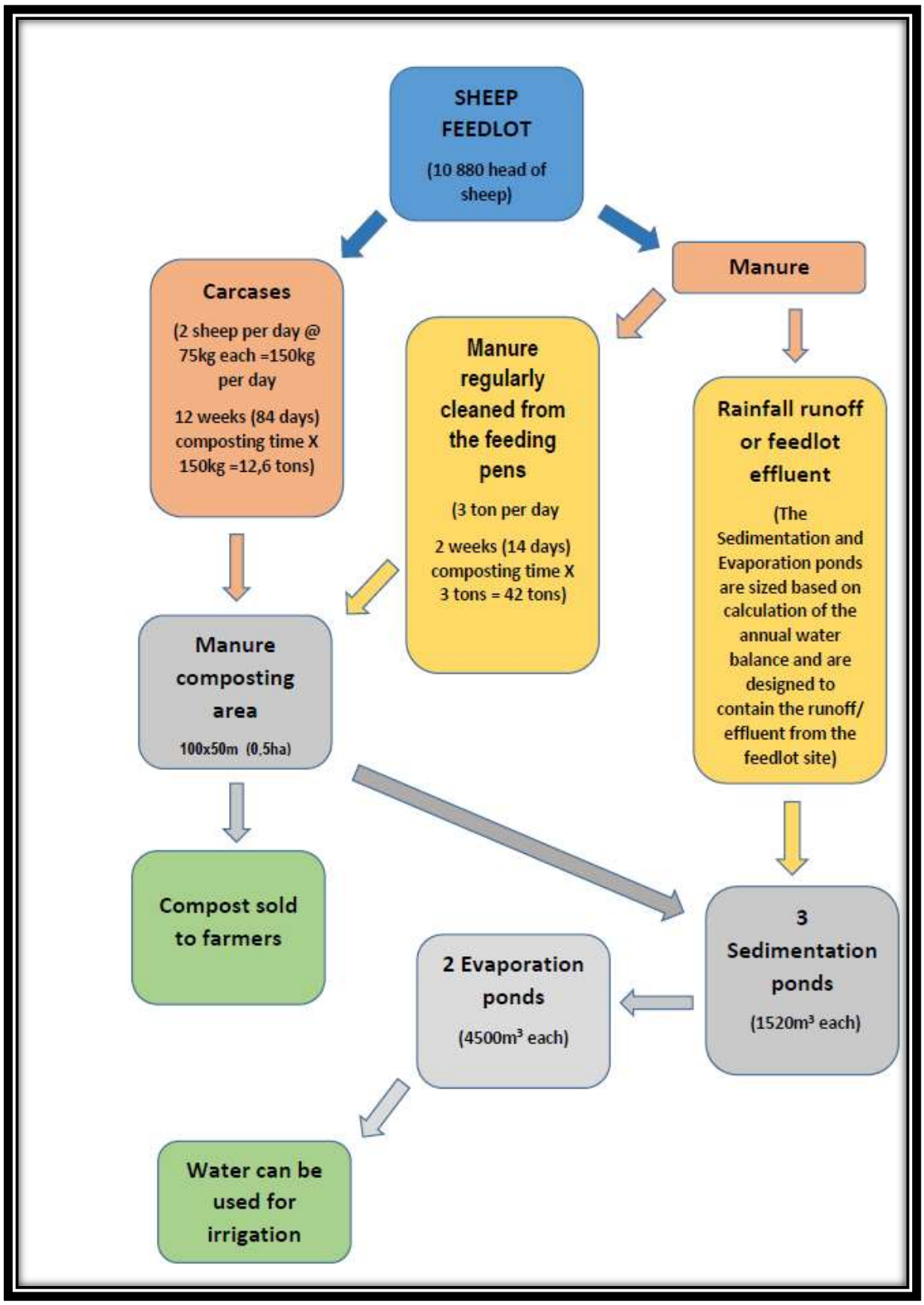


Figure 9: Flow chart for solid waste handling facility.

CIVIL SERVICES

BULK WATER SUPPLY

No municipal Bulk Water lines are available to supply the site with its calculated water demand. As part of the development of the site, new borehole/s will be installed to supply the site's water demands.

The Hydrogeologist's preliminary findings following a site visit to the study area, resulted in the placement of the proposed boreholes at the following locations (Figure 9a below):

- Borehole 1 (25º01'59.61"E, 31º31'35.2"S) – near sample site DH2 (Geotechnical test pit), and;
- Borehole 2 (25º02'02.26"E, 31º31'39.8"S) – near sample site DH10 (Geotechnical test pit).

Drilling of the borehole can occur within a 5m radius of the proposed coordinates. The depth of the boreholes would be between 30 to 40 meters and the yield would vary from 3 to 7 liters per second.

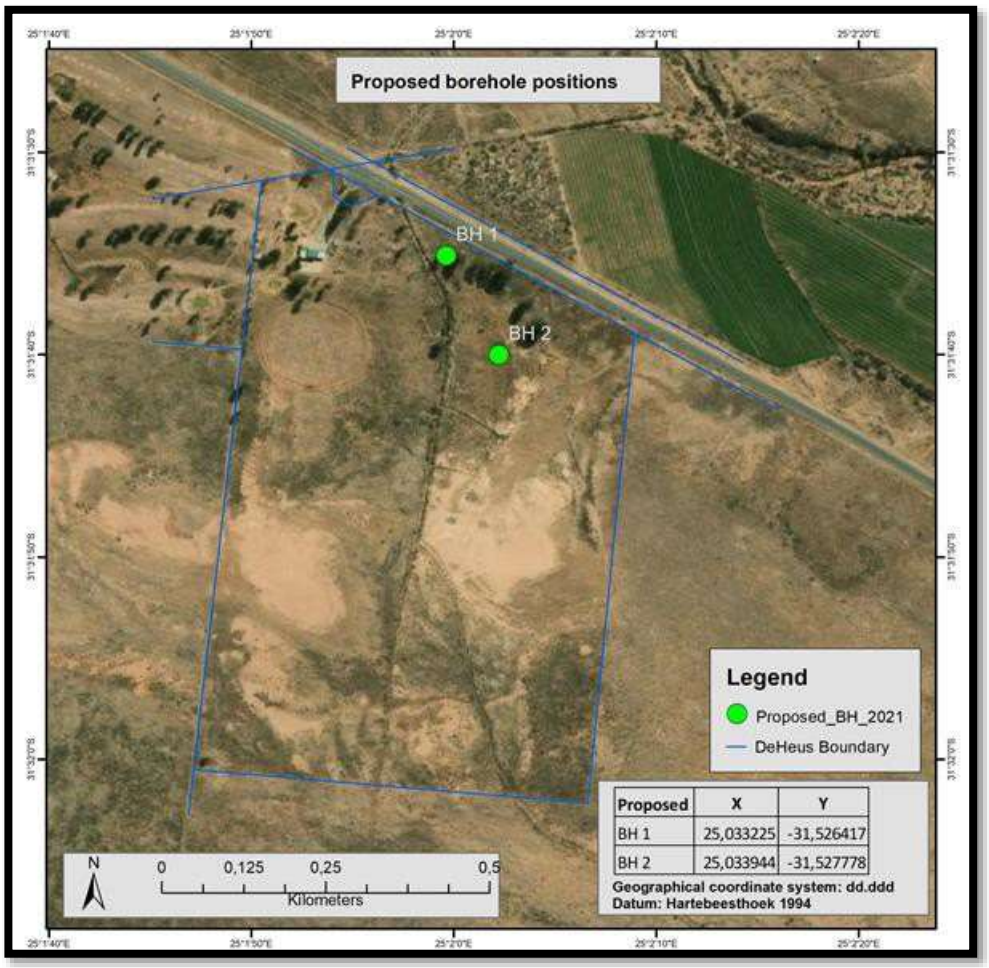


Figure 9a. Proposed borehole positions

The proposed layout of the development in relation to the proposed boreholes are indicated in Figure 9b below:

Figure 9b: Proposed development layout plan with proposed borehole positions

Pipe routing

The design of the water reticulation network is done to provide water to demand nodes within the site, which will include fire hydrant nodes.

Hydraulic analysis of the water reticulation network

The water distribution network is analysed by utilizing Civil Designer's Aquanet Software. The appropriate pipe diameters were established by calculating peak draw-off flows from nodes and then adding fire hydrant flow (40 l/s) at each specific location. Water storage tanks will be installed on site to accommodate the water storage requirements. From there the water will be distributed to the network. Pipes are sized to limit flow velocities below 1,5 m/s for peak domestic flow only and 2,2 m/s for fire flow included.

SEWER DESIGN

Existing Infrastructure

No Existing municipal Sewerage systems exist for the site. Sewerage generated by the site will discharge into the conventional pipe network and make its way to a new Waste water package plant. The Package plant will be designed to accommodate all the effluent generated from the human populated areas. A specialist company will be approached to provide a turn-key solution for the site. Treated greywater will discharge from the package plant and will be let out into the evaporation pond.

The internal sewer drainage network was designed as a gravity system. The design was done to provide a sewerage connection to each required point with an optimised route to the Waste Water Package Plant.

The sewer reticulation network is hydraulically analysed by utilising Civil Designer software. The appropriate pipe diameter is determined by Civil Designer and adjusted to the minimum requirements of 160mm.

ROADS AND STORM WATER DESIGN

Existing Infrastructure

The following existing infrastructure is applicable to this proposed development:

- The N10, which forms the northern boundary of the site has periodic concrete culverts beneath it which assist the movement of stormwater from north to south, in line with the natural topography, these culverts disperse the stormwater on to the lower areas, where evaporation and infiltration to the soil occurs
- There is an existing stormwater drainage ditch which runs north to south across the site, which is abandoned due to changes up stream, it was previously protected by a servitude, which has since been cancelled. This ditch will be filled and closed up.
- Access to the proposed development will be from the N10, from which there is an existing widening of the road and a splay for dedicated traffic to the site.

Access to site

The internal roads will be private roads, the Roads will be 7m wide and be designed to accommodate slow moving heavy livestock trucks.

- The internal roads will be classified as a local distributor, class 4, primarily due to the heavy load requirements.

The structural design of the road pavement will be done according to the standards prescribed in the "Guidelines for Human Settlement and Planning" and TRH 14 (Catalogue Specification for Pavements).
Provision will be made for the installation of pre-cast concrete kerbs or edge beams on both sides of streets.

The long sectional gradient of the road will be varied, but will be a minimum of 0.5%.

Storm Water Design Criteria

Stormwater will be accommodated on the surface in the road prism. Shallow earth lined channels will be created to direct stormwater away from the roads and eventually discharge to the sedimentation pond and then the Evaporation Pond.

For the Sheep feedlot area, a special stormwater management plan will be implemented to comply to guidelines.

The following Standard Reference Documents, Codes of Practice, Policies and Guidelines will be used in the design of the stormwater drainage systems:

- TRH 15 – Subsurface Drainage for Roads.
- Guidelines for Human Settlement Planning and Design – (Red Book).
- Guideline for the Provision of Engineering Services in Residential Townships (Blue book).
- DoT Minimum Standards for Civil Engineering Services in Townships Draft
- SANRAL Road Drainage Manual
- SANS 1200 DB : 1989 – Earthworks (Pipe Trenches)
- SANS 1200 GA : 1982 – Concrete (Small Works)
- SANS 1200 GE : 1984 - Precast Concrete (Structural)
- SANS 1200 LB : 1983 – Bedding (Pipes)
- SANS 1200 LE : 1982 - Stormwater Drainage

General Development Considerations

- Shallow earth lined stormwater channels will be allowed, for ease of maintenance**.**
- Runoff will be caught in stormwater channels and eventually discharge into the sedimentation pond from where settling occurs and then overflow into the evaporation pond.
- Periodic Maintenance of the stormwater system will be needed to clean out sludge. The sludge will be transported to the manure composting area where it will be mixed and utilised for compost.

Connections to existing road and stormwater infrastructure

- New roads of the proposed development will link with existing main surfaced National Road N10
- All stormwater systems will discharge into the new Sedimentation and Evaporation ponds as part of the sheep feedlot design

SOLID WASTE MANAGEMENT

Existing Infrastructure

The following existing infrastructure is applicable to this proposed development:

- No existing Solid Waste management exists for the site.
- The site is not serviced by municipal Waste collection services

Feed Mill Production

The Waste generated by the feed mill will be dumped into skips and transported to the nearest municipal waste disposal site, this will be managed by the Clients' operations team and will occur on routine frequency as required.

Sheep Feed lot Production

Manure effluent will be cleaned from the feeding pens routinely. Two actions takes place in terms of management:

- Manure is manually collected and transported to the Manure Composting Area where it will be aired, dried and process as a by-product from the sheep feedlot.
- In the event of rainfall, the manure will discharge into the Stormwater channels and flow towards the sedimentation pond, where settling will occur and then overflow into the evaporation pond.
- The evaporation pond has been sized to accommodate the 1:20 year rainfall return period, and accompanied with high evaporation (Based on S-Pan) values, will only overflow on rare occurrences.

Waste generated by the Sheep Feedlots will be managed by the Clients' operations team and will occur on routine frequency as required.

4. DESCRIPTION OF THE PROPERTY

The site is located on the outskirts of Middelburg along the N10 in the direction of Cradock. The site is approximately 42.8266 ha in extent and is located on Portion 15, of Portion 1 of the Farm Bultfontyn, Middelburg, Eastern Cape Province. See Figure 10a for a copy of the locality map and Figure 10b for a copy of the site in relation to Critical Biodiversity Areas (CBA's). The site is located approximately 4,2 kilometres south east of the City Centre of Middelburg, 1,7 kilometres south of Midros and 2,5 kilometres south east of Kwanonzame. An Airfield is located 1,5 kilometres south of the site. The site falls within an area that is under the jurisdiction of the Inxuba Yethemba Local Municipality and the Chris Hani District Municipality.

Figure 10a: Locality Map.

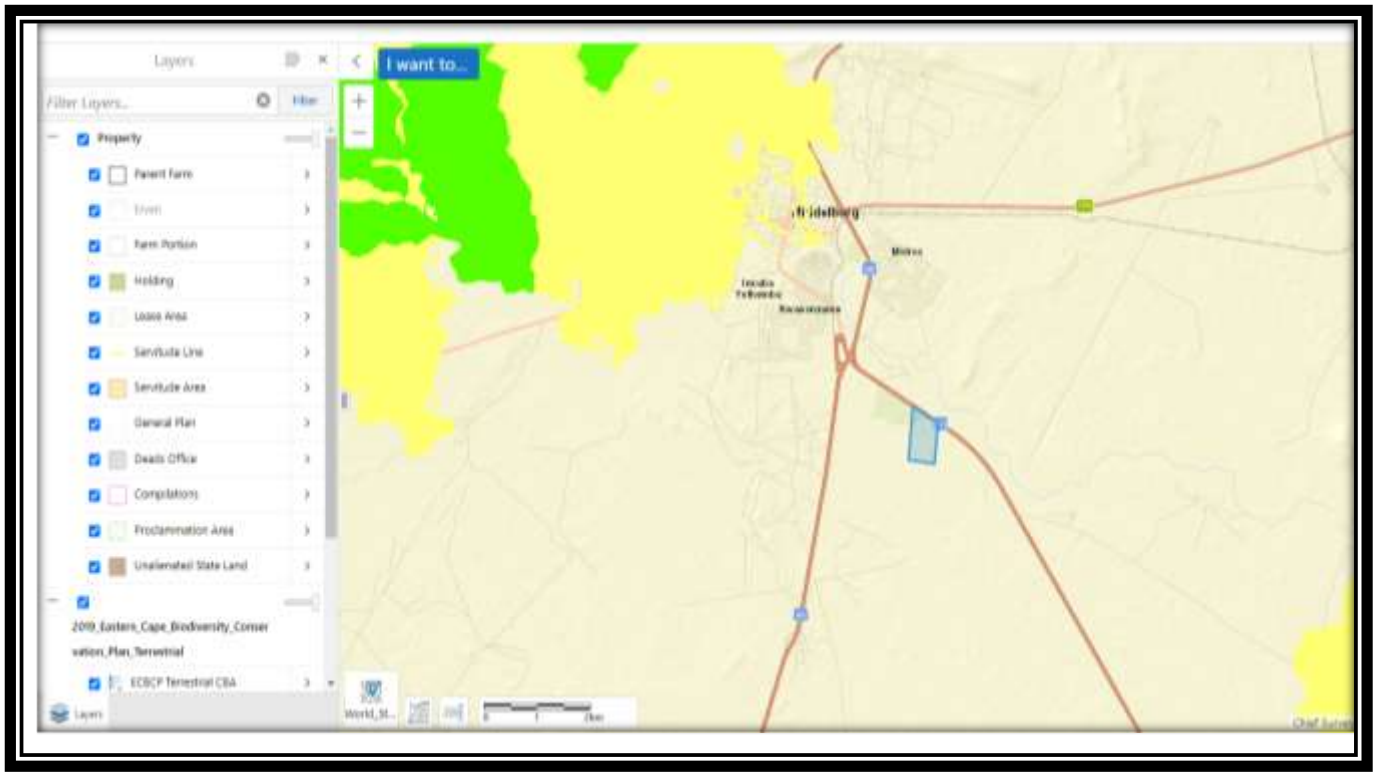


Figure 10b: Locality Map in relation to CBA's.

The Middelburg Golf Course is located adjacent and west of the site. See Photograph 1.The remains of a Cricket Oval/field is located close to the Golf Club house. The Cricket Oval/field is demarcated by a soil berm. The Cricket oval was constructed between February 2016 and October 2018 (According to the Google Earth Images) and was never used. See Photograph 2.

Photograph 1: Entrance to the site. Golf course on the right and site on the left. Clubhouse in the background.

Photograph 2: The circle that you can see on Google is in fact an attempt to have established a cricket ground.

The site used to form part of the Golf course as it used to be an 18 hole course and has since been reduced to a 9 hole course. Old structures (Old Golf tees (Photograph 3) and old greens (Photograph 4)) associated with this activity can be seen at various locations on the site.

Photograph 3: Remnants of an old golf tee box.

Photograph 4: Remnants of Old "oil green" that was part of the golf course.

The blue line on the Layout plan is a furrow that was used (Prior to 1990) to divert water that overflowed from a reservoir that was build in the Klein Brak River towards a farm dam that is situated south west of the proposed development. Since the dam wall of the reservoir was broken down in the early 1990's there has been no water in the furrow and this structure has become redundant. The servitude that was registered for this furrow has also since been cancelled. See Photograph 5.

Photograph 5: The canal on site that used to cannel water from the Klein Brak River towards a dam located towards the south of the site.

Photograph 6: View towards the north. N10 in the background.

Photograph 7: View towards the north east.

Photograph 8: View towards the east.

Photograph 9: View towards the south east.

Photograph 10: View towards the south.

Photograph 11: View towards the south west.

Photograph 12: View towards the west.

Photograph 13: View towards the North West.

Large bare areas (See Photograph 14) are present where signs of sheet erosion are visible. Signs of excavations (See Photograph 15 and 16) or scraping of extensive areas are noticeable despite a "good rainfall season". A number of pioneer and alien plant species that are conspicuous may also be reflection of possible "harsh soil conditions" and/or disturbances of the past. The Topographical map of the area identifies these barren areas as Eroded Areas. See Figure 11.

Photograph 14: Excavations on site.

Photograph 15: Barren areas on site.

Photograph 16: Barren areas on site

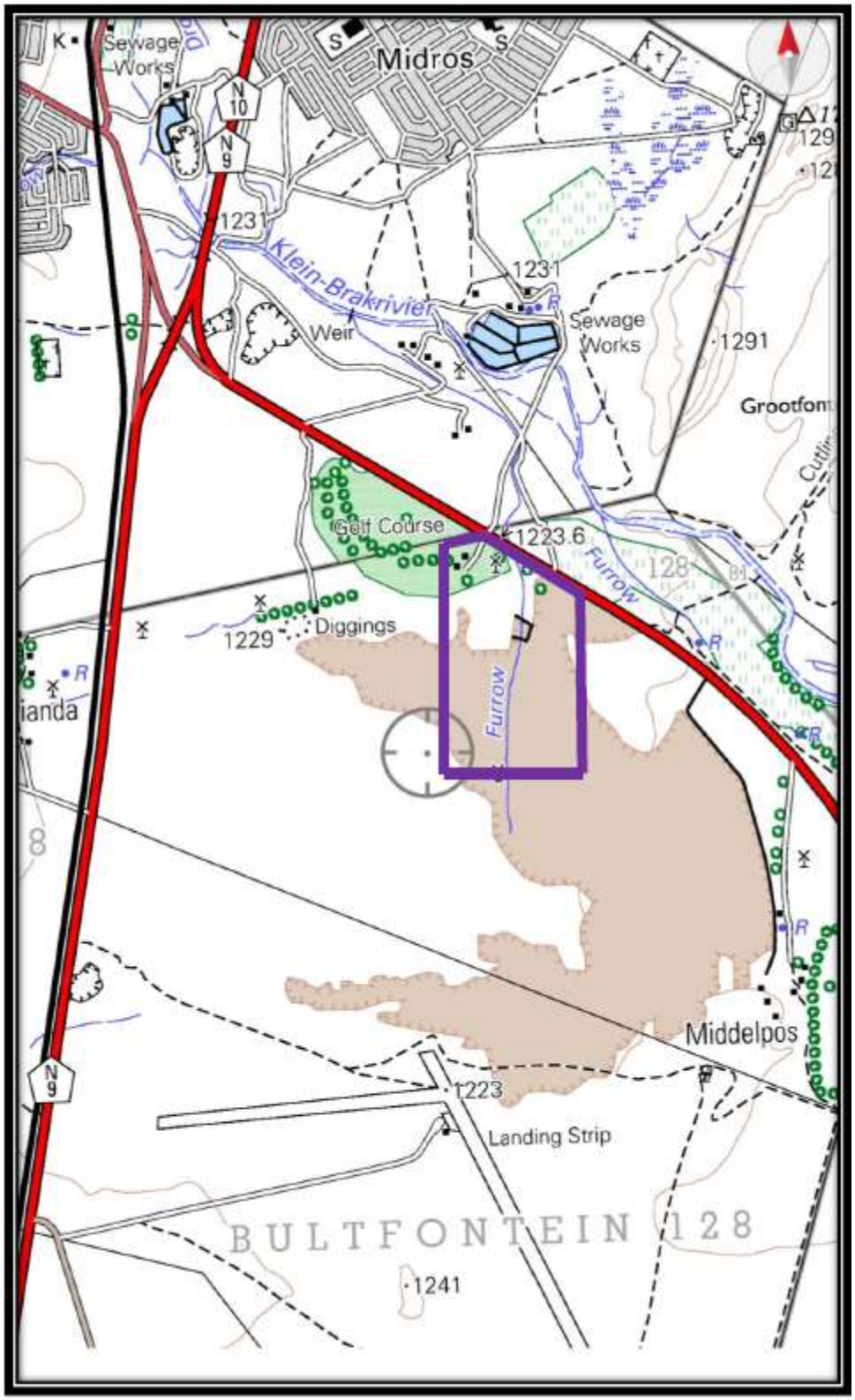


Figure 11(a). 1:50 000 Topographical map (3125CA Middelburg) of the area (purple outline).

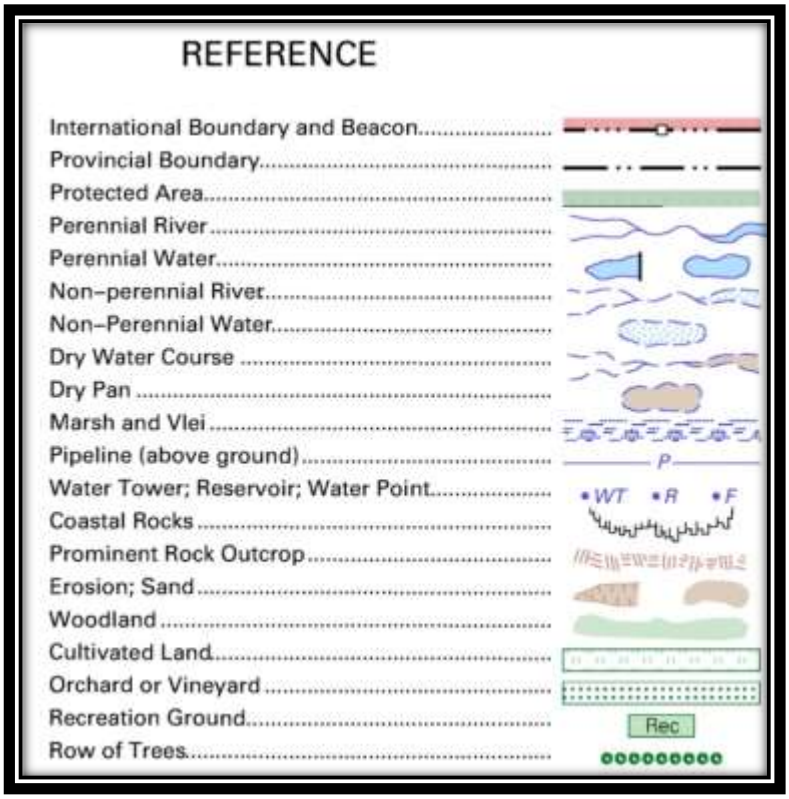


Figure 11(b): Reference for 1:50 000 Topographical map (3125CA Middelburg).

Site Co-ordinates	**Latitude (S):**			**Longitude (E):**		
Middle point of the site	31°	31'	47.07"	25°	01'	53.27"

5. LEGAL AND OTHER REQUIREMENTS

Title of legislation, policy or guideline	Applicability to the project	Administering authority	Date
The Bill of Rights, Constitution of South Africa, Constitution Act (Act No. 108 of 1996) Section 27 (1)(b)	The Constitution of the Republic of South Africa is the legal source of all law, including environmental law, in South Africa. 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: (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) Peoples needs must be responded to, and the public must be encouraged to participate in policymaking. (f) Public administration must be accountable. (g) Transparency must be fostered by providing the public with timely, accessible and accurate information (Government Gazette, 1996).	National Government	1994
National Environmental Management Act No. 107 of 1998 as amended.	NEMA is the guiding legislation that has been considered during the Environmental Impact Assessment process and the compilation of this Scoping Report. The developer must be mindful of the principles, broad liability and implications associated with NEMA and must eliminate or mitigate any potential impacts. The developer must also be mindful of the principles, broad liability and implications of causing damage to the environment. The developer must also comply with the EIA Regulations (2014) (amended 2017) in the terms of the Act which specifies	National & Provincial (DEA And DEDEAT)	27 November 1998

Title of legislation, policy or guideline	Applicability to the project	Administering authority	Date
	when an environmental authorisation is required and the nature of the EIA process		
New Regulations 2014 in terms of NEMA	Legislation consulted during the environmental impact assessment process to determine whether any listed activities would be triggered. The Regulations were also consulted to determine inter alia the requirements regarding the contents of Scoping reports and the public participation process that should be followed.	National & Provincial (DEA And DEDEAT)	7 April 2017
National Water Act (36 OF 1998)	National Water Act (NWA), 1998 (Act 36 of 1998) is the primary statute providing the legal basis for water management in South Africa and has to ensure ecological integrity, economic growth and social equity when managing and using water. The major objectives of the National Water Act are to: •Aid in providing basic human needs; •Meet the growing demand of water in a sustainable manner; •Ensure equal access to water and use of water resources; •Protect the quality of water of natural resources; •Ensure integrated management of water resources; •Foster social and economic development; and •Conserve aquatic and related ecosystems. Section 19 of the National Water Act states that the person responsible for land upon which any activity is or was performed which causes, has caused or is likely to cause, pollution of a water resource, must take all reasonable measures to prevent any such pollution from occurring, continuing or recurring. The NWA is concerned with the overall management, equitable allocation and conservation of water resources in South Africa. To this end, it requires registration of water users and licenses to be obtained for water use except for certain limited instances set out in the Act. These instances include domestic use, certain recreational use, where the use occurs in terms of an existing lawful use or where the Department of Water and Sanitation (DWS) has issued a general authorisation that obviates the need for a permit. Water use for which a permit is required: For the purposes of this Act, water uses	Department of water and sanitation	1998

Title of legislation, policy or guideline	Applicability to the project	Administering authority	Date
	for which a permit is required (amongst other), are defined in Section 21 as follows: Taking water from a water resource. Storing water. Impeding or diverting the flow of water in a watercourse. Discharging waste or water containing waste into a water resource through a pipe, canal, sewer, sea outfall or other conduit. Disposing of waste in a manner which may detrimentally impact on a water resource. Altering the bed, banks, course or characteristics of a watercourse.		
National Environmental Management: Biodiversity Act (NEMBA) (ACT NO. 10 OF 2004)	The National Environmental Management Biodiversity Act, 2004 (Act No. 10 of 2004), provides for the management and conservation of South Africa's biodiversity within the framework of the National Environmental Management Act, 1998; the protection of species and ecosystems that warrant national protection; the sustainable use of indigenous biological resources; the fair and equitable sharing of benefits arising from bio-prospecting involving indigenous biological resources; the establishment and functions of a South African National Biodiversity Institute; and for matters connected therewith. The Act provides for the management and conservation of South Africa's biodiversity and the protection of species and ecosystems that warrant national protection. The objectives of this Act are to: a) Provide, within the framework of the National Environmental Management Act; b) Manage and conserve of biological diversity within the Republic; and c) Promote the use of indigenous biological resources in a sustainable manner. In terms of Chapter 4 of the Above Act: 52. (1) (a) The Minister may, by notice in the Gazette, publish a national list of ecosystems that are threatened and in need of protection. (b) An MEC for environmental affairs in a province may, by notice in the Gazette, publish a provincial list of ecosystems in the province that are threatened and in need of protection.	National & Provincial (DEA And DEDEAT)	2004

Title of legislation, policy or guideline	Applicability to the project	Administering authority	Date
	(2) The following categories of ecosystems may be listed in terms of subsection: (a) critically endangered ecosystems, being ecosystems that have undergone severe degradation of ecological structure, function or composition as a result of human intervention and are subject to an extremely high risk of irreversible transformation; (b) endangered ecosystems, being ecosystems that have undergone degradation of ecological structure, function or composition as a result of human intervention, although they are not critically endangered ecosystems; (c) vulnerable ecosystems, being ecosystems that have a high risk of undergoing significant degradation of ecological structure, function or composition as a result of human intervention, although they are not critically endangered ecosystems or endangered ecosystems; and (d) protected ecosystems, being ecosystems that are of high conservation value or of high national or provincial importance, although they are not listed in terms of paragraphs (a), (b) or (c). (3) A list referred to in subsection (1) must describe in sufficient detail the location of each ecosystem on the list. 53 (1) The Minister may, by notice in the Gazette, identify any process or activity in a listed ecosystem as a threatening process. (2) A threatening process, identified in terms of subsection (1) must be regarded as a specified activity contemplated in section 24(2)(b) of the National Environmental Management Act (1998) and a listed ecosystem must be regarded as an area identified for the purpose of that section.		
National Environmental Management: Protected Areas Act (ACT NO. 57 OF 2003)	This Act aims to provide for a national system of protected areas in South Africa as part of a strategy to manage and conserve its biodiversity. The Protected Areas Act tries to ensure the protection of the entire range of biodiversity, referring to natural landscapes and seascapes. The Act makes express reference to the need to move towards Community Based	National & Provincial	2003

Title of legislation, policy or guideline	Applicability to the project	Administering authority	Date
	natural Resource Management (CBNRM) as its objectives include promoting the participation of local communities in the management of protected areas. The purpose of the Act is: •To protect ecologically viable areas representative of South Africa's biological diversity and its natural landscapes and seascapes and their ecological integrity. •To conserve biodiversity in those areas; •To protect South Africa's rare species; •To protect vulnerable or ecologically sensitive areas; •To assist in ensuring the sustained supply of environmental goods and services; •To provide for the sustainable use of natural and biological resources; •To create or augment destinations for nature-based tourism; •To manage the interrelationship between natural environmental biodiversity, human settlement and economic development; •To contribute to human, social, cultural, spiritual and economic development; •To rehabilitate and restore degraded ecosystems and promote the recovery of endangered and vulnerable species. This Act further stipulates various criteria which must be met before an area can be declared as a special nature reserve, national park, nature reserve and protected environment. It also prescribes a range of procedures, including consultation and public participation procedures which must be followed before any of the kinds of protected areas are declared.		
National Heritage Resources Act, Act No. 25 of 1999	Legislation consulted during the impact assessment process, to determine the legal requirements relating to the management of heritage resources that are present in and around the site. The protection of archaeological and paleontological resources is the responsibility of a provincial heritage resources authority and all archaeological objects, paleontological material and meteorites are the property of the State. "Any person who discovers archaeological or paleontological objects or material or a meteorite in the course of development must immediately report the find to the responsible heritage resources authority, or to the nearest local authority offices or museum, which must	SAHRA	1999

Title of legislation, policy or guideline	Applicability to the project	Administering authority	Date
	immediately notify such heritage resources authority".		
National Environmental Management: Waste Act, Act No. 59 of 2008, DEDEAT together with the List of Waste Activities that Have, or are Likely to Have, a Detrimental Effect on the Environment, GN No. 921 of 29 November 2013 and	Legislation consulted to determine whether a waste licence will have to be obtained for the development. The purpose of this Act relates to the proper disposal of waste. The Act also provides for the waste related activities where a Waste Licence is required. This includes the recycling and refining of waste.	National & Provincial (DEA And DEDEAT)	2008
Norms and Standards for organic waste composting, 2020 (GN No 561 of 25 June 2021).	*In terms of this Legislation: "3 (2) The owner of an organic waste composting facility with a capacity to process less than 10 tonnes per day of organic waste must register in terms of clause 3(3) of these Norms and Standards, and align with the requirements of applicable integrated waste management by-laws, and comply with the principle of duty of care as contained in section 28 of the National Environmental Management Act, 1998 (Act No. 107 of 1998)."*	*A separate application for the registration of the composting facility will be submitted with DEDEAT.*	June 2021
Hazardous Substances Act (15 of 1973)	This Act provides for the control of substances which may cause injury, ill-health or death by reason of their toxic, corrosive, irritant, strongly sensitizing or flammable nature. It divides these hazardous substances into groups relating to the degree of danger and provides for the prohibition and control of the importation, manufacture, sale, use, operation, application, modification, disposal or dumping of such substances and products.	National & Provincial (DEA And DEDEAT)	1973
Mineral and Petroleum Resources Development Act (MPRDA), Act 28 of 2002	The Act distinguishes between mining permits and mining rights as follows: Mining Permit: Required where the activity will last less than two years and affects an area of less than 1.5ha in extent (valid for 3 years). In terms of the Act a mining permit requires a submission of an Environmental Management Plan (EMP to DME for approval prior to the onset of activities). Mining Right: Required for larger mining operations (renewable and valid for 30 years). In terms of the Act a mining right requires the submission of an Environmental Management Programme (EMPr) to DME for approval prior to the onset of activities. In light of their limited spatio-temporal extent, borrow pits (for the provision of construction material) and quarry	Relevant Provincial Authorities.	2002

Title of legislation, policy or guideline	Applicability to the project	Administering authority	Date
	operations would typically require a mining permit. The closure of borrow pits requires the submission of a closure application; this must be submitted within 180 days after ceasing operations. It is important to recognise that the mining right/permit holder's liability persists until such time as a Closure Certificate has been issued by DMR. No Borrow pits will be used for this proposed development and as such this Law will not apply to this application.		
National Environmental Management: Air Quality Act (Act 39 of 2004) and: *Government Notice 893 in Government Gazette 37054 dated 22 November 2013. Commencement date: 22 November 2013* *As amended by:* *Government Notice 551 in Government Gazette 38863 dated 12 June 2015. Commencement date: 12 June 2015.* *Government Notice 1207 in Government Gazette 42013 dated 31 October 2018. Commencement date: 31 October 2018.* *Government Notice 687 in Government Gazette 42472 dated 22 May 2019. Commencement date: 22 May 2019.* *Government Notice 421 in Government Gazette 43174 dated 27 March 2020. Commencement date: 27 March 2020.*	To protect the environment by providing reasonable measures for the prevention of pollution and ecological degradation and for securing ecologically sustainable development while promoting justifiable economic and social Development. The following Categories were considered for this application: Category 1: Combustion Installations Subcategory 1.1: Solid Fuel Combustion Installations Description: Solid fuels combustion installations used primarily for steam raising or electricity generation. Application: All installations with design capacity equal to or greater than 50 MW heat input per unit, based on the lower calorific value of the fuel used. Outcome: The proposed development will not trigger this Category, as only a maximum of 2 MW heat inputs per unit will be generated. Category 10: Animal Matter Processing Description: Processes for the rendering cooking, drying, dehydrating, digesting, evaporating or protein concentrating of any animal matter not intended for human consumption. Application: All installations handling more than 1 ton of raw materials per day. Outcome: The proposed development will be triggered by the Category, as only a maximum of 150kg per day will be processed.	Relevant Provincial Authorities.	2004
The Conservation of Agricultural Resources Act (Act 43 of 1983)	This Act regulates the flow pattern of runoff water, control of weeds and invader plants.	Relevant Provincial Authorities.	1983
National Veldt and Forest Fire Act (Act 101 of 1998)	Chapter 4 places a duty on owners to prepare and maintain firebreaks.	Relevant Provincial Authorities.	1998

Title of legislation, policy or guideline	Applicability to the project	Administering authority	Date
National Forests Act, Act 84 of 1998 (NFA) DEDEAT with GN1602 of December 2016.	During the construction phase of the development certain protected trees may be affected. Licences will have to be obtained from the Minister before the affected trees may be cut, disturbed, damaged or destroyed. GN1602 of December 2016 contains the list of protected trees.	National and Provincial authorities.	1998
Occupational Health and Safety Act (Act 85 of 1993)	To provide for the health and safety of persons at work and for the health and safety of persons in connection with the use of plant and machinery and the protection of persons other than persons at work against hazards to health.	Relevant Provincial Authorities.	1993

The study is conducted in such a way as to comply with the instructions regarding such studies and reports (as contained within the above-mentioned documents).

The following aspects have been dealt with:

SCHEDULE

Actions	Timeframe
1. Project Initiation and Scoping Phase	
1.1 Communication with authorities and source and analyse relevant baseline information and undertake site inspections	5 days
1.2 Identify key interested and affected parties (I&APs)	1 day
1.3 Compilation of terms of reference for specialist studies	2 days
1.4 Commission specialist studies	1 day
1.5 Compile Environmental Application Form for the project and submit to the authorities	Once the Environmental Application form has been submitted, the scoping report which has been subject to public participation (30 days) needs to be submitted within 44 days
1.6 Compile draft Scoping Report (SR) and make available to the public for a 30 day commenting period	5 days for compilation and 30 days for commenting period
1.7 Prepare an Information Sheet (summary of the draft SR) and distribute to I&APs	1 day
1.8 Compile and publish media notices (for the EIA) in relevant newspapers	7 days
1.9 Compile and place poster/s along the boundary of the site	1 day
1.10 Receive and address first round of comments from public	3 days
1.11 Should the draft SR require substantial changes, these changes will be incorporated into the final SR and distributed	The competent authority must within 43 days of receipt of the scoping report accept / refuse the report with our without conditions
1.12 Address comments received on the SR, finalise Scoping Report and submit to authorities	As above
1.13 Compile a Plan of Study for the assessment phase and submit to authorities for approval	As above

The total time allowed for the Scoping phase of the application	**87 days**
2. Assessment Phase	
2.1 Undertake assessment phase by assessing and evaluating potential impacts identified in the Scoping phase.	5 days
2.2 Review and manage specialist studies required.	Ongoing
2.3 Compile a draft Environmental Impact Report (EIR).	5 days
2.4 Compile a draft Environmental Management Plan for the Construction phase.	Included above
2.5 Compile an Information Sheet (summary of EIR) and distribute to identified I&APs	1 day
2.6 Distribute DEIR to I&APs	1 day
2.7 Allow the identified public to provide comment within a 30 day period on above report.	3 days for compilation and 30 days for commenting period
2.8 Address comments received and finalise EIR	3 days
2.9 Should the draft EIR require substantial changes, these changes will be incorporated into the final EIR and distributed for a 21 day commenting	3 days plus 21 day commenting period
2.10 Finalise EIR and update comments and response table for submission to authorities	5 days
2.11 Submit EIR to authorities for a final decision	1 day (The department requires the submission of the Final EIR within 106 days of the approval of the Scoping report)
2.12 Once the decision is issued, all I&Ps must be formally informed of the decision	The Competent Authority has 107 days from the date of receipt of the EIR and EMPr to determine the application
Total number of days allowed for the compilation and consideration of the EIR	**213 (may require additional 50 days public participation and consideration)**
TOTAL NUMBER OF DAYS:	**300-350 days**

6. NEED AND DESIRIBILITY

The National Development 2030 mentions that South Africa can eliminate poverty and reduce inequality by 2030 and this will require change, hard work, leadership and unity. Its goal is to improve the life chances of all South Africans, but particularly those young people who presently live in poverty. In the past, we expected government to do things for us. What South Africa needs is for all of us to be active citizens and to work together – government, **business**, communities – so that people have what they need to live the lives they would like.

The White Paper on Local Government1 (1998) introduces the concept of "developmental local government" which is defined as: "Local government committed to working with citizens and groups within the community to find sustainable ways to meet their social, economic and material needs, and improve the quality of their lives." However the same document makes it clear that:

"Local Government is not directly responsible for creating jobs. Rather, it is responsible for taking active steps to ensure that the overall economic and social conditions of the locality are conducive to the creation of employment opportunities."

The Chris Hani District Municipality developed and adopted a District Development Agenda that focuses on the development of all its Six Local Municipalities through the identification of competitive advantages of its local municipalities. This was later translated into an **Agro Industrial Plan** that has been used as a spring board to the proposed Special Economic Zone.

The Chris Hani Regional Development Strategy provides focused areas around which resources can be leveraged and mobilised in order to contribute to the broad overall objective of ensuring that all people in the district are able to benefit from the economy. The Competitive Advantage therefore for the district points to the broadly defined **agricultural sector** as the one with the most potential to contribute to job creation, promoting of livelihoods opportunities and contributing to sustained social and economic growth and development.

Whilst crop production and agro-processing sector remain important areas of intervention, the present cost of transport to high volume markets will most likely render local production uncompetitive until substantial economies of scale and consistent quality can be achieved.

Value chain integration implies looking at all the components of a particular sector and subsector and identifying what can be done or put in place to add value to what already exists, and in doing so, promote job creation and provide more livelihood opportunities.

While the districts' agricultural potential is obvious, primary agricultural projects have had a minimal impact on unemployment. This situation necessitates strategies to increase value-added production by exploiting opportunities that exist along the various crop and livestock value chains. (Chris Hani District Municipality 2021-2022 Draft IDP)

Agriculture is one of the main economic sectors within the area. Agricultural activities can be sub-divided into two groups – crop farming and livestock farming. The Applicant has identified gaps in the value chain for both of these economic sectors being Lucerne (Crop farming) and sheep (Livestock farming). It is the intension of the applicant to add value to both of these identified agricultural sectors and in doing so, create jobs and infrastructure. The increased employment in the area during both the construction and operational phase will also result in increased expenditure, which, in addition, will mean that more than just the proposed jobs required for the proposed development will be created due to economic spin-offs that will result.

Feed Mill

Feed mixing, pill making, packaging and ancillary works including grain and feed storage will form part of this operation. Lucerne that is produced extensively in the area and will be used to produce feed, thus adding value to primary products that are produced in the region. Maize that is also produced in the region will also be incorporated into the production process and a limited amount of this produce will also be value added. At full production the Feed Mill will produce 9 000 tons of feed per month and will generate 100 employment opportunities.

Agricultural recreational area.

This part of the proposed development will be for Animal display and demonstrations, auctions and ancillary activities and will be Open to the public, thus providing a platform for the people of the region to sell and display their animals and to come together as a community.

Solar Farm

Greenhouse gases (GHG), including CO2 emissions are associated with the conventional provision of energy services and are a major cause of climate change. Globally, coal is the second largest primary energy source used worldwide (preceded by oil), and the first source for power generation. In terms of electricity generation or supply, South Africa is highly dependent on coal-fired power plants and therefore energy supply is carbon dioxide-intensive.

Renewable energy sources play a role in providing energy services in a sustainable manner, and in particular in mitigating climate change. Sustainable energy can be defined as energy which provides affordable, accessible and reliable energy services that meet economic, social and environmental needs within the overall developmental context of society, while recognising equitable distribution in meeting those needs. Sustainable energy is an element of sustainable development which is defined as development that meets the present needs and goals of the population without compromising the ability of future generations to meet theirs. On the overall sustainable development is underpinned by economic development (growth efficiency), social development (culture, heritage, poverty, and empowerment) and environmental development (pollution and natural resources).

The government of South Africa considers the use of renewable energy as a contribution to sustainable development. Sustainable development also implies the provision of electricity and other modern fuels to the commercial and industrial sectors to promote their economic competitiveness and future prosperity. (Department of Environmental Affairs (2015). EIA Guideline for Renewable Energy Projects. Department of Environmental Affairs, Pretoria, South Africa)

With the current situation of unreliable electricity provision in the Country, the Applicant has opted for the option of providing his own Electricity, thus ensuring a steady flow of electricity for his operations. In providing off-grid, renewable Electricity, the Applicant is also decreasing his Ecological footprint as he will not be using Electricity that has been generated from unrenewable energy sources.

Sheep Feedlot

The Sheep Feedlot will be designed for 10 880 head of sheep. Currently, only 24 sheep can be raised on the entire development site, as the area is very dry. The intensification of the Agricultural potential of the site is a huge advantage as the production capacity of the site will be raised from 24 to 10 880 head of sheep. This operation will also result in an additional 10 employment opportunities that will be generated.

Treatment Facilities

In order to treat the manure and the carcasses that will originate from the Sheep Feedlot the construction of three Sedimentation ponds, two Evaporation ponds and a Manure Composting area is proposed. The need for these activities lies in the fact that in order to ensure that the proposed development does not cause any harm to the Environment, potential pollution has to be curbed. The purpose of the sedimentation system is to remove settleable solid material from the feedlot runoff and prevent it from entering the evaporation ponds. The Evaporation pond is sized based on calculation of the annual water balance (Annual Rainfall versus Evaporation Statistics) and is designed to contain the runoff/ effluent from the feedlot site.

The manure composting area will have a concrete base and will be able to accommodate the composting activities. The composting facility will generate additional income as the compost will be sold, thus ensuring that a potential source of pollution has been processed to a usable product.

Consistent with national priorities, environmental authorities must support *"increased economic growth and promote social inclusion",* whilst ensuring that such growth is *"ecologically sustainable".* In the National Spatial Development Perspective (NSDP) it is highlighted that, to achieve the goal of stimulating sustainable economic activities and to create long-term employment opportunities, it is required that spending on economic infrastructure is focused in priority areas with potential for economic development, with development to serve the broader societies' needs equitably.

7. ALTERNATIVES

One of the objectives of an EIA is to investigate alternatives to the proposed project. The IEM procedure stipulates that the environmental investigation needs to consider feasible alternatives for any proposed development. Therefore, a number of possible proposals or alternatives for accomplishing the same objectives should be identified and investigated. In order to ensure that the proposed development enables sustainable development, feasible alternatives must be explored (S. Cliff, 2015).

The identification, description, evaluation and comparison of alternatives are important for ensuring a sound environmental scoping process. Alternatives should be considered as a norm within the Environmental Process (S. Cliff, 2015).

There are two types of alternatives: Fundamental Alternatives and Incremental Alternatives.

7.1 Fundamental Alternatives

Fundamental alternatives are developments that are totally different from the proposed project description and usually include the following:

- Alternative property or location where it is proposed to undertake the activity.
- Alternative type of activity to be undertaken.
- Alternative technology to be used in the activity.

7.2 Incremental Alternatives

Incremental alternatives relate to modifications or variations to the design of a project that provide different options to reduce or minimise environmental impacts. There are several incremental alternatives that can be considered with respect to the proposed development, including:

- Alternative design or layout of the activity.
- Alternative operational aspects of the activity.

7.3 No-Go alternative

The EIA process is obligated to assess the status quo (i.e. the "No-Go" option). The No-Go alternative provides the assessment with a baseline against which predicted impacts resulting from the proposed development may be compared. A "No-Go" alternative has been assessed for the proposed development.

7.4 Alternative operational aspects of the activity

7.4.1 Sheep Feed lot Mortality – Biomass Waste Disposal

A predicted mortality rate of 2 sheep / day should be considered whereby each sheep could have a maximum estimated mass of 75kg. Therefore, an anticipated mass of 150kg / day will be considered when selecting a desired disposal process.

Alternatives are being investigated based on these predictions and the following options can be considered for the carcass disposal:

7.4.1.1 Manure Composting (Alternative 1)

Carcasses will be disposed into the manure composting area, whereby it will take approximately 5-6 months to decompose, per carcass, with respect to mass.

Advantages

Composting adds value to the carcass as it can be sold as compost.

7.4.1.2 Incineration plant (Alternative 2)

The incineration process neutralises the danger of possible ground water pollution and converts the post-incineration residue into a sterile, easily disposable by-product which can be re-used.

The incineration units will be sized based on the above-mentioned mortality rate requirement for the site. The units are powered by either Diesel or Gas. In this instance, the viable option would be to adopt a diesel-operated unit due to the proposed diesel tank bunker facility located in the feed mill area of the site, and for efficient access. The stored diesel would be pumped into smaller tanks and transported via trucks to the Incineration facility, located near the manure composting area of the site.

Disadvantages

The incineration process causes air pollution and a licence will have to be obtained for this process. It will also require long-term external auditing that will render this option not viable in the long run.

7.4.1.3 Mortality pit (Alternative 3)

A mortality pit entails the construction of a sealed container (normally an underground bunker) that the carcasses are disposed in.

Disadvantages

It is envisaged that with a feedlot of this scale, the mortality pit will not be viable, as it will have to have a very large capacity.

7.4.1.4 No-go Alternative

The No-go Alternative has been considered for the proposed development as a whole. Should this Alternative be implemented the status quo will prevail and none of the advantages as listed in the “Need and desirability” section of this report will realise.

7.4.1.5 Waste to Energy (Alternative 5)

This Alternative entails the installation of a solid waste steam generator and/or a Compressed Natural Gas plant.

Advantages:

Waste that would have ended up in the Municipal waste stream will be utilised for the generation of energy. Steam would be generated by means of burning of waste.

Development operations can affect air quality through emissions of gasses (ammonia and hydrogen sulphide), particulate matter (PM), volatile organic compounds (VOC), hazardous air pollutants, microorganisms, and odour. Animal Feeding Operations also produce gasses (carbon dioxide and methane) that are associated with climate change. Should a Compressed Natural Gas plant be installed, the impact of this variable on the Environment will be minimized. The generation of Compressed Natural Gas could be an additional source of income for the Development.

Disadvantages:

1. The volume of solid waste generated by the feed mill is low. Due to low volume this was not considered as boiler feed stock.
2. The feedlot is relatively small and the stormwater containment dams is not considered a viable source of energy (methane gas).
3. The cost of installing the above mentioned technology alternatives will not justify the income generated as a result of these installations as the volumes produced by the proposed development is too low.

8. DESCRIPTION OF THE ENVIRONMENT THAT MAY BE AFFECTED BY THE PROJECT

8.1 BIO-PHYSICAL ASPECTS

8.1.1 GEOLOGY AND SOIL

Referral to the geological map (1992 sheet 3124 Middelburg; 1:250 000 series) indicates that the entire area is underlain by rocks of the Karoo Supergroup comprising sedimentary rocks of the Permian Balfour Formation of the Adelaide Subgroup of the Beaufort Group, which comprises mainly mudrock and sandstone (Figure 12), and in turn are overlain by Quaternary calcrete and alluvial sediments.

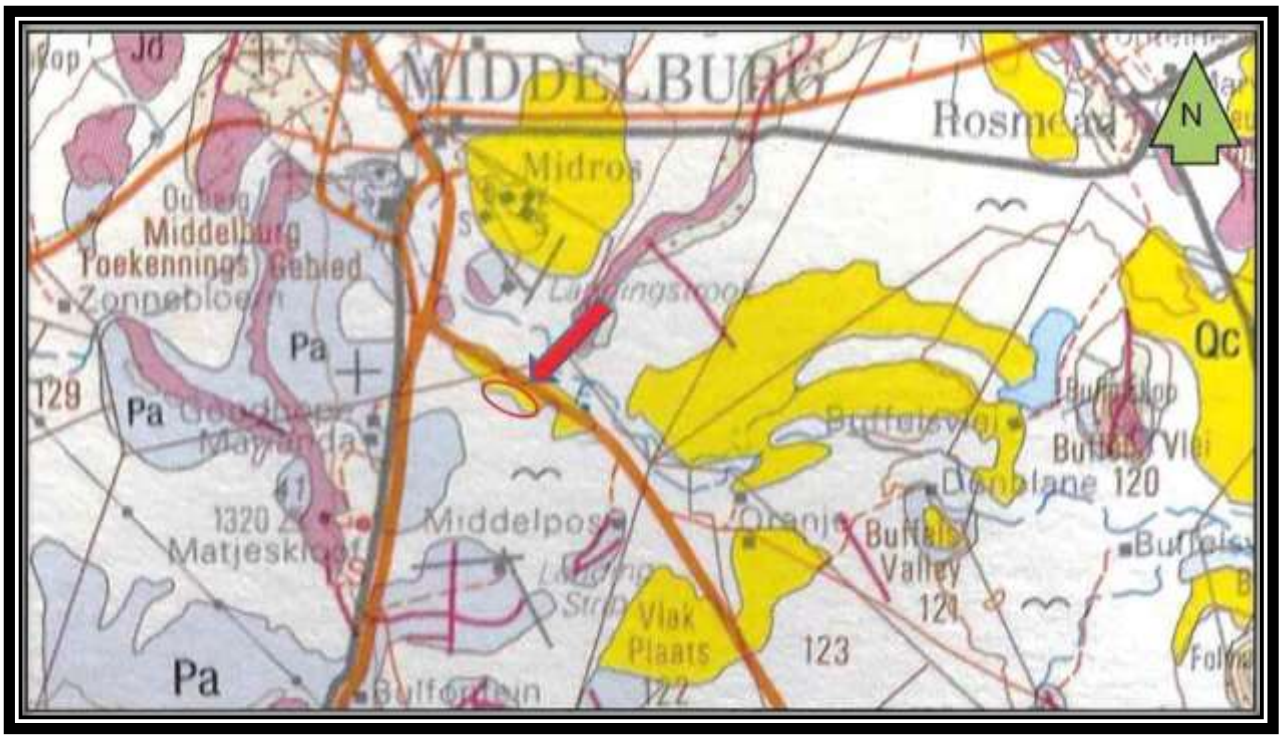


Figure 12: Extract from the 1:25 000 scale geological map 3124 Middelburg

According to the 1:250 000 scale geological map 3124 Middelburg, the site is underlain by calcrete (symbol ***Qc*** in dark yellow), and alluvium and colluvium (symbol in light yellow). Other geological formations around the site but not shown to directly underly the site include ***Jd*** in purple (intrusive dolerite formations), and ***Pa*** in light blue (red, purple and grey mudstone with subordinate sandstone).

According to the geo-technical study that was conducted by Southern Geotechnical Engineering, the site is underlain by a relatively uniform soil profile. All test pits were stopped within transported soils (pedogenic, colluvlum and alluvium). None of the test pits encountered residual soils or bedrock formations. The following soil layers were identified within the test pit excavations:

TOPSOIL WITH PLANT ROOTS:
Encountered at all 12 test pits as a thinnish surface layer.
Layer thickness:Min. 0.1m;Average 0.33m; Max. 0.4m.
Typically described as: *Dry to slightly moist, pale orange brown, loose to medium dense, cracked, slightly voided, clayey SAND containing fine plant and grass roots.*

COLLUVIUM:
Encountered at 6 of the 12 test pits as a relatively thick, near surface soil layer.
Layer thickness: Min. 1.5m; Average 2.3m; Max.2.6m.
Typically described as: *Dry to slightly moist1 pale light orange to pinkish brown slightly blotched off white, loose, voided, fine, slightly silty fine sand with occasional soft calcareous nodules and gravels.*

PEDOGENIC CALCRETE:
Encountered at 4 of the 12 test pits as a relatively thick, near surface soil layer.
Layer thickness: Min. 1.0m; Average 2.2m; Max. More than 2.5m.
Typically described as: *Dry to slightly moist, pale light orange to reddish brown blotched off white, medium dense to dense with depth, soft, calcareous gravels and small nodules in a fine sandy matrix.*

LACUSTRINE DEPOSITS:
Coinciding with the *'pad* areas.
Encountered at 3 of the 12 test pits from surface (DH 05, DH 11 and DH 12).
Layer thickness extends from surface to maximum depth reach of **TLB** and deeper.
Typically described as: *Dry to slightly moist, pale light orange brown, slightly blotched off white, 'firm to 'stiff, silty/sandy clay with some soft calcareous nodules and gravels;*

ALLUVIUM:
Encountered at 2 of the 12 test pits at depth (bases of Test Pits DH 06 and DH 09), underlying colluvium and pedogenic soils.
At Test pit DH 02 alluvium was encountered as two thin 'lenses' of granular material.
Min. depth to 1.1m (thin 'lens'); Max. depth to 4.0m.
Typically encountered as either loosely packed rounded pebbles and cobbles in a coarse, clean sandy matrix (DH02 and DH06), or a clean sand **(DH** 09)

8.1.2 TOPOGRAPHY

The topography of the study area is flat with no rocky outcrops, ridges or hills. The highest elevation on site is found in the north-west at 1 231 meters above sea lea level and the lowest elevation is located along the eastern boundary at 1 225 meters above sea level. Remnants of a partially completed cricket pitch is situated towards the north-west while an old furrow runs through the center of the site, from north to south. The remainder of the study area is almost devoid of structural development, apart from a few old golf tees, golf greens, broken up concrete slabs, partially backfilled excavations and disturbed surfaces associated with old golf fairways.

A detailed site survey has been carried out to establish levels. The Engineering report and the Layout plan addresses issues regarding storm water.

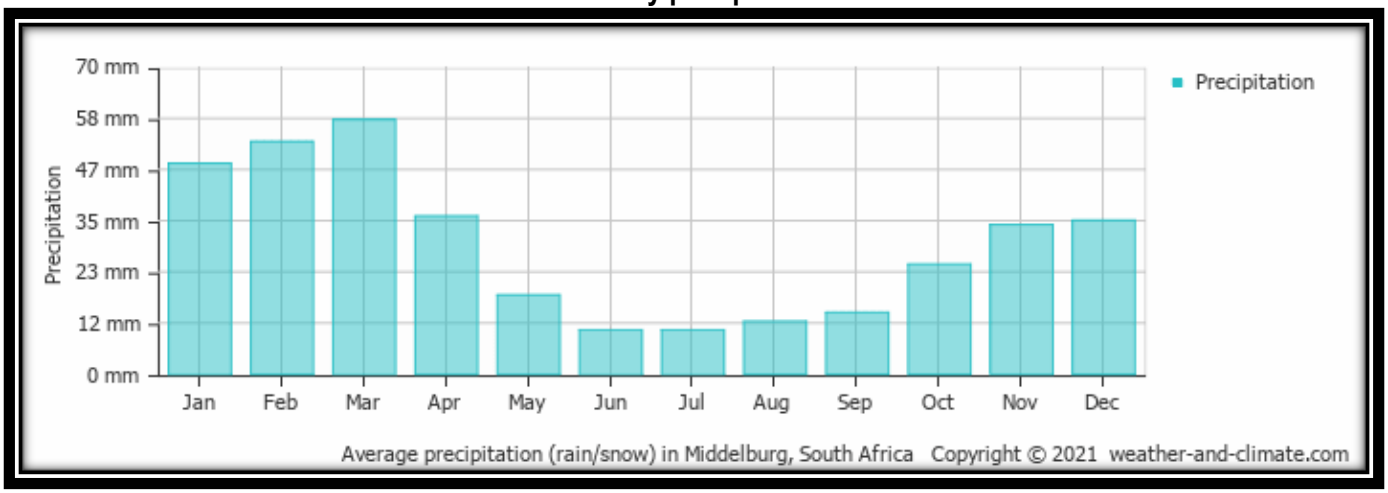
8.1.3 CLIMATE

The prevailing climate in Middelburg is known as a local steppe climate. There is not much rainfall in Middelburg all year long. The Köppen-Geiger climate classification is BSk. The average annual temperature is 15.9 °C. About 461 mm of precipitation falls annually. In the discussion of this variable, certain aspects of rainfall, humidity, temperature and monthly Hours of sunshine that can influence the project will be highlighted.

8.1.3.1. Rainfall

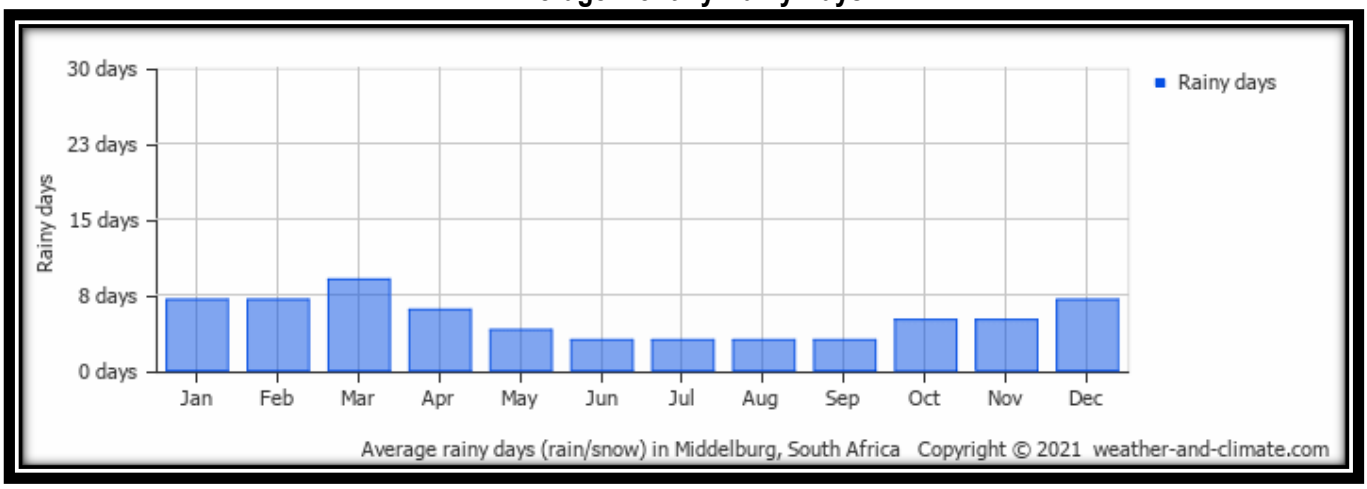
Middelburg has dry periods in May, June, July, August, September and October. On average, March is the wettest month while, on average, July is the driest month. The average amount of annual precipitation is: 353.0 mm.

Monthly precipitation



Source: 2010-2021 World Weather & Climate Information (https://weather-and-climate.com/average-monthly-Rainfall-Temperature-Sunshine,middelburg,South-Africa.)
(Date visited: 12/07/2021)

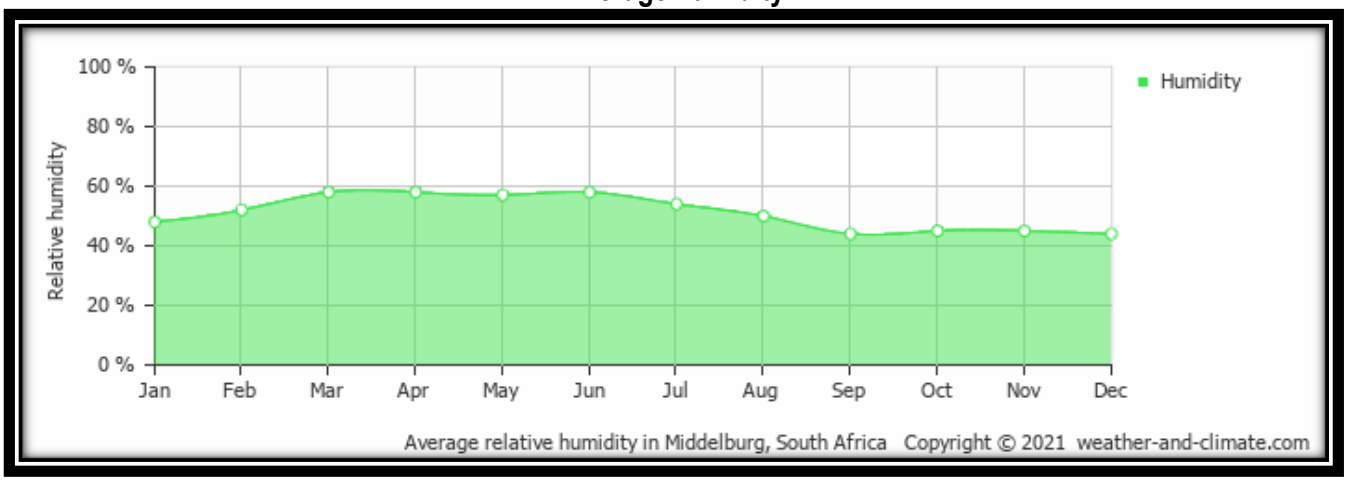
Average Monthly Rainy Days



Source: 2010-2021 World Weather & Climate Information (https://weather-and-climate.com/average-monthly-Rainfall-Temperature-Sunshine,middelburg,South-Africa.)
(Date visited: 12/07/2021)

On average, March is the rainiest and August has the least rainy days. The average annual amount of rainy days is: 62.0 days; On average, April is the most humid and September is the least humid month. The average annual percentage of humidity is: 51.0%.

Average humidity

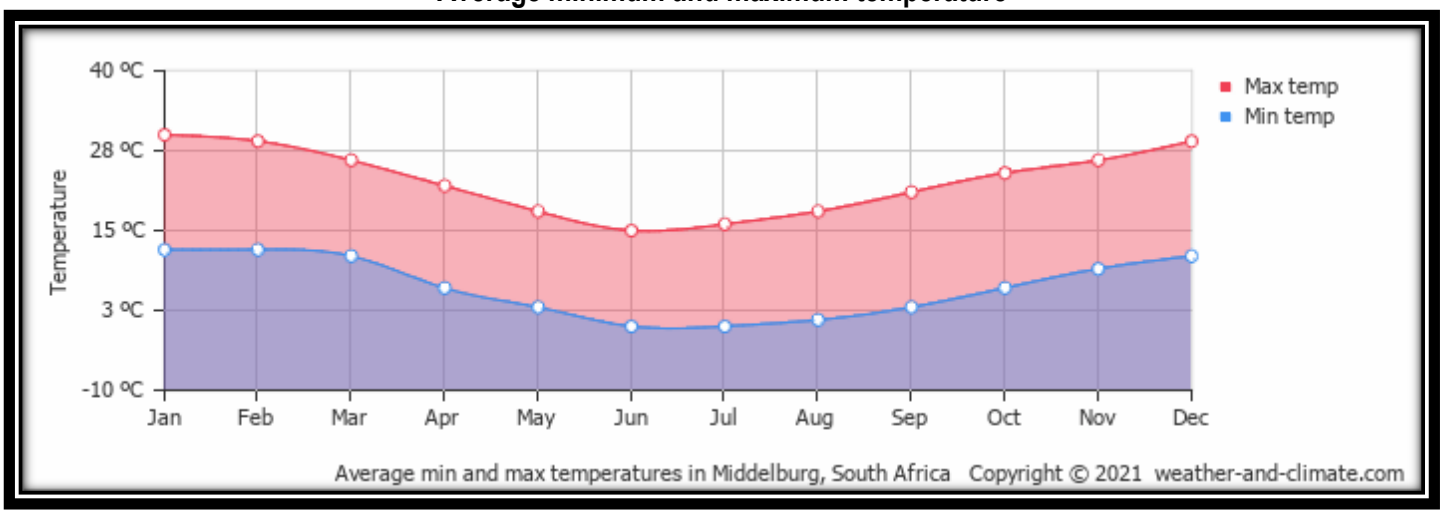


Source: 2010-2021 World Weather & Climate Information (https://weather-and-climate.com/average-monthly-Rainfall-Temperature-Sunshine,middelburg,South-Africa.)
(Date visited: 12/07/2021)

8.1.3.2. Temperature

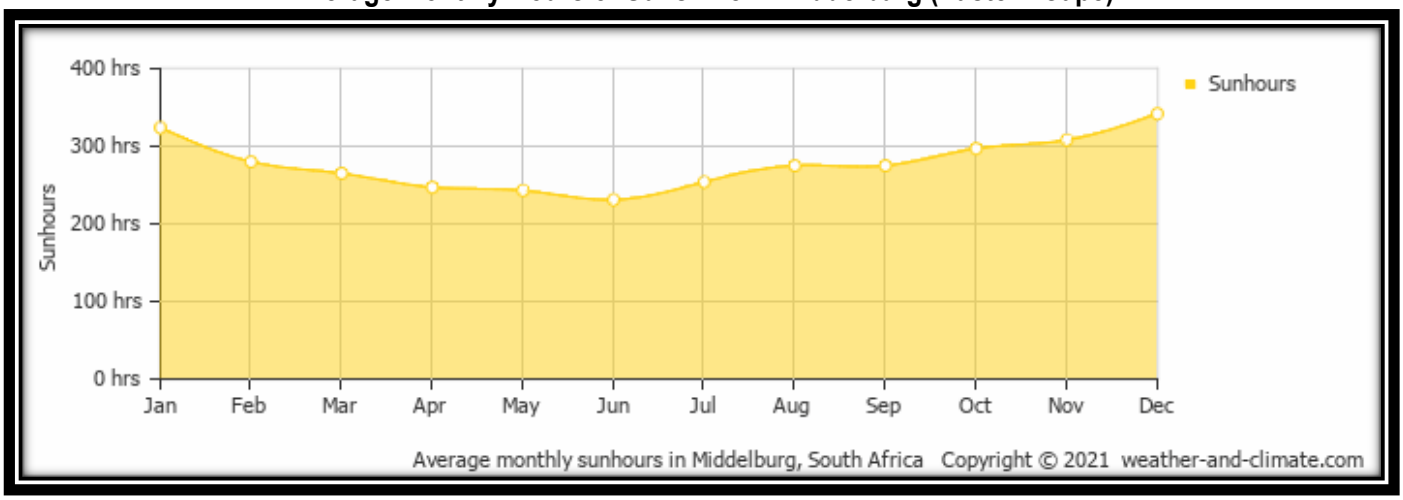
The warmest months are January, February and December. On average, the warmest month is January and the coolest month is June. The average annual maximum temperature is: 23.0° Celsius and the average annual minimum temperature is: 6.0° Celsius.

Average minimum and maximum temperature



Source: 2010-2021 World Weather & Climate Information (https://weather-and-climate.com/average-monthly-Rainfall-Temperature-Sunshine,middelburg,South-Africa.)
(Date visited: 12/07/2021)

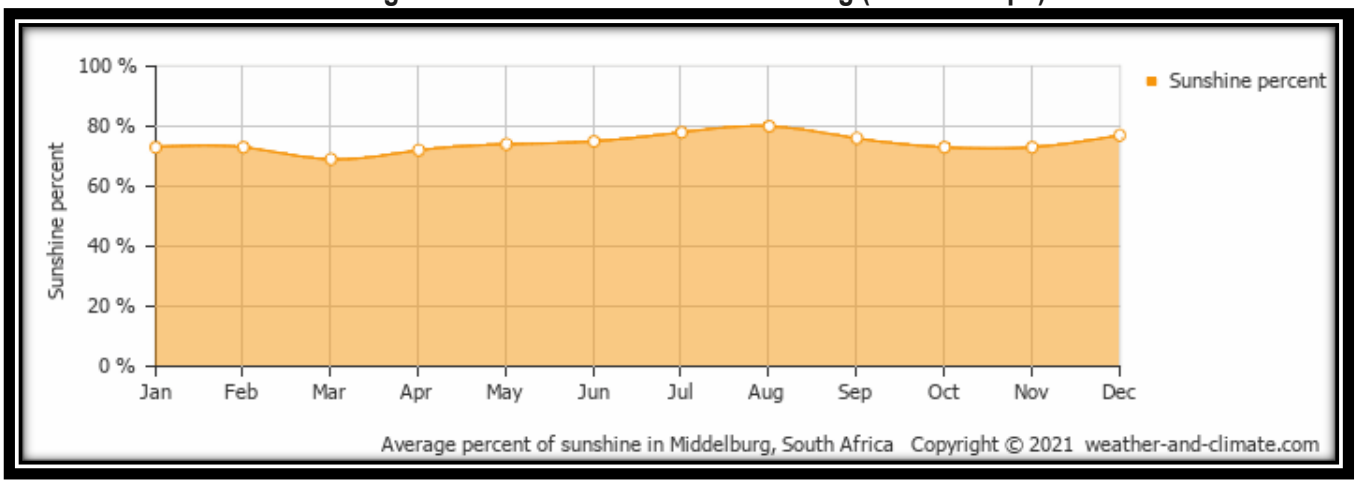
Average Monthly Hours of Sunshine in Middelburg (Eastern Cape)



Source: 2010-2021 World Weather & Climate Information (https://weather-and-climate.com/average-monthly-Rainfall-Temperature-Sunshine,middelburg,South-Africa.)
(Date visited: 12/07/2021)

- On average, December is the most sunny.
- On average, June has the lowest amount of sunshine

Average Percent of Sunshine In Middelburg (Eastern Cape)



Source: 2010-2021 World Weather & Climate Information (https://weather-and-climate.com/average-monthly-Rainfall-Temperature-Sunshine,middelburg,South-Africa.)
(Date visited: 12/07/2021)

- On average, August is the most sunny.
- On average, March has the lowest amount of sunshine.

Climate Change

According to: WIREs Climate Change 2014, 5605-620. Doi:10.1002/wcc.295: "Climate change is a key concern within South Africa. Mean annual temperatures have increased by at least 1.5 times the observed global average of 0.65∘C over the past five decades and extreme rainfall events have increased in frequency. These changes are likely to continue. Climate change poses a significant threat to South Africa's water resources, food security, health, infrastructure, as well as its ecosystem

services and biodiversity. Considering South Africa's high levels of poverty and inequality, these impacts pose critical challenges for national development. In relation to water, impact studies for the water resources sector have begun to look beyond changes in streamflow to changes in the timing of flows and the partitioning of streamflow into base flows and stormflows, reservoir yields, and extreme hydrological events. Spatially the eastern seaboard and central interior of the country are likely to experience increases in water runoff. Higher frequencies of flooding and drought events are projected for the future. Complexities of the hydrological cycle, influences of land use and management and the linkages to society, health, and the economy indicate far higher levels of complexity in the water resources sector than in other sectors. What has emerged is that land uses that currently have significant impacts on catchment water resources will place proportionally greater demands on the catchment's water resources if the climate were to become drier. The influence of climate change on water quality is an emerging research field in South Africa, with assessments limited to water temperature and non-point source nitrogen and phosphorus movement. A critical interaction that has not been explored is between changes in water quality and quantity and the combined impacts, such changes might have impact on various types of water use, e.g., irrigation, domestic consumption, or aquatic ecosystems support".

Water availability and demand has been calculated by the consulting Civil Engineers, to enable a sustainable development.

"Animal Feeding Operations also produce gases (carbon dioxide and methane) that are associated with climate change. In December 2015, 196 Parties to the U.N. Framework Convention on Climate Change (UNFCCC) adopted the Paris Agreement, a legally binding framework for an internationally coordinated effort to address climate change. It aims to hold the rise in global average temperature by 2100 to well below 2°C above pre-industrial levels. Researchers are assessing how much mitigation will be needed by various sectors worldwide to meet the global target, including how much mitigation is feasible.

Because livestock emissions are estimated to represent 14.5% of anthropogenic GHG emissions globally, it is generally acknowledged that the livestock sector plays an important role in climate change. How much of a role the sector can play in attaining the global target of the Paris Agreement is unknown for now, especially in view of projections that worldwide livestock production will increase by about 70% between 2010 and 2050 to meet growing demand, especially in developing countries.

Research has identified a range of Green House Gasses mitigation options for the livestock sector. A number of approaches are believed to be promising, but no single option has "hit the sweet spot" of reducing emissions dramatically while not harming animals or dampening production of farms and ranches. Adoption of more efficient technologies and practices is key to reducing emissions. Possible technologies and practices include the use of better quality feed and feed balancing to lower enteric and manure emissions. Manure management practices can assist in recovery and recycling of nutrients and energy. Technologies such as feeding additives, vaccines that reduce the microorganisms that produce methane, and genetic selection methods are believed to have potential to reduce emissions but require further development. Some believe that reducing the livestock sector's contribution to climate change, while also ensuring that nutritional security and health needs are supported, is an urgent global research and investment priority." (Source: EveryCRSReport.com, University of North Texas Libraries Government Documents Department Raw Metadata: JSON).

8.1.4 SURFACE DRAINAGE AND WETLANDS

The area lies within the drainage basin of the Klein-Brakrivier that is located approximately 350m north of the site. Site is part of the Fish to Tsitsikamma Water Management Area (WMA 15). The site is not part of a Freshwater Ecosystem Priority Area (FEPA) and also not part of a wetland cluster (Nel *et al.*, 2011a, 2011b). Wetlands such as floodplain wetlands, channelled valley-bottom wetlands, unchannelled valley-bottom wetlands, depressions, seeps and wetland flats appear to be absent at the site. No wetlands are found at the site and plate flow is the dominant drainage pattern.

There is a furrow that was used (Prior to 1990) to divert water that overflowed from a reservoir that was build in the Klein Brak River towards a farm dam that is situated south west of the proposed development. Since the dam wall of the reservoir was broken down in the early 1990's there has been no water in the furrow and this structure has become redundant. See Photograph 17 and Photograph 18. The servitude that was registered for this furrow has also since been cancelled.

Large bare areas are present where signs of sheet erosion are visible. Signs of excavations or scraping of extensive areas are noticeable, despite substantial rainfall of the summer season. A number of pioneer and alien plant species that are conspicuous may also be reflection of possible "harsh soil conditions" and/or disturbances of the past. The 1:50 000 Topographical map of the area indicates that these areas are "eroded areas".

Photograph 17: Soil sample at a furrow at the site. The furrows at the site appear to be dysfunctional at present.
Photo: R.F. Terblanche.

Photograph 18 Soil at bare area where erosion and poor recovery of vegetation are visible, at the site.
Photo: R.F. Terblanche

8.1.5 GROUND WATER

No groundwater was encountered during the geo-technical investigation and as such the depth to the permanent ground water level is unknown. However, it is considered unlikely that any groundwater will be encountered to a minimum depth of 3.0m to 4.0m below current ground levels. Test pit excavation DH 09 also did not encounter groundwater in the upper 4.0m of the soil profile.

Possible infiltration into the groundwater have been taken into account. During the construction phase, no spills of lubricants or construction worker sewage should be allowed to pollute the ground water. Special care must be taken to ensure adequate surface drainage to prevent the accumulation of water next to structures, especially within these relative flat areas.

8.1.6 FAUNA AND FLORA

Site is part of the Nama-Karoo Biome which is represented by the Eastern Upper Karoo vegetation type (Mucina & Rutherford 2006).

To serve as local context for the landscape and vegetation at the site an outline of the Eastern Upper Karoo (NKu 4) from Mucina and Rutherford (2006) follows.

NKu 4 Eastern Upper Karoo

Distribution: Eastern Upper Karoo is present in parts of the Northern Cape Province, Eastern Cape Province and Western Cape Province. Eastern Upper Karoo is located between the towns of Carnarvon and Loxton in the west, De Aar, Petrusville and Venterstad in the north, Burgersdorp, Hofmeyr and Cradock in the east and the Great Escarpment and the Sneeuberge-Coetzeesberge mountain chain in the south. Altitude varies mostly between 1000 – 1700 m (Mucina & Rutherford, 2006).
Vegetation and landscape features: Flats and gently sloping plains (interspersed with hills and rocky areas of Upper Karoo Hardeveld in the west, Besemkaree Koppies Shrubland in the northeast and Tarkastad Montane Shrubland in the southeast),

dominated by dwarf microphyllus shrubs, with "white" grasses of the genera *Aristida* and *Eragrostis* (these become prominent especially in the early autumn months after good summer rains). The grass cover increases along a gradient from southwest to northeast (Mucina & Rutherford, 2006).
Geology and soils: Mudstones and sandstones of the Beaufort Group (including both Adelaide and Tarkastad Subgroups) supporting duplex soils with prismacutanic and/or pedocutanic diagnostic horizons dominant (Da land type) as well as some shallow Glenrosa and Mispah soils (Fb and Fc land types). In places, less prominent Jurassic dolerites (Karoo Dolerite Suite) are also found (Mucina & Rutherford, 2006).
Climate: Rainfall takes place mainly in autumn and summer, peaking in March. Mean Annual Precipitation (MAP) ranges from about 180 mm in the west to 430 mm in the east. Incidence of frost is relatively high, but ranging widely from <30 days (in the lower-altitude Cradock area) to >80 days of frost per year (bordering the Upper Karoo Hardeveld on the Compassberg and mountains immediately to the west) (Mucina & Rutherford, 2006).
Important taxa. Tall shrubs: *Lycium cinereum*, *Lycium horridum*, *Lycium oxycarpum*. Low shrubs: *Chrysocoma ciliata*, *Eriocephalus ericoides* subsp. *ericoides*, *Eriocephalus spinescens*, *Pentzia globosa*, *Pentzia incana*, *Phymaspermum parvifolium*, *Salsola calluna*, *Aptosimum procumbens*, *Felicia muricata*, *Gnidia polycephala*, *Helichrysum dregeanum*, *Helichrysum lucilioides*, *Limeum aethiopicum*, *Nenax microphylla*, *Osteospermum leptolobum*, *Plinthus karooicus*, *Pteronia glauca*, *Rosenia humilus*, *Selago geniculata*, *Selago saxatilis*. Succulent shrubs: *Euphorbia hypogaea*, *Ruschia intricata*. Herbs: *Indigofera alternans*, *Pelargonium minimum*, *Tribulus terrestris*. Geophytic herbs: *Moraea pallida*, *Moraea polystachya*, *Syringodea bifucata*, *Syringodea concolor*. Succulent herbs: *Psicaulon coriarium*, *Tridentea jucunda*, *Tridentia virescens*. Graminoids: *Aristida congesta*, *Aristida diffusa*, *Cynodon incompletus*, *Eragrostis bergiana*, *Eragrostis bicolor*, *Eragrostis lehmanniana*, *Eragrostis obtusa*, *Sporobolus fimbriatus*, *Stipagrostis ciliata*, *Tragus koelerioides*, *Aristida adscensionis*, *Chloris virgata*, *Cyperus usitatus*, *Digitaria eriantha*, *Enneapogon desvauxii*, *Enneapogon scoparius*, *Eragrostis curvula*, *Fingerhuthia africana*, *Heterpogon contortus*, *Sporobolus ludwigii*, *Sporobolus tenellus*, *Stipagrostis obtusa*, *Themeda triandra* and *Tragus berteronianus*.

Note: Though some plant species of the above listed vegetation types are present at the site, not necessarily all of the plant species listed above are present at the site.

Large parts of vegetation at the site have been transformed or modified. Remaining vegetation is mainly karroid with few individual trees. Exotic trees or alien invasive trees occur at the golf course section with its associated infrastructure as well as at some other parts of the site. The alien invasive succulent *Cylindropuntia imbricata* occurs at some parts of the site.

Fairly large covers of the alien invasive herb *Atriplex lindleyi* are conspicuous at areas where the soil have been exposed in the past. Tall shrubs include the indigenous *Lycium cinereum*, *Lycium horridum* and *Hertia pallens* as well as the exotic *Atriplex nummularia*. Low shrubs include *Salsola tuberculata*, *Salsola calluna, Eriocephalus ericoides* subsp. *ericoides*, *Pentzia incana, Chrysocoma ciliata*, *Aptosimum spinescens, Aptosimum procumbens*, *Ruschia intricata*, *Osteospermum leptolobum*, *Pteronia glauca* and *Rosenia humilus*. Conspicuous indigenous grass species at the site are *Eragrostis lehmanniana*, *Aristida congesta*, *Eragrostis obtusa*, *Tragus berteronianus*, *Enneapogon desvauxii* and *Stipagrostis uniplumis*. Few indigenous trees are found at the site which include *Searsia lancea* and *Vachellia karroo*.
Alien invasive tree species at the site include *Schinus molle*, *Eucalyptus camaldulensis*, *Agave americana* and *Ligustrum lucidum*.

Some of the alien invasive weed species at hirtherto bare ground or ecologically disturbed areas at the site are *Salsola kali*, *Argemone ochroleuca*, *Chenopodium album*, *Alternanthera pungens*, *Datura ferox* and *Senecio inaequidens.*

Old furrows which do not appear to have a significant function currently are present at the site.

Large bare areas are present where signs of sheet erosion is visible. Signs of excavations or scraping of extensive areas are noticeable despite a “good rainy season”. A number of pioneer and alien plant species that are conspicuous may also be reflection of possible “harsh soil conditions” and/or disturbances of the past. Rocky ridges and wetlands appear to be absent at the site.

Photograph 19. Tall shrubs in the picture are the exotic *Salsola nummularia*.
Photo: R.F. Terblanche

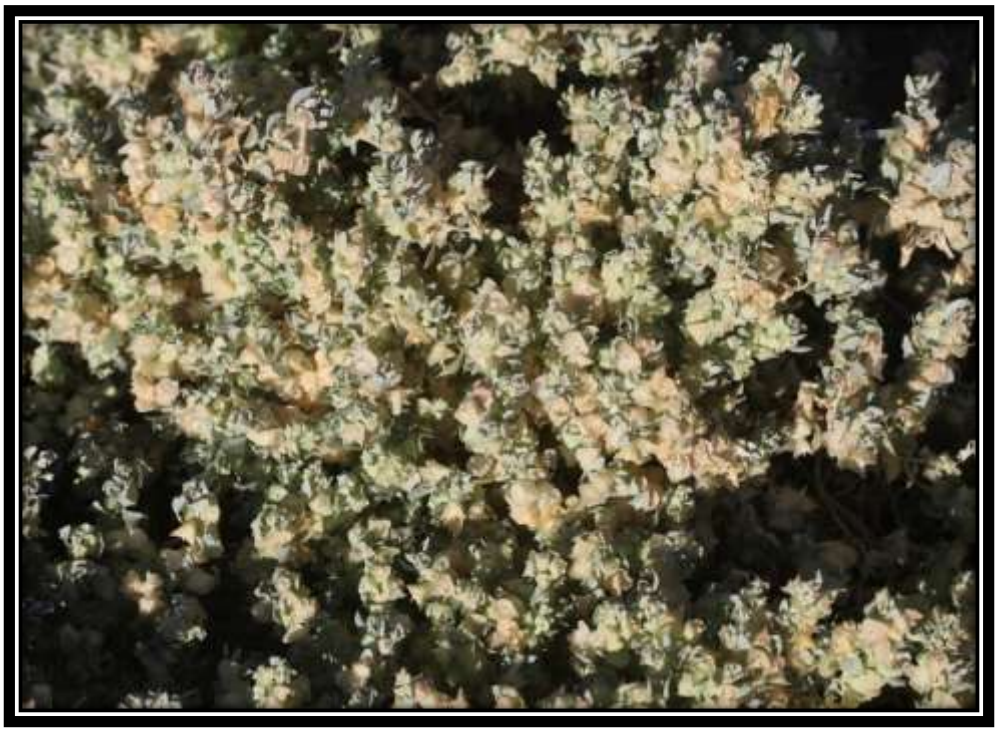
Photograph 20: The succulent shrub in the picture is the alien invasive *Cylindropuntia imbricata*.

Photo: R.F. Terblanche

Photograph 21: Vegetation and exposed soil adjacent to the old furrow at the site.
Photo: R.F. Terblanche

Photograph 22 Foliage of the alien invasive tree species *Schinus molle* at the site.
Photo: R.F. Terblanche

Photograph 23 The exotic shrub *Salsola nummularia* at the site.
Photo: R.F. Terblanche



Photograph 24 Alien invasive weed *Atriplex lindleyi* at the site.
Photo: R.F. Terblanche

Photograph 25: Foliage and flowers of the indigenous shrub *Lycium cinereum*, at the site.
Photo: R.F. Terblanche

Photograph 26 The indigenous shrub *Eriocephalus ericoides* at the site.
Photo: R.F. Terblanche.

Photograph 27 The indigenous shrub *Hertia pallens* at the site.
Photo: R.F. Terblanche

Site specific indications of sensitivity from the SANBI EIA Screening Tool for relative plant species theme sensitivity indicates a low sensitivity for the entire site.

The indications of sensitivity from the SANBI EIA Screening Tool for relative animal species theme sensitivity indicates a very high sensitivity for the entire site. This very high sensitivity indication is owing to the distribution range of the bird species *Neotis ludwigii* (Ludwig's Bustard). Ludwig's Bustard is a large bird and a nomad and partial migrant. Though Ludwig's Bustard roams over large areas and a visit by this large bird to the site cannot be totally excluded, the site does not appear to be a habitat of particular importance to this bird species. The local animal theme sensitivity of the specific site is probably low.
Indications of sensitivity from the SANBI EIA Screening Tool for relative terrestrial biodiversity indicates a low sensitivity for the entire site.

A low sensitivity from the SANBI EIA Screening Tool for relative aquatic biodiversity is indicated.

The findings of the habitat survey at the site also suggest that a low sensitivity for the biodiversity themes at the site is likely. No Threatened or Near Threatened plant or animal species appear to be resident at the site. No other plant or animal species of particular conservation concern appear to be present at the site.The scope for the site to be part of a corridor of particular conservation importance is small.

Ecological sensitivity at most of the site is currently low and at some parts, medium. See Figure 13. Following the mitigations which will be upheld, all the impact risks listed are considered to be moderate or low.

Establishment of exotic weeds should be monitored and exotic weeds at the site should be eradicated. A declared invader such as the mesquite tree (*Prosopis* species), should not be planted or allowed to spread from adjacent areas to the proposed footprint.

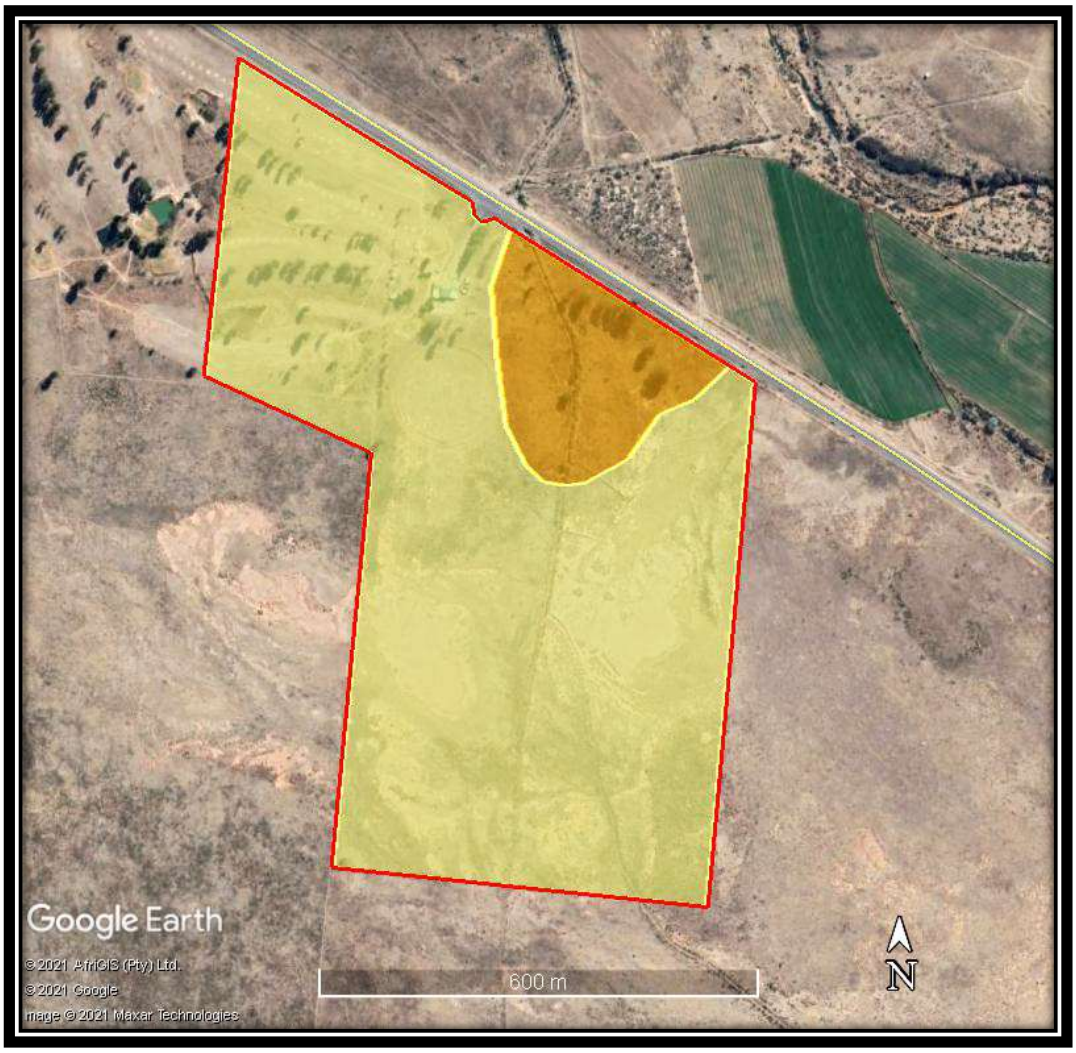


Figure 13: Indications of ecological sensitivity at the site.

Red outline	Boundaries of the site
Light yellow outline and shading	Low Sensitivity
Orange outline and shading	Medium-low Sensitivity

8.2 SOCIO ECONOMIC FACTORS

8.2.1 SOCIAL AMENITIES

The National Development 2030 mentions that South Africa can eliminate poverty and reduce inequality by 2030 and this will require change, hard work, leadership and unity. Its goal is to improve the life chances of all South Africans, but particularly those young people who presently live in poverty. The plan asks for a major change in how government in general go about their lives. In the past, we expected government to do things for us. What South Africa needs is for all of us to be active citizens and to work together – government, **business**, communities – so that people have what they need to live the lives they would like.

The White Paper on Local Government1 (1998) introduces the concept of "developmental local government" which is defined as: "Local government committed to working with citizens and groups within the community to find sustainable ways to meet their social, economic and material needs, and improve the quality of their lives." However, the same document makes it clear that:

"Local Government is not directly responsible for creating jobs. Rather, it is responsible for taking active steps to ensure that the overall economic and social conditions of the locality are conducive to the creation of employment opportunities."

The Chris Hani District Municipality developed and adopted a District Development Agenda that focuses on the development of all its Six Local Municipalities through the identification of competitive advantages of its local municipalities. This was later translated into an **Agro Industrial Plan** that has been used as a springboard to the proposed Special Economic Zone.

The Chris Hani Regional Development Strategy provides focused areas around which resources can be leveraged and mobilised in order to contribute to the broad overall objective of ensuring that all people in the district are able to benefit from the economy. The Competitive Advantage therefore for the district points to the broadly defined **agricultural sector** as the one with the most potential to contribute to job creation, promoting of livelihoods opportunities and contributing to sustained social and economic growth and development.

Whilst crop production and agro-processing sector remain important areas of intervention, the present cost of transport to high volume markets will most likely render local production uncompetitive until substantial economies of scale and consistent quality can be achieved.

Value chain integration implies looking at all the components of a particular sector and subsector and identifying what can be done or put in place to add value to what already exists, and in doing so, promote job creation and provide more livelihood opportunities.

While the districts' agricultural potential is obvious, primary agricultural projects have had a minimal impact on unemployment. This situation necessitates strategies to increase value-added production by exploiting opportunities that exist along the various crop and livestock value chains. (Chris Hani District Municipality 2021-2022 Draft IDP)

Agriculture is one of the main economic sectors within the area. Agricultural activities can be sub-divided into two groups – crop farming and livestock farming. The Applicant has identified gaps in the value chain for both of these economic sectors being Lucerne (Crop farming) and sheep (Livestock farming). It is the intension of the applicant to add value to both of these identified agricultural sectors and in doing so, create jobs and infrastructure. The increased employment in the area during both the construction and operational phase will also result in increased expenditure, which, in addition, will mean that more than just the proposed jobs required for the proposed development will be created due to economic spin-offs that will result.

Feed Mill

Feed mixing, pill making, packaging and ancillary works including grain and feed storage will form part of this operation. Lucerne that is produced extensively in the area and will be used to produce feed, thus adding value to primary products that are produced in the region. Maize that is also produced in the region will also be incorporated into the production process and a limited amount of this produce will also be value added. At full production the Feed Mill will produce 9 000 tons of feed per month and will generate 100 employment opportunities.

Agricultural recreational area

This part of the proposed development will be for Animal display and demonstrations, auctions and ancillary activities and will be Open to the public, thus providing a platform for the people of the region to sell and display their animals and to come together as a community.

Solar Farm

Greenhouse gases (GHG), including CO2 emissions are associated with the conventional provision of energy services and are a major cause of climate change. Globally, coal is the second largest primary energy source used worldwide (preceded by oil), and the first source for power generation. In terms of electricity generation or supply, South Africa is highly dependent on coal-fired power plants and therefore energy supply is carbon dioxide-intensive.

Renewable energy sources play a role in providing energy services in a sustainable manner, and in particular in mitigating climate change. Sustainable energy can be defined as energy that provides affordable, accessible and reliable energy services that meet economic, social and environmental needs within the overall developmental context of society, while recognising equitable distribution in meeting those needs. Sustainable energy is an element of sustainable development that is defined as development that meets the present needs and goals of the population without compromising the ability of future generations to meet theirs. On the overall sustainable development is underpinned by economic development (growth efficiency), social development (culture, heritage, poverty, and empowerment) and environmental development (pollution and natural resources).

The government of South Africa considers the use of renewable energy as a contribution to sustainable development. Sustainable development also implies the provision of electricity and other modern fuels to the commercial and industrial sectors to promote their economic competitiveness and future prosperity. (Department of Environmental Affairs (2015). EIA Guideline for Renewable Energy Projects. Department of Environmental Affairs, Pretoria, South Africa)

With the current situation of unreliable electricity provision in the Country, the Applicant has opted for the option of providing his own Electricity, thus ensuring a steady flow of electricity for his operations. In providing off-grid, renewable Electricity, the Applicant is also decreasing his Ecological footprint as he will not be using Electricity that has been generated from unrenewable energy sources.

Sheep Feedlot

The Sheep Feedlot will be designed for 10 880 head of sheep. Currently, only 24 sheep can be raised on the entire development site, as the area is very dry. The intensification of the Agricultural potential of the site is a huge advantage as the production capacity of the site will be raised from 24 to 10 880 head of sheep. This operation will also result in an additional 10 employment opportunities that will be generated.

Treatment Facilities

In order to treat the manure and the carcasses that will originate from the Sheep Feedlot the construction of three Sedimentation ponds, two Evaporation ponds and a Manure Composting area is proposed. The need for these activities lies in the fact that in order to ensure that the proposed development does not cause any harm to the Environment, potential pollution has to be curbed. The purpose of the sedimentation system is to remove settleable solid material from the feedlot runoff and prevent it

from entering the evaporation ponds. The Evaporation pond is sized based on calculation of the annual water balance (Annual Rainfall versus Evaporation Statistics) and is designed to contain the runoff/ effluent from the feedlot site.

The manure composting area will have a concrete base and will be able to accommodate the composting activities. The composting facility will generate additional income as the compost will be sold, thus ensuring that a potential source of pollution has been processed to a usable product.

Consistent with national priorities, environmental authorities must support *"increased economic growth and promote social inclusion",* whilst ensuring that such growth is *"ecologically sustainable".* In the National Spatial Development Perspective (NSDP) it is highlighted that, to achieve the goal of stimulating sustainable economic activities and to create long-term employment opportunities, it is required that spending on economic infrastructure is focused in priority areas with potential for economic development, with development to serve the broader societies' needs equitably

During the construction phase, temporary employment will be created. The increased employment in the area during the construction phase will also result in increased expenditure, which, in addition, will mean that more than just the proposed jobs required for the construction on the site will be created due to economic spin-offs that will result.

8.2.2. AIR QUALITY

Animal Feeding Operations can affect air quality through emissions of gases (ammonia and hydrogen sulphide), particulate matter (PM), volatile organic compounds (VOC), hazardous air pollutants, microorganisms, and odour. Animal Feeding Operations also produce gases (carbon dioxide and methane) that are associated with climate change. The generation rates of odour, manure, gases, particulates, and other constituents vary with weather, time, animal species, type of housing, manure handling system, feed type, and management system (storage, handling, and stabilization).

The extent and toxicity of emissions is not necessarily a concise indicator of contributions to ground-level air pollution concentrations or of risks to health and the environment. Such contributions are also a function of the height of emission, temporal variations in the release of pollutants, and the proximity of the source to the people or the environment affected by exposure to the pollutant (such as, for instance, children, or the elderly, or people who are ill, or others who may be particularly sensitive receptors to a specific pollutant above a certain concentration). If an industry is operating close to a school or hospital or centre for the elderly, the potential exposure (in combination with the other contributing factors) is high.

Currently there is little documentation on the composition of sheep manure under dryland conditions. However, the differences between feedlot cattle and sheep manure characteristics are well documented. On a kilo for kilo basis, sheep produce two thirds as much manure; it is drier; has half the concentration of nitrogen, a similar concentration of phosphate and almost twice as much potassium. (Pennsylvania State University 2003). Sheep manure also has half the biochemical demand for oxygen of cattle and a BOD:COD ratio of 7.8% as opposed to 17.4% for cattle (Taiganides 1977).

Sheep manure is difficult to dilute or mix with water, as solids tend to float. Consequently, with the exception of manure from early-weaned lambs on a liquid diet, sheep manure is best handled in solid form (Pennsylvania State University 2003). The comparative dryness of sheep manure is a potential benefit. With good manure management, moisture levels could be kept below 33% where there is no oviposition from any flies or any fly development (Taiganides 1977).

Given the high volumes of pollutants emitted from fuel-burning within the industrial and power-generation sectors, their contribution to ambient concentrations and public health risks is often lower than might be expected. This is because these sources are generally characterized by constant releases, relatively high above ground level, and further away from residential settlements than are household fuel-burning and vehicle emissions.

Ranking the significance of different sources of pollution on the basis of the total emissions for which each source is responsible would, for example, place industrial emissions above household fuel-burning. If the aim is to reduce impacts on human health, however, then household fuel-burning would need to be targeted as a top priority (Scorgie et al., 2004d).

Historically, air pollution control in South Africa has primarily emphasized the implementation of 'command and control' measures in the industrial sector. The shift from source-based control, to the management of the air that people breathe, emphasizes the importance of targeting a wider range of sources and using more flexible and varied approaches. It means paying greater attention to ambient air quality, as it is more important (and more cost-effective, in many cases) to make sure that the ambient air complies with air quality standards. This approach ensures that human and environmental health is protected and that the cumulative impact of pollution from a number of sources is addressed.

Approaches adopted or considered for future implementation have included: regulation (for example, the use of Atmospheric Emission Licences for Listed Activities); market instruments (such as atmospheric user-charges and pollution taxes); the potential for voluntary agreements, education and awareness raising; and emissions trading. International experience shows that adopting a mix of instruments and interventions is more effective than using a single instrument to improve air quality across various types of source. Although direct regulation remains important in controlling industrial sources, there is evidence that specifying emission limits is more effective than specifying the use of particular technologies, so as to give companies flexibility in selecting the method of achieving success that suits them best. This approach is advocated as being more cost-effective and more likely to stimulate technological advances in pollution control methods and production processes.

For large point sources (that is, sources of pollution that are concentrated on one site, but that have large, constant volumes of many types of pollution) that are few in number, instruments such as emissions trading have been advocated as an effective way to manage pollutant emissions and reduce the costs of compliance.

Implementing an efficient social protection system to alleviate poverty is central to maintaining conditions that facilitate not only economic growth but also environmental sustainability. Many South African households – including those with access to electricity – use coal, wood, and paraffin, due to the relative cost-effectiveness of such fuels for heating (that is, space heating) and cooking purposes.
Greenhouse gases (GHG), including CO2 emissions are associated with the conventional provision of energy services and are a major cause of climate change. Globally, coal is the second largest primary energy source used worldwide (preceded by oil), and the first source for power generation. In terms of electricity generation or supply, South Africa is highly dependent on coal-fired power plants and therefore energy supply is carbon dioxide-intensive.

Renewable energy sources play a role in providing energy services in a sustainable manner, and in particular in mitigating climate change. Sustainable energy can be defined as energy that provides affordable, accessible and reliable energy services that meet economic, social and environmental needs within the overall developmental context of society, while recognising equitable distribution in meeting those needs. Sustainable energy is an element of sustainable development that is defined as development that meets the present needs and goals of the population without compromising the ability of future generations to meet theirs. On the overall sustainable development is underpinned by economic development (growth efficiency), social development (culture, heritage, poverty, and empowerment) and environmental development (pollution and natural resources).

The government of South Africa considers the use of renewable energy as a contribution to sustainable development. Sustainable development also implies the provision of electricity and other modern fuels to the commercial and industrial sectors to promote their economic competitiveness and future prosperity. (Department of Environmental Affairs (2015). EIA Guideline for Renewable Energy Projects. Department of Environmental Affairs, Pretoria, South Africa).

Air pollution as a result of steam generation will be a given. The proposed generation of steam falls below the threshold as described in the Air Quality Act (Act 39 of 2004) and no further action will be required for this variable. In addition to the above, it should be noted that the project will however create a certain amount of dust during the construction phase. If proper dust suppression measures are implemented this variable will have very little impact (low in intensity and significance during the construction phase).

8.2.3 NOISE

Increased noise pollution as a result of the operational activities of the feed mill and the sheep feedlot will occur. The proposed development is located more than 2 kilometres away from the nearest residential development. In addition the ambient noise created by the N10 that is located adjacent to site has already disturbed the "rural" character of the area. It is also a fact that a certain amount of noise will be generated during the construction phase of the project. Noise levels should however rarely exceed the allowable limits.

8.2.4 ARCHAEOLOGY AND CULTURAL SITES

Background research indicates that there are some cultural heritage sites and features in the larger geographical area within which the study area falls. A number of archaeological & recent historical sites and features were identified and recorded in the study area during the assessment. The most extensive and significant of these are a number of open-air Stone Age sites with scatters of stone tools and associated material. Some recent historical features recorded include the remnants of an aqueduct (indicated on the 1957 map of Portion 15 of the farm) and possibly associated features and a Cricket field (oval). See Figure 14.

Figure 14: The distribution of sites in the assessment area. The blue line indicates the water furrow; the green polygon is the Cricket Oval; Site 2 is the cement & brick foundation remains associated with the golf course. The

sheet erosion areas in the black polygons show the extent of the areas where the Stone Age open-air scatters were found (Google Earth 2021).

The 1st site is the remains of the old Cricket Oval/field (This is in fact a new cricket ground that was never completed) close to the Golf Club. The site is demarcated by a soil berm. The site is not deemed as historically significant.

The 2nd site recorded is the water furrow. The Phase 1 assessment is seen as sufficient enough documentation. The site used to form part of the Golf course as it used to be an 18 hole course and has since been reduced to a 9 hole course. The structures referred to as site 3 are in all probability old structures associated with this activity (Old tee boxes?). They are nearly completely demolished and the Phase 1 assessment is seen as sufficient enough documentation.

The most significant sites and finds in the area are the open-air scatters of Stone Age material. These sites are characterized by fairly dense scatters of MSA & LSA flakes, cores, flake tools such as blades, scrapers and more formal tools such as points. A scatter of ostrich egg shell fragments was also recorded in one area. These open-air scatters are located in two large sheet erosion areas. The size and density of these Stone Age scatters make these sites highly significant from an Archaeological perspective. It is therefore recommended that Phase 2 Archaeological Mitigation measures be implemented before the development commences and the sites are destroyed.

The following is recommended:

1. Detailed mapping of the Stone Age scatters of material
2. Surface sampling of representative material from these scatters in order to determine their age and typology. This material will then have to be curated by a recognized institution such as the McGregor Museum in Kimberley
3. A permit from SAHRA will be required from SAHRA to conduct this Phase 2 work.

8.2.5 PALAEONTOLOGY

The entire study area is underlain by mudrocks of the Permian Balfour Formation of the Adelaide Subgroup of the Beaufort Group of the Karoo Supergroup and more superficially by Quaternary calacrete and alluvial deposits. The rocks of the Beaufort Group are renowned for their wealth of fossil tetrapods, and there is a slight, but unlikely, possibility that the overlying alluvial deposits could contain fossils.

The sedimentary rocks of the Permian Beaufort Group, which are not exposed in the study area, are renowned for their wealth of fossil tetrapods, particularly therapsids, and also plants of the *Glossopteris* flora. These rocks of the Karoo Supergroup are completely covered by unconsolidated Quaternary sediments. The Quaternary deposits could host much younger fossils but this is extremely unlikely.

Collections of fossils from the Beaufort Group are present in the collections of the Evolutionary Studies Institute (ESI), at the University of the Witwatersrand, the Council for Geoscience in Pretoria, National Museum in Bloemfontein, Ditsong Museum in Pretoria, and Iziko Museum in Cape Town.

As the Permian Beaufort Group are overlain by Quaternary calcrete and alluvial deposits and are not exposed in the study area it is highly unlikely that palaeontological heritage will be affected by the proposed development. The overlying Quaternary sediments are not consolidated and it is very unlikely that any fossils will be present.

This desktop study has indicated that no fossils are exposed, and if deep excavations are undertaken as a result of development it could expose fossil vertebrates, and plants in the rocks of the Beaufort Group and could create an opportunity

for further study. It is thus recommended that, if in the unlikely event that fossils are exposed in the Permian Beaufort Group or Quaternary sediments, during the proposed development a qualified palaeontologist must be contacted to assess the exposure for fossils so that the necessary rescue operations are implemented.

8.2.6 CIVIL AVIATION

The site is rated as a "High" sensitivity site for the civil aviation theme. This is mainly due to its close proximity to the Middelburg (Cape) Aerodrome (FAMC) at location Ref. Point: S31.547259 ,E25.029453. In accordance with the Government Gazette No. 43110 a specialist assessment was performed in order to ensure the level of impact on civil aviation installations. After an assessment performed by a radio frequency and radar specialist the site was rated as a "Low" sensitivity site for the civil aviation theme. Therefore according to the Government Gazette No. 43110 no further assessment requirements are identified. Initial Screening tool result: "High" Sensitivity site related to the impact on civil aviation installations.

The site marked in light blue in the figures below is 1.5km due north of Middelburg (Cape) Aerodrome (FAMC). The runways of the Middelburg (Cape) Aerodrome (FAMC) is indicated in green in the figures below. Indicated in red with inside the development area is the location of the solar plant.

Figure 15: Proposed development site in respect to the Middelburg (Cape) Aerodrome (FAMC)

The highest planned structure on the development site will fall well below the obstacle identification surfaces area and not cause any obstacle complications for the Middelburg (Cape) Aerodrome (FAMC). The proposed development site is 1.5km due north of Middelburg (Cape) Aerodrome (FAMC) and falls within the Inner Horizontal Surface with n limitation on the height of the maximum structure on the development site to be below 40meters in height. See Figure 16 below.

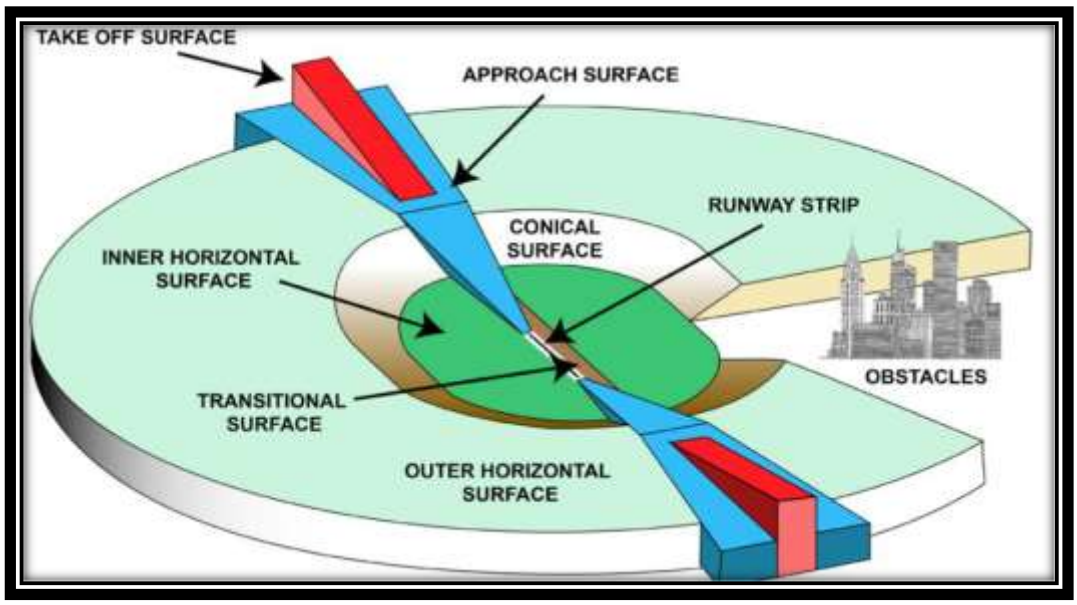


Figure 16: Obstacle identification surfaces

Radio frequency propagation prediction modelling was performed in order to assess the degree of interference from the proposed development site on any type of electromagnetic radio waves transmitting devices that could be deployed at the Middelburg (Cape) Aerodrome (FAMC). The Middelburg (Cape) Aerodrome (FAMC) runways are indicated by the green lines in the images below and the proposed development site is indicated in light blue.

The Middelburg (Cape) Aerodrome (FAMC) currently do not have a radar system. For possible future radar installations the proposed development site will have a very low influence on an airport radar. This is due to the height of the development area in regards to the runway level. The area is very flat and the development is more or less on the same level as the runway. This low level together with angle of the radar antenna and the distance from the runway will result in very low interference on the radar. The interference will be so low together with clutter map adjustments that the interference from the proposed development site is negligible.

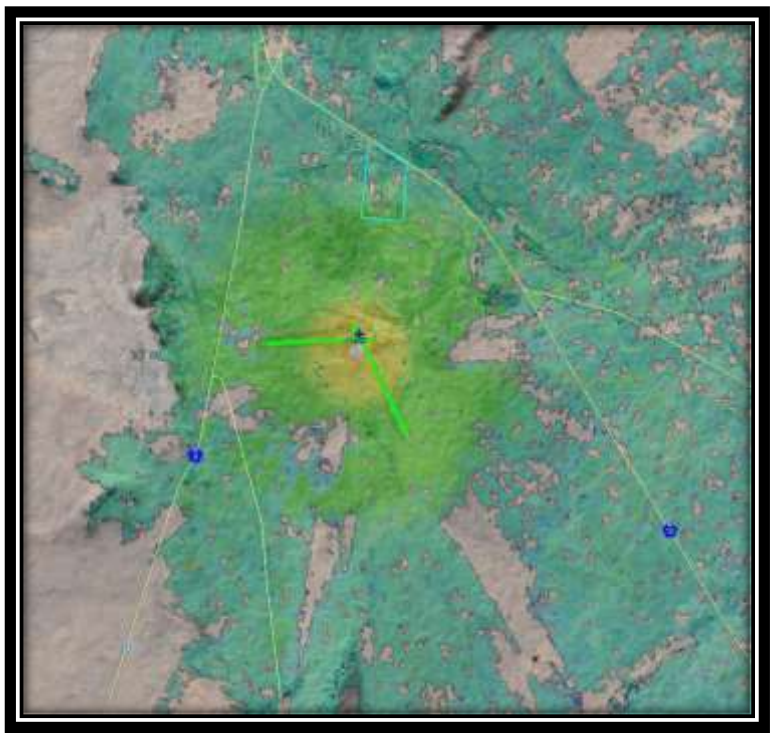


Figure 17: RF propagation from FAMC – Plot 2

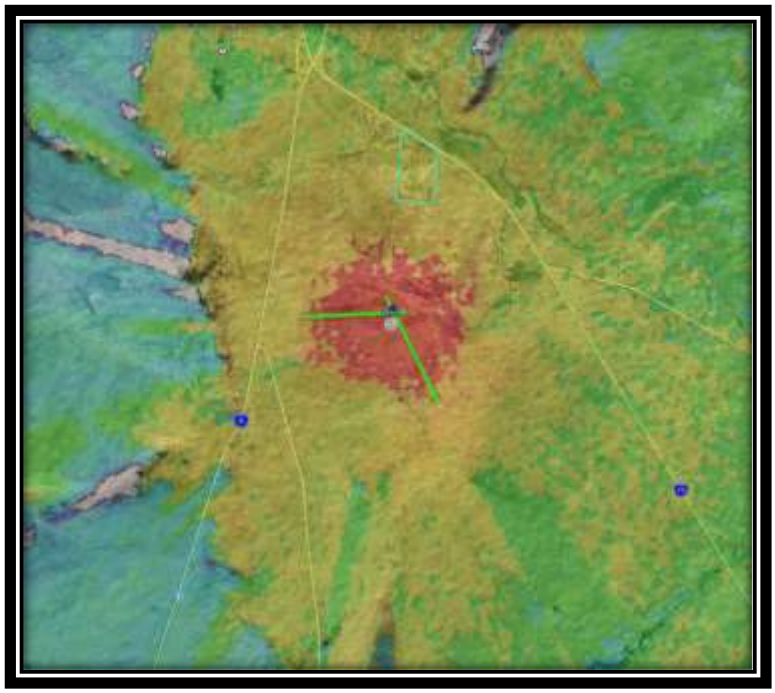


Figure 18: RF propagation from FAMC – Plot 1

The proposed development site do not fall in the take-off and approach flight path of the RF signal lobes as used by precision landing systems for the Middelburg (Cape) Aerodrome (FAMC). Although there are no precision landing systems currently deployed, it can be seen in the image below that should there be precision landing systems deployed in the future the RF signal focus area of the precision landing systems fall well outside the proposed development.

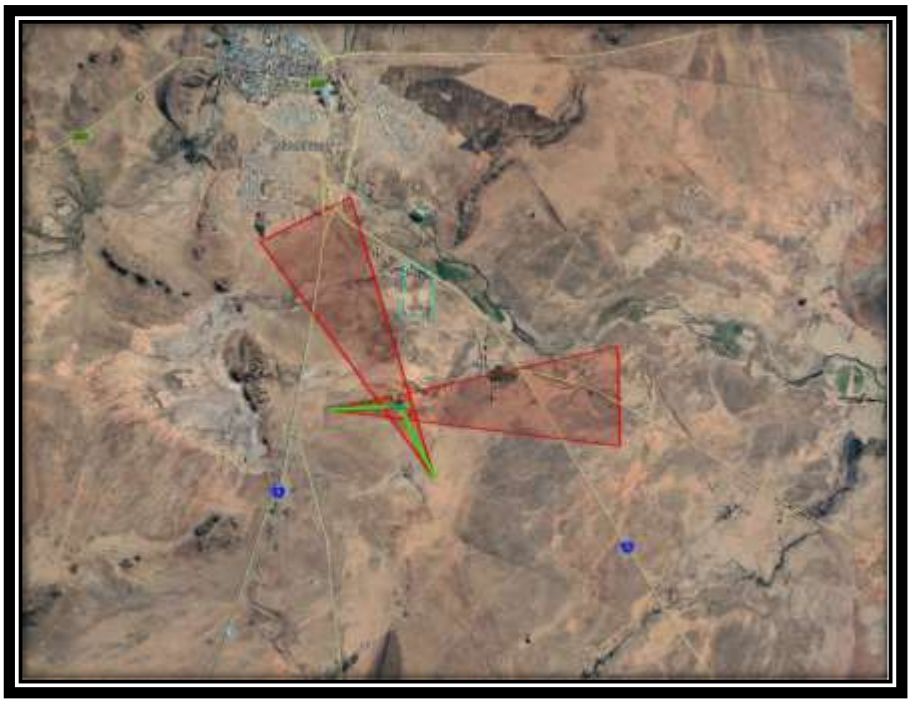


Figure 19: RF propagation from FAMC for advance landing systems

Glint and Glare

A Glint and glare analysis was performed on the influence of the planned solar plant. The reason for this is that the PV glare can be hazardous for pilots, motorists, and other observers.

The following table summarizes the policy adherence of the glare analysis based on the 2013 U.S. Federal Aviation Administration

Interim Policy 78 FR 63276. This policy requires the following criteria be met for solar energy systems on airport property:

- No "yellow" glare (potential for after-image) for any flight path from threshold to 2 miles
- No glare of any kind for Air Traffic Control Tower(s) ("ATCT") at cab height.

After the assessment, the Development has been rated as a “Low” sensitivity site for the civil aviation theme because of the following main reasons.

1. The highest planned structure on the development site will fall within the obstacle identification surfaces area and not cause any obstacle problems for the Middelburg (Cape) Aerodrome (FAMC).

2. The site also will cause low radar interference. Radar is a detection system that uses radio waves to determine the range, angle, or velocity of objects. A radar system consists of a transmitter producing electromagnetic radio waves. These electromagnetic radio waves reflect off the object and return to the receiver, giving information about the object's location and speed. Because the Development site is not in line with the approach and departure flight paths and the maximum height of the buildings is low relative to the radar the interference from the proposed development site will be negligible.

3. The proposed development site do not fall in the takeoff and approach flight path of the RF signal lobes as used by precision landing systems for the Middelburg (Cape) Aerodrome (FAMC).

4. A Glint and glare analysis show no "yellow" glare (potential for after-image) for any flight path from threshold to 2 miles. PV glare can be hazardous for pilots, motorists, and other observers. There is also no glare of any kind for Air Traffic Control Tower(s) ("ATCT") at cab height.

5. The site will also have negligible interfere with any ground to air communication, any airport radio direction finding equipment as well as any radio transmitting beacons

8.2.7 AGRICULTURAL POTENTIAL

The sensitivity of a site is determined by the screening tool of the Department of Environment. According to the screening tool, the site has a medium sensitivity. More detailed analyses, however, found that this assessment is incorrect and for the following reasons:

1) Middelburg is in the Karroo Region that has an arid climate, it has a low and erratic rainfall and high summer temperatures. Crop production is not practiced unless it is under irrigation.
2) There is no irrigated cropping on the site and no water license as far as we are aware.
3) The soils are mostly moderately deep and deep Clovelly soils that are arable but with no irrigation water available, has low arable potential.

The development proposed will remain agriculture but will intensify the agricultural activities. Instead of degraded barren land, it will be converted to include a feed mill, agricultural recreation area, solar farm and sheep feedlot. The conclusion is that the land has a low agricultural sensitivity.

Figure 20: Surrounding land uses (Bing map) indicating that irrigated land is the only cultivated land

Figure 21 is the Land Cover map of DALRRD that clearly indicates that the only cropping that takes place is under irrigation. The implication is: no water, no commercial cropping.

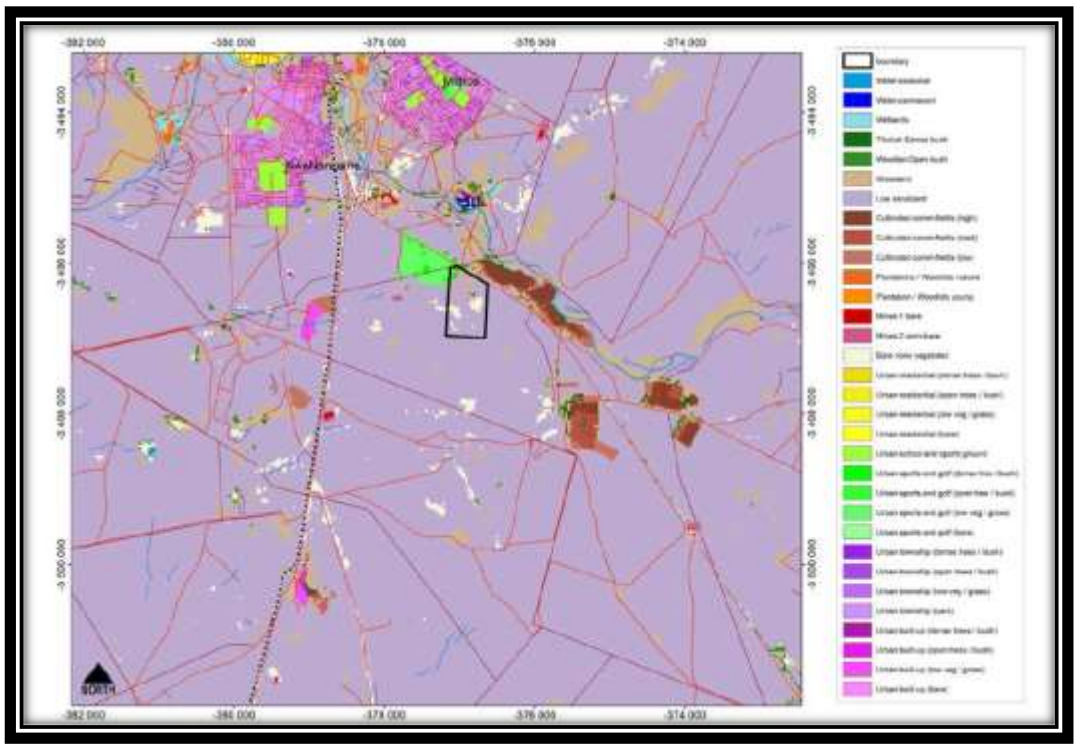


Figure 21: Land cover map (DALRRD)

The Agricultural Specialist concluded*: "It is our professional view that no high potential land will be lost and that the development proposed will only benefit farming as a land use and as an industry*

8.2.8 AESTHETICS AND VISUAL

Visual Intrusion is defined as the level of compatibility or congruence of the project with the particular qualities of the area, or its 'sense of place'. This is related to the idea of context and maintaining the integrity of the landscape or townscape.

High visual intrusion – results in a noticeable change or is discordant with the surroundings;

Moderate visual intrusion – partially fits into the surroundings, but clearly noticeable;

Low visual intrusion – minimal change or blends in well with the surroundings.

The proposed development will change the scenic resources of the local area from an undeveloped area to a developed area. The visual intrusion is considered to be moderate as the proposed development will partially fit into the surroundings, but will be clearly noticeable.

The proposed development will require additional lighting on and in buildings and possibly along roads. This will change the night landscape from unlit to lit. The solar farm's panels is expected to be orientated north and as such will be visible from the N10 The reflectiveness from the panels may result in glare at certain times of day. Passing traffic travelling in a west-north-westerly direction is likely not to be impacted on, however motorists travelling in an east-south-easterly direction may experience some glare at certain times of day. However considering the solar farm will be setback from the road and that the feedmill will partially obscure the solar farm it is unlikely to lead to significant visual impact.

9. ENVIRONMENTAL IMPACT ASSESSMENT

9.1 ASSESSMENT CRITERIA

Impacts were rated using the following methodology:

Nature of the potential impact		Description of the effect, and the affected aspect of the environment
Duration (time scale)	Short term	Up to 5 years
	Medium term	6 – 15 years
	Long term	More than 15 years
Extent (area)	Local	Confined to study area and its immediate surroundings
	Regional	Region (cadastral, catchment, topographic)
	National	Nationally (The country)
	International	Neighboring countries and the rest of the world.
Magnitude (Intensity)	Low	Site-specific and wider natural and/or social functions and processes are negligibly altered. ((A low intensity impact will not affect the natural, cultural, or social functions of the environment).
	Medium	Site-specific and wider natural and/or social functions and processes continue albeit in a modified way. (Medium scale impact will alter the different functions slightly).
	High	Site-specific and wider natural and/or social functions and processes are severely altered. (A High intensity impact will influence these functions to such an extent that it will temporarily or permanently cease to exist).
Probability	Improbable	Possibility of occurrence is very low. (Such an impact will have a very slight possibility to materialise, because of design or experience).
	Possible	There is a possibility that the impact will occur
	Probable	It is most likely that the impact will occur
	Definite	The impact will definitely occur
Significance	Insignificant	Impact is negligible and will not have an influence on the decision regarding the proposed activity (No mitigation is necessary)
	Very Low	Impact is very small and should not have any meaningful influence on the decision regarding the proposed activity (No mitigation is necessary)
	Low	The impact may not have a meaningful influence on the decision regarding the proposed activity (No mitigation is necessary)
	Medium	The impact should influence the decision regarding the proposed activity (The project can only be carried through if certain mitigatory steps are taken)
	High	The impact will influence the decision regarding the proposed activity
	Very High	The proposed activity should only be approved under special circumstances

Nature of the potential impact		Description of the effect, and the affected aspect of the environment
Reversibility	Low	There is little chance of correcting the adverse impact
	Medium	There is a moderate chance of correcting the adverse impact
	High	There is a high chance in correcting the adverse impact
Risk	Low	Assessing a risk involves an analysis of the consequences and likelihood of a hazard being realized. In decision-making, low-consequence / low-probability risks (green) are typically perceived as acceptable and therefore only require monitoring.
	Medium	Other risks (amber) may require structured risk assessment to better understand the features that contribute most to the risk. These features may be candidates for management
	High	High-consequence / high-probability risks (red) are perceived as unacceptable and a strategy is required to manage the risk.

Attributes associated with the alternatives were assessed and is outlined below:

Geographical attributes

The Geographical attributes of an area relates to the characteristics of a particular region, area or place. It influences the determination of site alternatives as it relates to the location of a site in relation to relevant features in the area.

Physical attributes

Physical attributes of an area relates to the processes and patterns in the natural environment. For the purpose of this assessment, the following processes and patterns have been investigated. Geology, soil, topography and landforms, climate and meteorology, surface water and ground water.

Biological attributes

Biological attributes for the purpose of this study includes the distribution of species and ecosystems in geographic space and through geological time. Organisms and biological communities often vary in a regular fashion along geographic gradients of latitude, elevation, isolation and habitat area. The two main branches assessed will be:
Phytogeography is the branch of biogeography that studies the distribution of plants.
Zoogeography is the branch that studies distribution of animals.

Social attributes

Social attributes is closely related to social theory in general and sociology in particular, dealing with the relation of social phenomena and its spatial components.

Economic attributes

Economic attributes includes the location, distribution and spatial organization of economic activities and also takes into account social, cultural, and institutional factors in the spatial economy of the development.

Heritage attributes

The broad generic term Cultural Heritage Resources refers to any physical and spiritual property associated with past and present human use or occupation of the environment, cultural activities and history. The term includes sites, structures, places, natural features and material of paleontological, archaeological, historical, aesthetic, scientific, architectural, religious, symbolic or traditional importance to specific individuals or groups, traditional systems of cultural practice, belief or social interaction.

Cultural attributes

Cultural attributes relates to the specific characteristics such as language, religion, ethnic and racial identity, and cultural history & traditions of people. These attributes influences family life, education, economic and political structures, and, of course, business practices.
It should be noted that the above mentioned attributes do not occur in isolation and it is not uncommon for an identified impact to overlap with two or more of these attributes. Also note, not all risks require comprehensive and detailed assessment. Solid problem formulation should allow decision-makers to evaluate the extent of subsequent analysis required. The level of effort put into assessing each risk should be proportionate to its significance and priority in relation to other risks, as well as its complexity, by reference to the likely impacts. Consideration should be given to stakeholders' perceptions of the nature of the risk.

ENVIRONMENTAL IMPACT ASSESSMENT (Planning and design phase)					
ALTERNATIVE 1: PROPOSAL AND MANURE COMPOSTING					
Environmental Attribute	**Potential impacts and risks**	**Assessment criteria**	**Assessment rating (With mitigation)**	**Proposed mitigation**	**Assessment rating (Without mitigation)**
DIRECT IMPACTS:					
Geographical Physical Social Economic	40,537 hectares of indigenous vegetation will be eradicated in order to establish a Feed Mill, Agricultural Recreation Area, Solar Farm and Sheep Feedlot.	Duration	Long term	Obtain the necessary environmental authorization for the development. Conduct a Fauna and Flora Habitat survey to determine the sensitivity of the area. Implement the mitigation measures as described in the Environmental Management Plan.	Long term
		Extent	Local		Local
		Magnitude (Intensity)	High		High
		Probability	Definite		Definite
		Significance	Low		Low
		Reversibility	Low		Low
		Risk	Low		Medium
	Manure Composting (Alternative 1) Carcasses will be disposed into the manure composting area, whereby it will take approximately 5-6 months to decompose, per carcass, with respect to mass.	Duration	Long term	Composting adds value to the carcass as it can be sold as compost.	Long term
		Extent	Local		Local
		Magnitude (Intensity)	High		High
		Probability	Definite		Definite
		Significance	Medium		High
		Reversibility	Low		Low
		Risk	Low		Medium
	The sheep feedlot will generate waste in the form of manure and the carcasses.	Duration	Long term	Plan for the construction of a waste storage and treatment facility, comprising of three Sedimentation ponds, two Evaporation ponds and a Manure Composting area in order to treat the manure and the carcasses that will originate from the Sheep Feedlot. Obtain the necessary Environmental Authorization for the operation of this facility. As this facility will have an Operational component, an Engineer will have to prepare method statement for this phase of the proposed development. The developer should also budget for the continues internal Audits and the Annual External Audit.	Long term
		Extent	Local		Local
		Magnitude (Intensity)	High		High
		Probability	Definite		Definite
		Significance	Medium		Medium
		Reversibility	Low		Low
		Risk	Low		Medium
	70 ton of coal, 23 cubic meters of diesel and 0,8 cubic meters of oil will be stored on site.	Duration	Long term	Plan for the construction and operation of facilities and infrastructure to ensure safe storage and handling of these products.	Long term
		Extent	Local		Local
		Magnitude (Intensity)	High		High

ENVIRONMENTAL IMPACT ASSESSMENT (Planning and design phase)					
ALTERNATIVE 1: PROPOSAL AND MANURE COMPOSTING					
Environmental Attribute	**Potential impacts and risks**	**Assessment criteria**	**Assessment rating (With mitigation)**	**Proposed mitigation**	**Assessment rating (Without mitigation)**
		Probability	Definite		Definite
		Significance	Medium		Medium
		Reversibility	Low		Low
		Risk	Low		Medium
	A Solar farm will form part of this proposed development and will have an impact on the airfield that is located 1,2 kilometres towards the south and the N10 to the north.	Duration	Long term	It is a fact that the proposed development will have a definite visual impact. It is not envisaged that this aspect will have a significant impact as it is not located on a ridge or a mountain. The area has been used as a golf course in the past and is by no means pristine. An Airfield is located 1,2 kilometres towards the south of the site. Plan to ensure that the proposed development does not negatively impact on the safe operation of this facility. The feedmill will partially obstruct the solar farm and panels.	
		Extent	Local		
		Magnitude (Intensity)	High		
		Probability	Definite		
		Significance	Medium		
		Reversibility	Low		
		Risk	Low		Medium
	Services (water, sewer, roads, storm water, electricity and solid waste removal) will be needed for the sustainable implementation of the proposed development.	Duration	Long term	Plan for the provision of services for the development. Appoint a Civil Engineer to assess the availability and design of services to ensure a sustainable development.	Long term
		Extent	Local		Local
		Magnitude (Intensity)	High		High
		Probability	Definite		Definite
		Significance	Medium		Medium
		Reversibility	Low		Low
		Risk	Low		Medium
	Disturbed surfaces can lead to erosion and dust pollution.	Duration	Short term	Plan to rehabilitate disturbed surfaces which can lead to erosion and dust pollution. Prepare method statements to this effect. Start the rehabilitation of disturbed surfaces as soon as possible. Spray bare surfaces with water to prevent dust pollution.	Medium term
		Extent	Local		Local
		Magnitude (Intensity)	Low		Medium
		Probability	Definite		Definite
		Significance	Medium		Medium
		Reversibility	High		High
		Risk	Low		Medium
	Foreign and invader plant species are likely to invade disturbed areas.	Duration	Short term	Start the extermination of any invasive species as soon as possible and maintain the eradication programme.	Medium term
		Extent	Local		Local
		Magnitude (Intensity)	Low		Low
		Probability	Definite		Definite
		Significance	Medium		Medium
		Reversibility	High		High
		Risk	Low		Medium
	The proposed development can cause pollution of surface and underground water.	Duration	Short term	Plan for the provision and maintenance of infrastructure to prevent pollution of surface and underground water. Provide portable ablution facilities that will not cause pollution during the	Short term
		Extent	Local		Local
		Magnitude (Intensity)	Medium		Medium
		Probability	Definite		Definite
		Significance	Medium		Medium

ENVIRONMENTAL IMPACT ASSESSMENT (Planning and design phase)					
ALTERNATIVE 1: PROPOSAL AND MANURE COMPOSTING					
Environmental Attribute	**Potential impacts and risks**	**Assessment criteria**	**Assessment rating (With mitigation)**	**Proposed mitigation**	**Assessment rating (Without mitigation)**
		Reversibility	High	construction phase. (There should be 1 Chemical toilet for every 30 workers on site.)	High
		Risk	Low		Medium
	The proposed development can have an impact on the soil and geology.	Duration	Long term	Plan to manage possible impacts that the project can have on the soil and geology. Properly plan the construction phase in such a manner that impacts on the soil and geology of the area can be minimised. The findings of the Geotechnical Engineer must be incorporated into the design of the project. Plan to prevent spills of lubricants/oils that can take place on bare soil. This will include the use of drip trays for vehicles that are standing for more than 24 hours.	Long term
		Extent	Local		Local
		Magnitude (Intensity)	Low		Medium
		Probability	Definite		Definite
		Significance	Medium		Medium
		Reversibility	High		High
		Risk	Low		Medium
	Excavations on site will pose a danger as it can collapse on people or on equipment and people- especially small children who may fall into it.	Duration	Short term	Plan to safeguard open excavations in order to alleviate the danger of collapse on people or on equipment and people- especially small children who may fall into it. Ensure that excavations are dug according to specifications as prescribed by the Civil Engineer. Ensure that open excavations are demarcated as required by the Occupational Health and Safety Act.	Short term
		Extent	Local		Local
		Magnitude (Intensity)	Medium		Medium
		Probability	Definite		Definite
		Significance	Medium		Medium
		Reversibility	High		High
		Risk	Low		Medium
Indirect impacts:					
Geographical Physical Social Economic	Dust will be generated during the construction phase and could impact on the surrounding area.	Duration	Short term	Plan to control dust generation from the proposed project which could impact on the surrounding area. Spray water on open surfaces to ensure that dust does not cause air pollution during construction. Start the rehabilitation of disturbed surfaces as soon as possible	Short term
		Extent	Local		Local
		Magnitude (Intensity)	Low		Low
		Probability	Probable		Probable
		Significance	Medium		Medium
		Reversibility	High		High
		Risk	Low		Medium
	Spills of lubricants / oils and diesel can take place on bare soil.	Duration	Short term	Plan and compile method statements to implement measures for the prevention and or handling of spills of lubricants / oils that can take place on bare soil. Prevent spills of lubricants/oils that can take place on bare soil. This will include the use of drip trays for vehicles that are standing for more than 24 hours.	Short term
		Extent	Local		Local
		Magnitude (Intensity)	Low		Low
		Probability	Probable		Probable
		Significance	Medium		Medium
		Reversibility	High		High
		Risk	Low		Medium

ENVIRONMENTAL IMPACT ASSESSMENT (Planning and design phase)					
ALTERNATIVE 1: PROPOSAL AND MANURE COMPOSTING					
Environmental Attribute	**Potential impacts and risks**	**Assessment criteria**	**Assessment rating (With mitigation)**	**Proposed mitigation**	**Assessment rating (Without mitigation)**
				Ensure that all construction vehicles are in good working order and not leaking oil and or fuel.	
	Waste materials such as glass, plastic, metal or paper may present a possible pollution hazard	Duration	Long term	Plan to provide method statements on the handling of waste materials such as glass, plastic, metal or paper which may present a possible pollution hazard Implement the management plan to ensure that: All construction rubble is disposed of in a safe and environmentally acceptable manner. NO concrete, gravel or other rubbish will be allowed to remain on site after the construction phase. All cement is housed as to prevent spills (due to rain and or handling errors). NO glass, plastic, metal, or paper shall be allowed to pollute the area.	Long term
		Extent	Local		Local
		Magnitude (Intensity)	Low		Low
		Probability	Probable		Probable
		Significance	Medium		Medium
		Reversibility	High		High
		Risk	Low		Medium
	Increased employment opportunities.	Duration	Long term	Plan to create new employment opportunities. Plan to use local labour to ensure local skills development will take place. Ensure compliance with the requirements of the Occupational Health and Safety Act and the Employment Equity Act.	Long term
		Extent	Local		Local
		Magnitude (Intensity)	Medium		Medium
		Probability	Definite		Definite
		Significance	Medium		Medium
		Reversibility	Medium		Medium
		Risk	Low		Medium
Cumulative impacts:					
Geographical Physical Social Economic	Air pollution as a result of steam generation.	Duration	Long term	The proposed generation of steam falls below the threshold as described in the Air Quality Act (Act 39 of 2004).	Long term
		Extent	Local		Local
		Magnitude (Intensity)	Medium		Medium
		Probability	Definite		Definite
		Significance	Medium		Medium
		Reversibility	Medium		Medium
		Risk	Low		Low
	Increased noise pollution as a result of the operational activities of the feed mill and the sheep feedlot.	Duration	Long term	The proposed development is located more than 2 kilometres away from the nearest residential development. In addition the ambient noise created by the N10 that is located adjacent to site has already disturbed the "rural" character of the area.	Long term
		Extent	Local		Local
		Magnitude (Intensity)	Medium		Medium
		Probability	Definite		Definite
		Significance	Medium		Medium
		Reversibility	Medium		Medium
		Risk	Low		Low
		Extent	Local		Local
		Duration	Long term		Long term

ENVIRONMENTAL IMPACT ASSESSMENT (Planning and design phase)					
ALTERNATIVE 1: PROPOSAL AND MANURE COMPOSTING					
Environmental Attribute	**Potential impacts and risks**	**Assessment criteria**	**Assessment rating (With mitigation)**	**Proposed mitigation**	**Assessment rating (Without mitigation)**
	Increased need for services (solid waste, bulk water supply water, sewage, electricity and storm water).	Extent	Local	Plan to ensure that the services (solid waste, bulk water supply water, sewage, electricity and storm water) are designed and constructed in such a manner that it will not cause Environmental degradation. Appoint a Civil Engineer to assess the availability and design of services to ensure a sustainable development. Ensure that the development is constructed as planned.	Local
		Magnitude (Intensity)	Medium		Medium
		Probability	Definite		Definite
		Significance	High		High
		Reversibility	High		High
		Risk	Low		Medium
	Increase in traffic volumes that will result from the proposed development	Duration	Long term	Plan for the increase in traffic volumes that will result from the proposed development. The Town and Regional Planner will have to design the layout of the development in such a way that accessibility will not become a problem. Appoint a Traffic engineer to assess the traffic volumes and existing road network and determine whether upgrades are necessary	Long term
		Extent	Local		Local
		Magnitude (Intensity)	Medium		Medium
		Probability	Definite		Definite
		Significance	Medium		High
		Reversibility	Low		Low
		Risk	Medium		Medium
	Loss of indigenous vegetation and Agricultural land.	Duration	Long term	No mitigation measures possible. The Agricultural potential is considered Low and the area is not pristine as it has been used as a Golf course in the past.	Long term
		Extent	Local		Local
		Magnitude (Intensity)	Medium		Medium
		Probability	Definite		Definite
		Significance	Low		Low
		Reversibility	Low		Low
		Risk	Low		Low

	ENVIRONMENTAL IMPACT ASSESSMENT (Planning and design phase)				
	ALTERNATIVE 2: INCINERATION PLANT				
Environmental Attribute	**Potential impacts and risks**	**Assessment criteria**	**Assessment rating (With mitigation)**	**Proposed mitigation**	**Assessment rating (Without mitigation)**
	DIRECT IMPACTS:				
Geographical Physical Social Economic	The incineration process neutralises the danger of possible ground water pollution and converts the post-incineration residue into a sterile, easily disposable by-product which can be re-used. The incineration units will be sized based on the above-mentioned mortality rate requirement for the site. The units are powered by either Diesel or Gas. In this instance, the viable option would be to	Duration	Long term	<u>Disadvantages</u> The incineration process causes air pollution and an a licence will have to be obtained for this process. It will also require long-term external auditing that will render this option not viable in the long run. It is proposed as a mitigation measure not to proceed with this option and to rather implement Alternative 1.	Long term
		Extent	Local		Local
		Magnitude (Intensity)	High		High
		Probability	Definite		Definite
		Significance	Medium		Medium
		Reversibility	Low		Low
		Risk	Low		Medium

ENVIRONMENTAL IMPACT ASSESSMENT (Planning and design phase)					
ALTERNATIVE 2: INCINERATION PLANT					
Environmental Attribute	**Potential impacts and risks**	**Assessment criteria**	**Assessment rating (With mitigation)**	**Proposed mitigation**	**Assessment rating (Without mitigation)**
	adopt a diesel-operated unit due to the proposed diesel tank bunker facility located in the feed mill area of the site, and for efficient access. The stored diesel would be pumped into smaller tanks and transported via trucks to the Incineration facility, located near the manure composting area of the site				

ENVIRONMENTAL IMPACT ASSESSMENT (Planning and design phase)					
ALTERNATIVE 3 MORTALITY PIT					
Environmental Attribute	**Potential impacts and risks**	**Assessment criteria**	**Assessment rating (With mitigation)**	**Proposed mitigation**	**Assessment rating (Without mitigation)**
	DIRECT IMPACTS:				
Geographical Physical Social Economic	A mortality pit entails the construction of a sealed container (normally an underground bunker) that the carcasses are disposed in.	Duration	Long term	<u>Disadvantages</u> It is envisaged that with a feedlot of this scale, the mortality pit will not be viable, as it will have to have a very large capacity. It is proposed as a mitigation measure not to proceed with this option and to rather implement Alternative 1.	Long term
		Extent	Local		Local
		Magnitude (Intensity)	High		High
		Probability	Definite		Definite
		Significance	Medium		Medium
		Reversibility	Low		Low
		Risk	Low		Medium

ENVIRONMENTAL IMPACT ASSESSMENT (Planning and design phase)					
ALTERNATIVE 4: (No-Go Option)					
Environmental Attribute	**Potential impacts and risks**	**Assessment criteria**	**Assessment rating (With mitigation)**	**Proposed mitigation**	**Assessment rating (Without mitigation)**
	DIRECT IMPACTS:				
Geographical Physical Social Economic Cultural	No indigenous vegetation will be removed.	Duration	Long term	No mitigation measures required.	Long term
		Extent	Local		Local
		Magnitude (Intensity)	Medium		Medium
		Probability	Definite		Definite
		Significance	High		High
		Reversibility	Low		Low
		Risk	Medium		Medium
	Indirect impacts:				
Geographical Physical Social Economic Cultural	No new employment opportunities will be created during the planning and design phase. No skills enhancement will take place	Extent	Local	Ensure that the development is constructed and operated as planned.	Local
		Magnitude (Intensity)	Medium		Medium
		Probability	Definite		Definite
		Significance	Medium		Medium
		Reversibility	Medium		Medium
		Risk	High		High

ENVIRONMENTAL IMPACT ASSESSMENT (Planning and design phase)					
ALTERNATIVE 4: (No-Go Option)					
Environmental Attribute	**Potential impacts and risks**	**Assessment criteria**	**Assessment rating (With mitigation)**	**Proposed mitigation**	**Assessment rating (Without mitigation)**
	If this option is implemented, the projected boost to the local and regional economy will not take place.				
Cumulative impacts:					
Geographical Physical Social Economic Cultural	If this option is implemented, the projected boost to the local and regional economy will not take place. No new employment opportunities will be created. No improvement to local skills development will take place. No broadened Tax base for the Local Municipality.	Extent	Local	Ensure that the development is constructed and operated as planned.	Local
		Magnitude (Intensity)	Medium		Medium
		Probability	Definite		Definite
		Significance	High		High
		Reversibility	High		High
		Risk	Medium		Medium

ENVIRONMENTAL IMPACT ASSESSMENT (Planning and design phase)					
ALTERNATIVE 5: (Waste to Energy)					
Environmental Attribute	**Potential impacts and risks**	**Assessment criteria**	**Assessment rating (With mitigation)**	**Proposed mitigation**	**Assessment rating (Without mitigation)**
DIRECT IMPACTS:					
Geographical Physical Social Economic Cultural	Waste that would have ended up in the Municipal waste stream will be utilised for the generation of energy. Development operations can affect air quality through emissions of gasses (ammonia and hydrogen sulphide), particulate matter (PM), volatile organic compounds (VOC), hazardous air pollutants, microorganisms, and odour. Animal Feeding Operations also produce gasses (carbon dioxide and methane) that are associated with climate change. Should a Compressed Natural Gas plant be installed, the impact of this variable on the Environment will be minimized.	Duration	Long term	Installation of a solid waste steam generator. Installation of a Compressed Natural Gas plant	Long term
		Extent	Local		Local
		Magnitude (Intensity)	High		Low
		Probability	Definite		Definite
		Significance	High		Low
		Reversibility	High		High
		Risk	High		Low
Indirect impacts:					
Geographical Physical Social Economic Cultural	Steam would be generated by means of burning of waste. The generation of Compressed Natural Gas could be an	Duration	Long term	Installation of a solid waste steam generator. Installation of a Compressed Natural Gas plant	Long term
		Extent	Local		Local
		Magnitude (Intensity)	High		Low
		Probability	Definite		Definite

ENVIRONMENTAL IMPACT ASSESSMENT (Planning and design phase)					
ALTERNATIVE 5: (Waste to Energy)					
Environmental Attribute	**Potential impacts and risks**	**Assessment criteria**	**Assessment rating (With mitigation)**	**Proposed mitigation**	**Assessment rating (Without mitigation)**
	additional source of income for the Development.	Significance	High		Low
		Reversibility	High		High
		Risk	High		Low
Cumulative impacts:					
Geographical Physical Social Economic Cultural	Waste that would have ended up in the Municipal waste stream will be utilised for the generation of energy.	Duration	Long term	Installation of a solid waste steam generator.	Long term
		Extent	Local		Local
		Magnitude (Intensity)	High		Low
		Probability	Definite		Definite
		Significance	High		Low
		Reversibility	High		High
		Risk	High		Low
	The generation of Compressed Natural Gas could be an additional source of income for the Development.	Duration	Long term	Installation of a Compressed Natural Gas plant. .	Long term
		Extent	Local		Local
		Magnitude (Intensity)	High		Low
		Probability	Definite		Definite
		Significance	High		Low
		Reversibility	High		High
		Risk	High		Low

ENVIRONMENTAL IMPACT ASSESSMENT (Construction phase)					
ALTERNATIVE 1: PROPOSAL AND MANURE COMPOSTING					
Environmental Attribute	**Potential impacts and risks**	**Assessment criteria**	**Assessment rating (With mitigation)**	**Proposed mitigation**	**Assessment rating (Without mitigation)**
DIRECT IMPACTS:					
Geographical Physical Social Economic	40,537 hectares of indigenous vegetation will be eradicated in order to establish a Feed Mill, Agricultural Recreation Area, Solar Farm and Sheep Feedlot.	Duration	Long term	Obtain the necessary environmental authorization for the development. Implement the findings of the Fauna and Flora Habitat survey. Implement the mitigation measures as described in the Environmental Management Plan.	Long term
		Extent	Local		Local
		Magnitude (Intensity)	High		High
		Probability	Definite		Definite
		Significance	Medium		Medium
		Reversibility	Low		Low
		Risk	Low		Medium
	Services (water, sewer, roads, storm water, electricity and solid waste removal) will be needed for the sustainable implementation of the proposed development.	Duration	Long term	Construct the infrastructure in accordance with the designs. Obtain the necessary environmental authorization for the development.	Long term
		Extent	Local		Local
		Magnitude (Intensity)	High		High
		Probability	Definite		Definite
		Significance	Medium		High
		Reversibility	Low		Low
		Risk	Low		Medium

ENVIRONMENTAL IMPACT ASSESSMENT (Construction phase)					
ALTERNATIVE 1: PROPOSAL AND MANURE COMPOSTING					
Environmental Attribute	**Potential impacts and risks**	**Assessment criteria**	**Assessment rating (With mitigation)**	**Proposed mitigation**	**Assessment rating (Without mitigation)**
				Obtain the necessary Water Use Licenses. Implement the mitigation measures as described in the Environmental Management plan.	
	Un-rehabilitated, disturbed surfaces can lead to erosion and dust pollution.	Duration	Short term	Start the rehabilitation of disturbed surfaces as soon as possible. Spray bare surfaces with water to prevent dust pollution.	Medium term
		Extent	Local		Local
		Magnitude (Intensity)	Low		Medium
		Probability	Definite		Definite
		Significance	Medium		Medium
		Reversibility	High		High
		Risk	Low		Medium
	Foreign plant species are likely to invade disturbed areas.	Duration	Short term	Start the extermination of any invasive species as soon as possible and maintain the eradication programme.	Medium term
		Extent	Local		Local
		Magnitude (Intensity)	Low		Low
		Probability	Definite		Definite
		Significance	Medium		Medium
		Reversibility	High		High
		Risk	Low		Medium
	Poorly planned ablution facilities for construction workers may cause pollution of surface and underground water.	Duration	Short term	Provide portable ablution facilities that will not cause pollution during the construction phase.	Short term
		Extent	Local		Local
		Magnitude (Intensity)	Medium		Medium
		Probability	Definite		Definite
		Significance	Medium		Medium
		Reversibility	High		High
		Risk	Low		Medium
	The proposed project can impact on the soil and geology.	Duration	Long term	Implement the findings of the Geo-Technical Engineer. Prevent spills of lubricants/oils that can take place on bare soil. This will include the use of drip trays for vehicles that are standing for more than 24 hours.	Long term
		Extent	Local		Local
		Magnitude (Intensity)	Low		Medium
		Probability	Definite		Definite
		Significance	Medium		Medium
		Reversibility	High		High
		Risk	Low		Medium
	The vegetation of the area will be removed during the construction phase, which will destroy floral and faunal habitats.	Duration	Short term	Start with the rehabilitation of vegetation to minimize the negative effects of the removal of plants. The rule must be to minimize the disturbance of animal	Short term
		Extent	Local		Local
		Magnitude (Intensity)	Medium		Medium
		Probability	Definite		Definite
		Significance	Medium		Medium
		Reversibility	High		High
		Risk	Low		Medium

ENVIRONMENTAL IMPACT ASSESSMENT (Construction phase)					
ALTERNATIVE 1: PROPOSAL AND MANURE COMPOSTING					
Environmental Attribute	**Potential impacts and risks**	**Assessment criteria**	**Assessment rating (With mitigation)**	**Proposed mitigation**	**Assessment rating (Without mitigation)**
				life by keeping the footprint as small as possible. No snares may be set.	
	Open excavations can be dangerous as they can either collapse on people or on equipment and people- especially small children, can fall into them.	Duration	Short term	Ensure that the excavations are dug according to specifications as prescribed by the Civil Engineer. Ensure that open excavations are demarcated as required by the Occupational Health and Safety Act.	Short term
		Extent	Local		Local
		Magnitude (Intensity)	Medium		Medium
		Probability	Definite		Definite
		Significance	Medium		Medium
		Reversibility	High		High
		Risk	Low		Medium
Indirect impacts:					
Geographical Physical Social Economic	Dust generation from the proposed project could impact on the surrounding area.	Duration	Short term	Spray water on open surfaces to ensure that dust does not cause air pollution during construction. Start the rehabilitation of disturbed surfaces as soon as possible	Short term
		Extent	Local		Local
		Magnitude (Intensity)	Low		Low
		Probability	Probable		Probable
		Significance	Medium		Medium
		Reversibility	High		High
		Risk	Low		Medium
	Spills of lubricants / oils can take place on bare soil.	Duration	Short term	Prevent spills of lubricants/oils that can take place on bare soil. This will include the use of drip trays for vehicles that are standing for more than 24 hours. Ensure that all construction vehicles are in good working order and not leaking oil and or fuel. No vehicles may be serviced on site.	Short term
		Extent	Local		Local
		Magnitude (Intensity)	Low		Low
		Probability	Probable		Probable
		Significance	Medium		Medium
		Reversibility	High		High
		Risk	Low		Medium
	Waste materials such as glass, plastic, metal or paper present a possible pollution hazard	Duration	Short term	Implement the management plan to ensure that: All construction rubble is disposed of in a safe and environmentally acceptable manner. NO concrete, gravel or other rubbish will be allowed to remain on site after the construction phase.	Short term
		Extent	Local		Local
		Magnitude (Intensity)	Low		Low
		Probability	Probable		Probable
		Significance	Medium		Medium
		Reversibility	High		High
		Risk	Low		Medium

ENVIRONMENTAL IMPACT ASSESSMENT (Construction phase)					
ALTERNATIVE 1: PROPOSAL AND MANURE COMPOSTING					
Environmental Attribute	**Potential impacts and risks**	**Assessment criteria**	**Assessment rating (With mitigation)**	**Proposed mitigation**	**Assessment rating (Without mitigation)**
				All cement is housed as to prevent spills (due to rain and or handling errors). NO glass, plastic, metal, or paper shall be allowed to pollute the area.	
	Non-compliance to the relevant legislation may cause social and environmental problems.	Duration	Short term	Ensure that contractors (construction phase) abide by all the requirements of the Occupational Health and Safety Act. Ensure that all contractors are aware of the consequences of non-compliance to the relevant legislation regarding the above-mentioned act as well as with regard to the environment (acts, regulations, and special guidelines).	Long term
		Extent	Local		Local
		Magnitude (Intensity)	Medium		Medium
		Probability	Probable		Probable
		Significance	Medium		Medium
		Reversibility	High		High
		Risk	Low		Medium
	New employment opportunities will be created. Local skills development will take place.	Duration	Long term	No mitigation measures needed apart from the fact that contractors will have to ensure that they abide to the requirements of the Occupational Health and Safety Act and the Employment Equity Act.	Long term
		Extent	Local		Local
		Magnitude (Intensity)	Medium		Medium
		Probability	Definite		Definite
		Significance	Medium		Medium
		Reversibility	Medium		Medium
		Risk	Low		Medium
Cumulative impacts:					
Geographical Physical Social Economic	Enhancement of the social well-being of the local communities as a result of increased employment opportunities.	Duration	Long term	Ensure that the development is constructed as planned.	Long term
		Extent	Local		Local
		Magnitude (Intensity)	Medium		Medium
		Probability	Definite		Definite
		Significance	Medium		Medium
		Reversibility	Medium		Medium
		Risk	Low		Medium
	<u>Solid waste</u>: The proposed development will add additional solid waste into the existing waste stream of the Municipality. <u>Sewage</u>: The proposed development will add additional sewage.	Duration	Long term		Long term
		Extent	Local	Ensure that the development is constructed as planned by the Civil Engineer.	Local
		Magnitude (Intensity)	Medium		Medium
		Probability	Definite		Definite
		Significance	High		High
		Reversibility	High		High
		Risk	Low		Medium

ENVIRONMENTAL IMPACT ASSESSMENT (Construction phase)					
ALTERNATIVE 1: PROPOSAL AND MANURE COMPOSTING					
Environmental Attribute	**Potential impacts and risks**	**Assessment criteria**	**Assessment rating (With mitigation)**	**Proposed mitigation**	**Assessment rating (Without mitigation)**
	Water supply: The proposed development will add pressure to the water supply.				
	Traffic: The proposed development will result in an increase in traffic in the immediate surroundings of the proposed development.	Duration	Long term	Ensure that the development is constructed as planned by the Town and Regional Planner and findings of the Traffic Engineer for upgrading the accesses are implemented	Long term
		Extent	Local		Local
		Magnitude (Intensity)	Medium		Medium
		Probability	Definite		Definite
		Significance	Medium		High
		Reversibility	Low		Low
		Risk	Medium		Medium
	Indigenous vegetation will be removed and Agricultural Land will be lost.	Duration	Long term	No mitigation measures possible. The Agricultural potential is considered Low and the area is not pristine as it has been used as a Golf course in the past.	Long term
		Extent	Local		Local
		Magnitude (Intensity)	Medium		Medium
		Probability	Definite		Definite
		Significance	High		High
		Reversibility	Low		Low
		Risk	Medium		Medium
		Extent	Local		Local

ENVIRONMENTAL IMPACT ASSESSMENT (Operational Phase)					
ALTERNATIVE 1: PROPOSAL AND MANURE COMPOSTING					
Environmental Attribute	**Environmental Attribute**	**Environmental Attribute**	**Assessment rating (With mitigation)**	**Proposed mitigation**	**Assessment rating (Without mitigation)**
DIRECT IMPACTS:					
Geographical Physical Social Economic Cultural	Poorly maintained and serviced infrastructure may cause environmental problems.	Duration	Long term	It will be the responsibility of the Applicant to maintain the infrastructure and to ensure that the storage and treatment facilities are operated as prescribed by the Engineer and in the EMPr.	Long term
		Extent	Local		Local
		Magnitude (Intensity)	Medium		Medium
		Probability	Definite		Definite
		Significance	Medium- high		High
		Reversibility	High		Medium
		Risk	Low		High
	The waste storage and treatment facility, comprising of three Sedimentation ponds, two Evaporation ponds and a Manure Composting area in order to treat the manure and the carcasses that will originate from the Sheep Feedlot will have an operational component.	Duration	Long term	Ensure that the operation of this facility takes place in accordance with the methods as was designed by the Engineer. Ensure that the continues internal Audits and the Annual External Audit takes place in order to monitor performance.	Long term
		Extent	Local		Local
		Magnitude (Intensity)	Medium		Medium
		Probability	Definite		Definite
		Significance	Medium- high		High
		Reversibility	High		Medium
		Risk	Low		High

ENVIRONMENTAL IMPACT ASSESSMENT (Operational Phase)					
ALTERNATIVE 1: PROPOSAL AND MANURE COMPOSTING					
Environmental Attribute	**Environmental Attribute**	**Environmental Attribute**	**Assessment rating (With mitigation)**	**Proposed mitigation**	**Assessment rating (Without mitigation)**
				Implement the measures as described in the EMPr.	
Indirect impacts:					
Geographical Physical Social Economic Cultural	Lack of rehabilitation may cause problems	Duration	Long term	It will be the responsibility of the Applicant to ensure that the rehabilitation plan is implemented	Long term
		Extent	Local		Local
		Magnitude (Intensity)	Medium		Medium
		Probability	Definite		Definite
		Significance	Medium- high		High
		Reversibility	High		Medium
		Risk	Low		High
Cumulative impacts:					
Geographical Physical Social Economic Cultural	Enhancement of the social well-being of the local communities.	Duration	Long term	Continue to make use of Local Labour to ensure that the Economic spinoffs that will be generated is kept in the area.	Long term
		Extent	Local		Local
		Magnitude (Intensity)	Medium		Medium
		Probability	Definite		Definite
		Significance	High		High
		Reversibility	High		High
		Risk	Low		Medium
Geographical Physical Social Economic Cultural	Broadened tax base: The proposed development will generate more income for the Local Municipality.	Duration	Long term	No mitigation measures required.	Long term
		Extent	Local		Local
		Magnitude (Intensity)	Medium		Medium
		Probability	Definite		Definite
		Significance	High		High
		Reversibility	High		High
		Risk	Medium		Medium

10. PUBLIC PARTICIPATION.

10.1 ADVERTISEMENT AND NOTICE

Publication name	Hartland Nuus	
Date published	19/08/2021	
Site notice 1 position		
	31°31'31.15"S	25° 1'53.99"E
Date placed	19/08/2021	

PROOF OF SITE NOTICE

PROOF OF NEWSPAPER ADVERTISEMENT 19 AUGUST 2021 HARTLAND NUUS

DOODSBERIG / DEATH NOTICE

Met liefdevolle herinneringe aan Maria Botha.
Gebore 01 Mei 1929, sag heengegaan op Maandag 16 Augustus 2021.

Privaat gedenkdiens word by Huis Silwerjare gehou op Vrydag 20 Augustus 2021 om 11:00.

Verassing Privaat.
Dienste gelewer deur Life After Life Funerals
042 2433 142 Somerset-Oos

KENNISGEWING / NOTICE

ACVV Somerset-Oos nooi alle belangstellendes uit na hul Jaarvergadering op 24 Augustus 2021 om 09:30 by die ACVV-kantoor. oc

Henrico Marais
Attorneys & Conveyancers

NOTICE IN TERMS OF REGULATION 68 OF THE DEEDS REGISTRIES ACT, 1937

Notice is hereby given in terms of Regulation 68 of the Deeds Registries Act, 1937, of the intention to apply for the issue of a certified copy of Deed of Transfer Number T8309/19854CTN passed by JAN HENDRIK TOBIAS DE LANGE, Identity Number 230601017006, Married out of community of property, in favour of ARCHIBALD RICHARD HEINI NOLTE, Identity Number 5109305009007, Married out of community of property, in respect of certain Erf 169 Somerset East, In The Blue Crane Route Local Municipality, Division of Somerset East, Province of the Eastern cape, which has been lost or destroyed.

All interested persons having objection to the issue of such a copy are hereby required to lodge the same in writing with the Registrar of Deeds at King William's Town within two weeks from the date of the publication of this notice

Dated at Somerset East on this 22nd day of June 2021.

Applicant
HENRICO MARAIS ATTORNEYS
P.O. Box 96 / 56 Nojoli Street
SOMERSET EAST
5850
Tel: 042 243 0026
Fax: 086 585 0562
Email: henrico@hmatt.co.za

NOTICE IN TERMS OF REGULATION 68 OF THE DEEDS REGISTRIES ACT, 1937

Notice is hereby given in terms of Regulation 68 of the Deeds Registries Act, 1937, of the intention to apply for the issue of a certified copy of Deed of Transfer Number T110393/1997CTN passed by The executors in the estate of the late Abraham Johannes Petrus Louw, Estate Number 4277/95/3 in favour of JAN BEKKER LOUW, Identity Number 560124 5019 08 8, Married out of

INTEGRATED ENVIRONMENTAL IMPACT ASSESSMENT PROCESS (EIR AND SCOPING)

Notice is hereby given of an *Integrated Environmental Impact Assessment Process* to be conducted. This process will be undertaken in terms of Section 24(M) and 44 made under section 24(5) of the National Environmental Management Act (Act No. 107 of 1998) (Amended Regulations 07 April 2017) and the National Environmental Management: Waste Act, 1998 (Act No. 59 of 2008) and the Schedule contained in Government Notice 921, published on 29 November 2013 in terms of section 19 of NEMWA. The proposed project is classified as, and will be conducted - in terms of NEMA: Government Notice No. R.327 of 2017 (Government Notice No. R.327 Listing Notice 1; Activity no 1(ii) & 4(ii)(a)); (Government Notice No. R.325 Listing Notice 2: Activity no 15) and in terms of NEM:WA: Government Notice Regulation 921 of November 2013: Category A: (Activities 1 & 12) This advertisement complies with the instructions regarding such notices, National Environmental Management Act (Act No. 107 of 1998, as amended) (Amended Regulations promulgated on 17 April 2017) (Government Notice No. R.326 of 2017) (Regulation 41(2)(c)(d)). The competent authority is the Eastern Cape department of Economic development, Environmental Affairs & Tourism. Notice is hereby also given in terms of section 41(4) of the National Water Act (Act 36 of 1998) (NWA) of the De Heus project intent to apply for a Water use licence. This application is for the use in terms of Sections 21 of the NWA for the (21(a)) abstraction of water from a ground water resource, via borehole. Additionally, run-off from site will be collected in an evaporation pond on site a 21 (g) – disposing of waste in a manner which may detrimentally impact a water resource.

PROJECT NAME:

Integrated Environmental Impact Assessment for the proposed clearance of 40,537 hectares of indigenous vegetation in order to establish a Feed Mill, Agricultural Recreation Area, Solar Farm and Sheep Feedlot on Portion 15 of Portion 1 of the Farm Bultfontyn, Inxuba Yethemba Local Municipality, Eastern Cape Province. The proposed development will also entail the construction of three Sedimentation ponds and two Evaporation ponds.

PROJECT DESCRIPTION:

Clearance of 40,537 hectares of indigenous vegetation in order to establish a Feed Mill (feed mixing, pill making and packaging), Agricultural Recreation Area (animal display / demonstrations /auctions), Solar Farm (to supply electricity for the development) and Sheep Feedlot (10 880 sheep). The proposed development will also entail the construction of three Sedimentation ponds and two Evaporation ponds in order to treat run-off/ storm water that will originate from the Sheep Feedlot.

CLIENT:
De Heus (Pty) Ltd

CONSULTANT AND CONTACT PERSON:
Mr. J.P. De Villiers of AB Enviro Consult cc.
7 Louis Leipoldt Street, Potchefstroom, 2531
Tel: 083 5488 106
Fax: 018 293 0671
E-mail: jp@abenviro.co.za

Parties wishing to formally object to and / or comment on the proposed development are requested to forward their objections and comments (with reasons) to AB Enviro Consult, no later than 30 days after the date of this advertisement. An electronic copy of the draft Scoping Report is also available from AB Enviro Consult on request.

INTEGRATED ENVIRONMENTAL IMPACT ASSESSMENT PROCESS
(EIR AND SCOPING)

Notice is hereby given of an *Integrated Environmental Impact Assessment Process* to be conducted. This process will be undertaken in terms of Section 24(M) and 44 made under section 24(5) of the National Environmental Management Act (Act No. 107 of 1998) (Amended Regulations 07 April 2017) and the National Environmental Management: Waste Act, 1998 (Act No. 59 of 2008) and the Schedule contained in Government Notice 921, published on 29 November 2013 in terms of section 19 of NEMWA. The proposed project is classified as, and will be conducted - in terms of NEMA: Government Notice No. R.327 of 2017 (Government Notice No. R.327 Listing Notice 1; Activity no 1(ii) & 4(ii)(a)); (Government Notice No. R.325 Listing Notice 2: Activity no 15) and in terms of NEM:WA: Government Notice Regulation 921 of November 2013: Category A: (Activities 1 & 12) This advertisement complies with the instructions regarding such notices, National Environmental Management Act (Act No. 107 of 1998, as amended) (Amended Regulations promulgated on 17 April 2017) (Government Notice No. R.326 of 2017) (Regulation 41(2)(c)(d)). The competent authority is the Eastern Cape department of Economic development, Environmental Affairs & Tourism. Notice is hereby also given in terms of section 41(4) of the National Water Act (Act 36 of 1998) (NWA) of the De Heus project intent to apply for a Water use licence. This application is for the use in terms of Sections 21 of the NWA for the (21(a)) abstraction of water from a ground water resource, via borehole. Additionally, run-off from site will be collected in an evaporation pond on site a 21 (g) – disposing of waste in a manner which may detrimentally impact a water resource.

PROJECT NAME:

Integrated Environmental Impact Assessment for the proposed clearance of 40,537 hectares of indigenous vegetation in order to establish a Feed Mill, Agricultural Recreation Area, Solar Farm and Sheep Feedlot on Portion 15 of Portion 1 of the Farm Bultfontyn, Inxuba Yethemba Local Municipality, Eastern Cape Province. The proposed development will also entail the construction of three Sedimentation ponds and two Evaporation ponds.

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Clearance of 40,537 hectares of indigenous vegetation in order to establish a Feed Mill (feed mixing, pill making and packaging), Agricultural Recreation Area (animal display / demonstrations /auctions), Solar Farm (to supply electricity for the development) and Sheep Feedlot (10 880 sheep). The proposed development will also entail the construction of three Sedimentation ponds and two Evaporation ponds in order to treat run-off/ storm water that will originate from the Sheep Feedlot.

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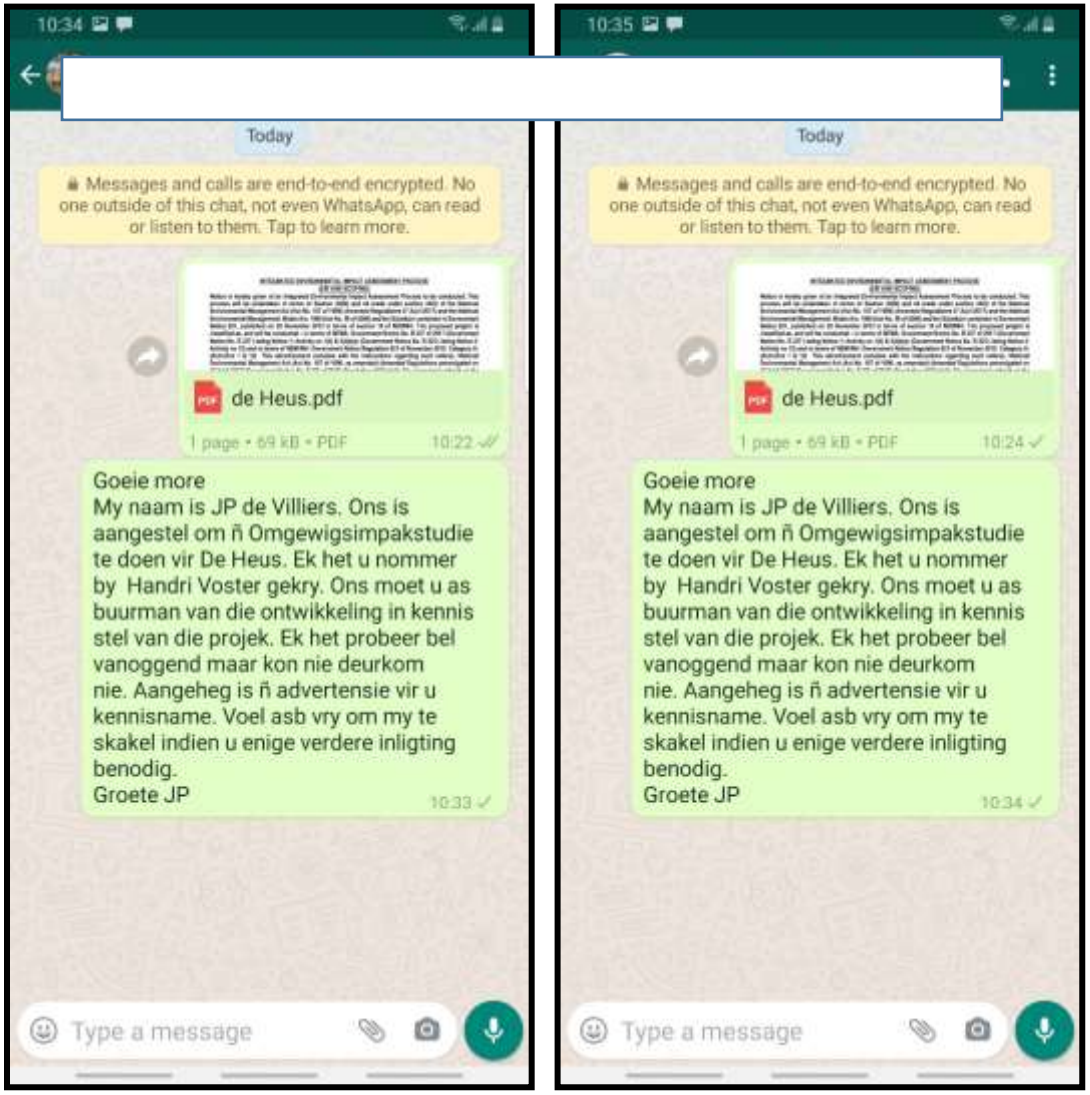
10.2 DETERMINATION OF APPROPRIATE MEASURES

Details of the measures taken to include all potential I&APs as required by Regulation 41(2)(e) and 41(6) of GN R.982.

Key stakeholders (other than organs of state) identified in terms of Regulation 40(2)(d) of GN R.982:

Title, Name and Surname	Affiliation/ key stakeholder status	Contact details (tel number or e-mail address)

PROOF OF NOTIFICATIONS SENT:


10:34
Today
Messages and calls are end-to-end encrypted. No one outside of this chat, not even WhatsApp, can read or listen to them. Tap to learn more.
de Heus.pdf
1 page • 69 kB • PDF
10:22
Goeie more
My naam is JP de Villiers. Ons is aangestel om ñ Omgewigsimpakstudie te doen vir De Heus. Ek het u nommer by Handri Voster gekry. Ons moet u as buurman van die ontwikkeling in kennis stel van die projek. Ek het probeer bel vanoggend maar kon nie deurkom nie. Aangeheg is ñ advertensie vir u kennisname. Voel asb vry om my te skakel indien u enige verdere inligting benodig.
Groete JP
10:33
Type a message
10:35
Today
Messages and calls are end-to-end encrypted. No one outside of this chat, not even WhatsApp, can read or listen to them. Tap to learn more.
de Heus.pdf
1 page • 69 kB • PDF
10:24
Goeie more
My naam is JP de Villiers. Ons is aangestel om ñ Omgewigsimpakstudie te doen vir De Heus. Ek het u nommer by Handri Voster gekry. Ons moet u as buurman van die ontwikkeling in kennis stel van die projek. Ek het probeer bel vanoggend maar kon nie deurkom nie. Aangeheg is ñ advertensie vir u kennisname. Voel asb vry om my te skakel indien u enige verdere inligting benodig.
Groete JP
10:34
Type a message

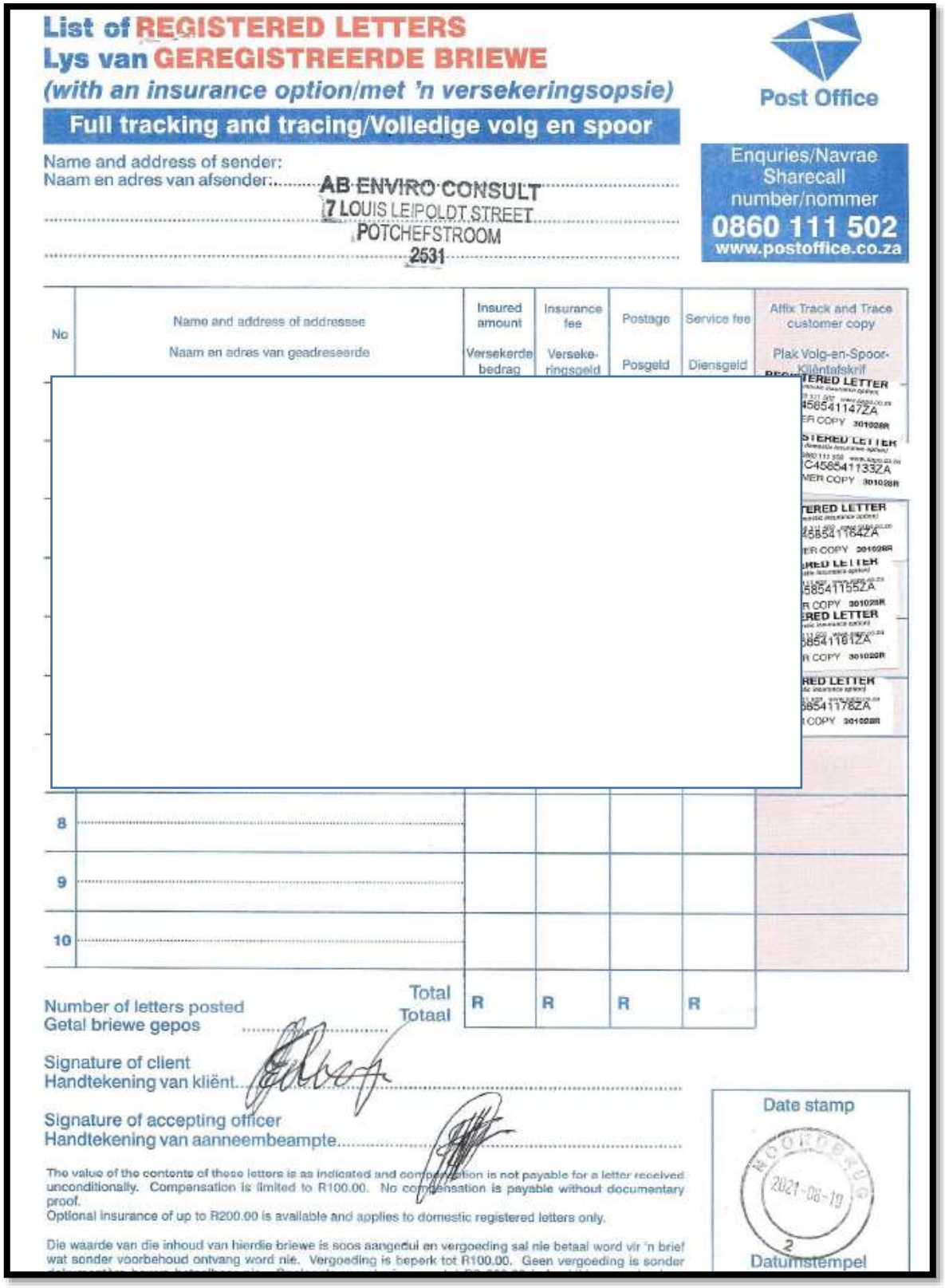
10.3 AUTHORITY PARTICIPATION

Authorities and organs of state identified as key stakeholders. Key stakeholders identified in terms of Regulation 7(1) and (2) and Regulation 40(2) (a)-(c) of GN R.982:

Authority/Organ of State	Contact person (Title, Name and Surname)	Tel No	Fax No	e-mail	Postal address
Department of Water and Sanitation					
Eastern Cape Rural development and Agragarian Reform					
Regional Manager: Environmental Affairs Dept of Economic Development, Environmental Affairs & Tourism: Chris Hani Region					
Chris Hani District Municipality					
Inxuba Yethemba Local Municipality					
Ward 7; Inxuba Yethemba Local Municipality					
Inxuba Yethemba Local Municipality					
Province of the Eastern Cape Transport					0023 Town
SANRAL					
Civil Aviation Authority					
Eskom					
SAHRA					

Chris Hani DM					
Chris Hani DM					
Environmental Affairs dept. of economic development, environmental affairs and tourism					

PROOF OF NOTIFICATIONS:



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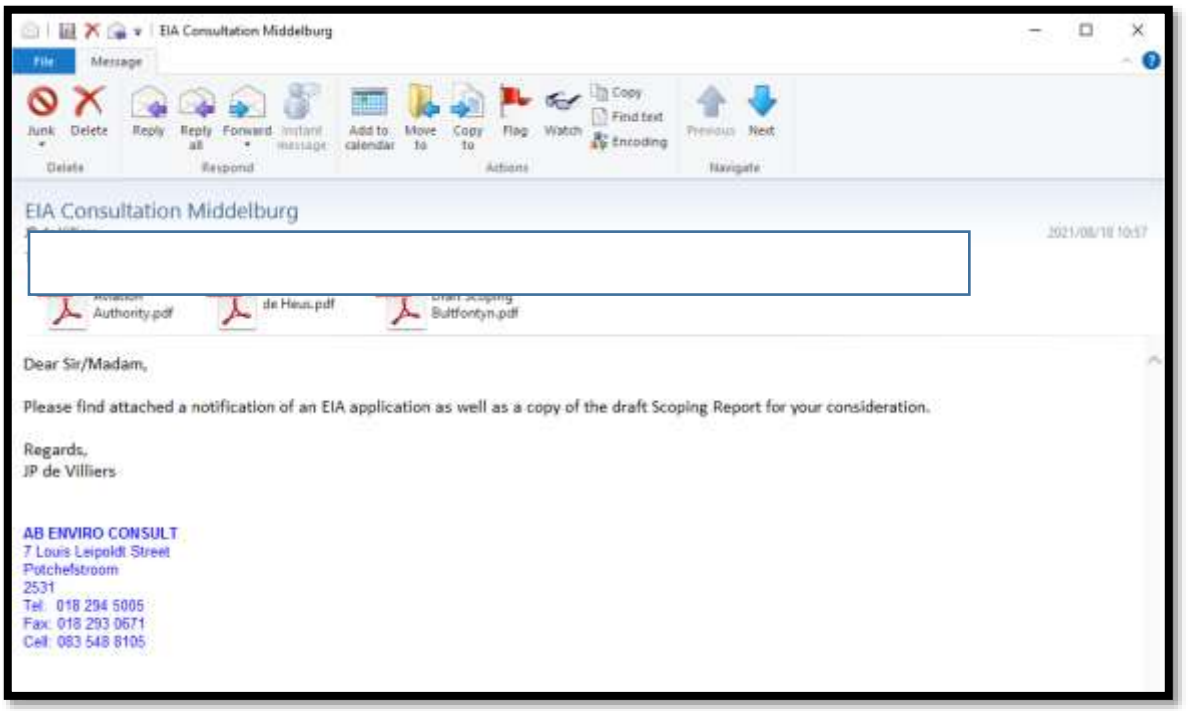
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Bultfontyn.pdf
Dear Sir/Madam,
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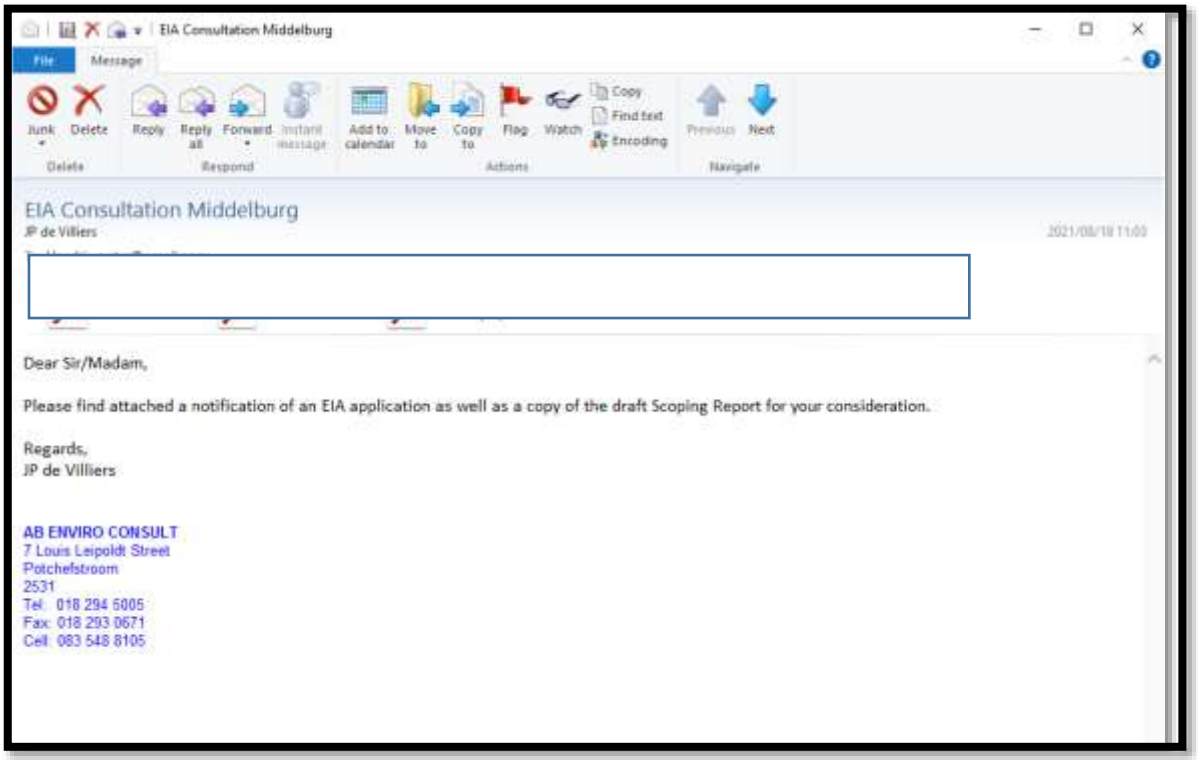
Regards,
JP de Villiers
AB ENVIRO CONSULT
7 Louis Leipoldt Street
Potchefstroom
2531
Tel: 018 294 5005
Fax: 018 293 0671
Cell: 083 548 8105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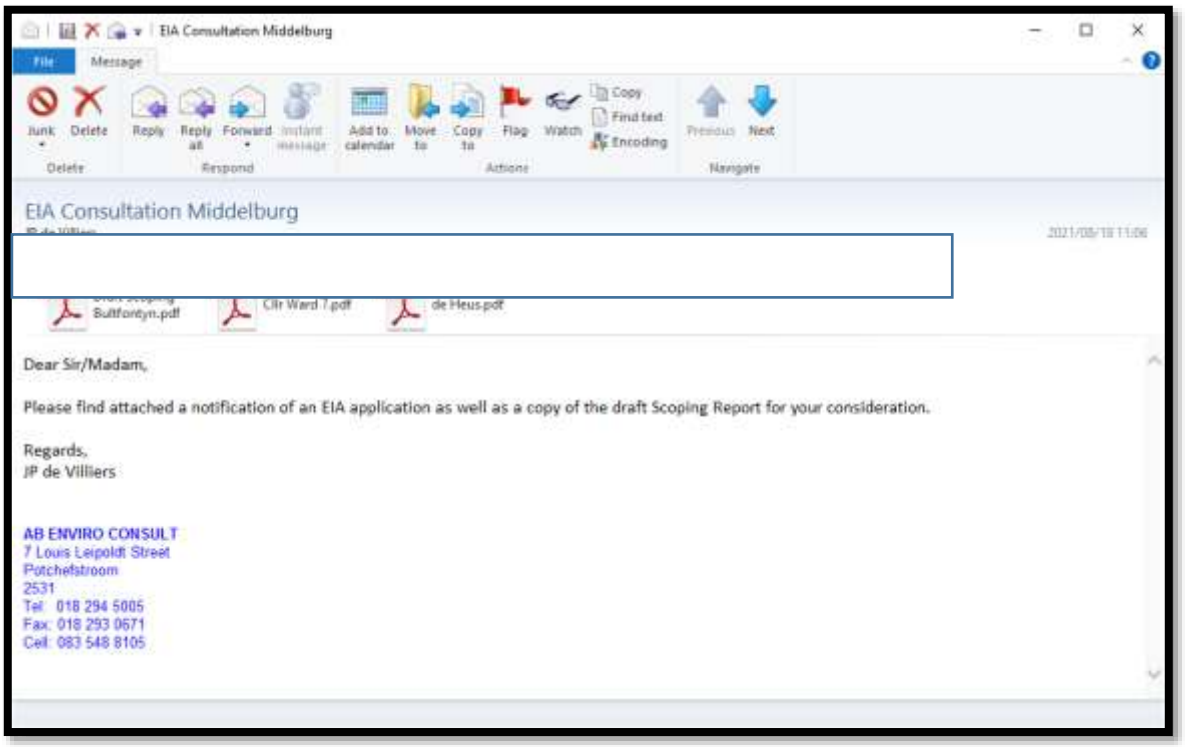
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Cllr Ward 7.pdf
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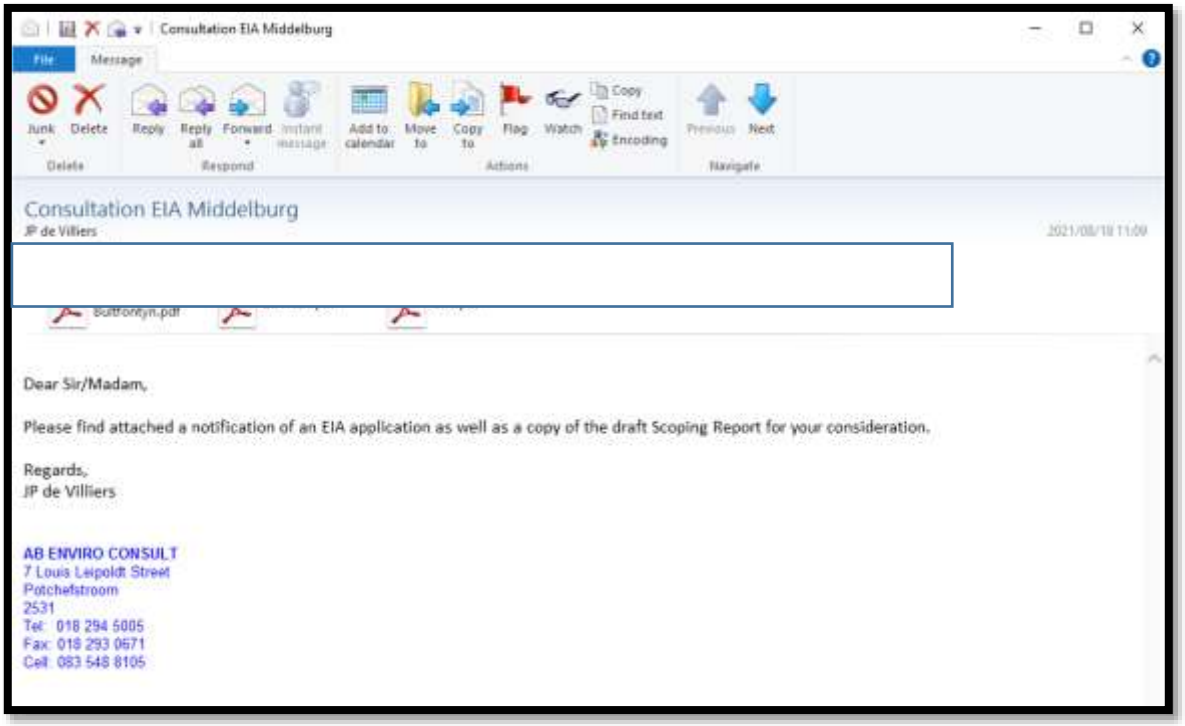
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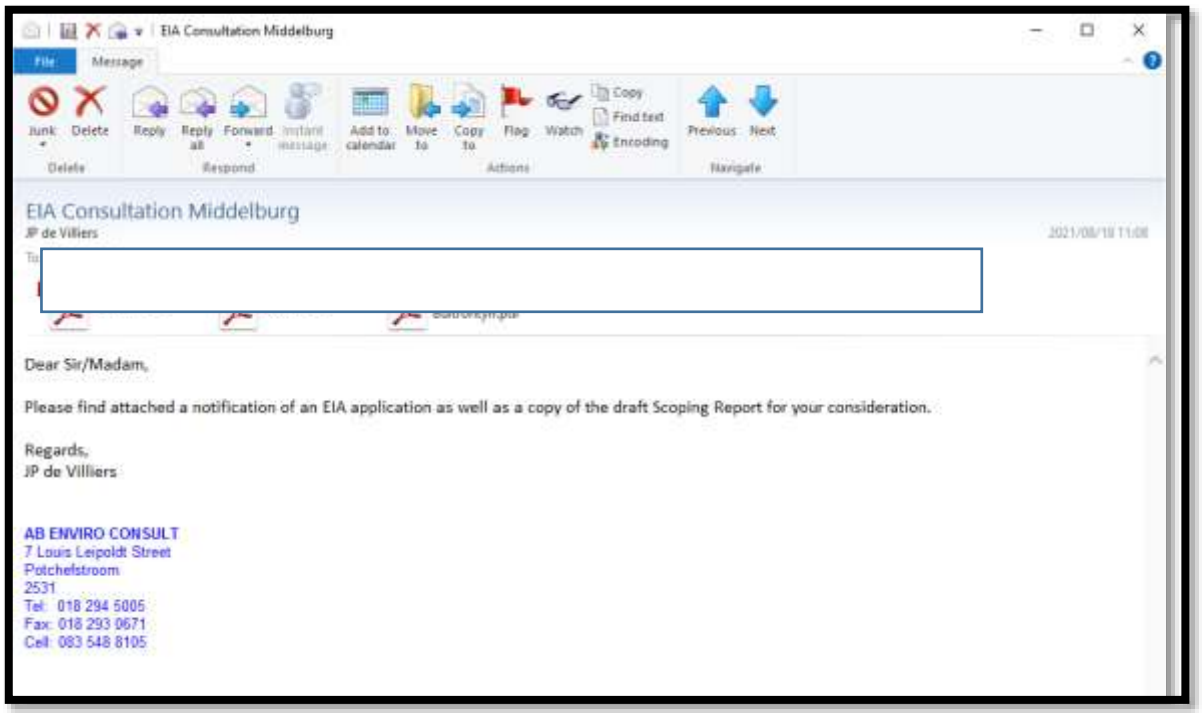
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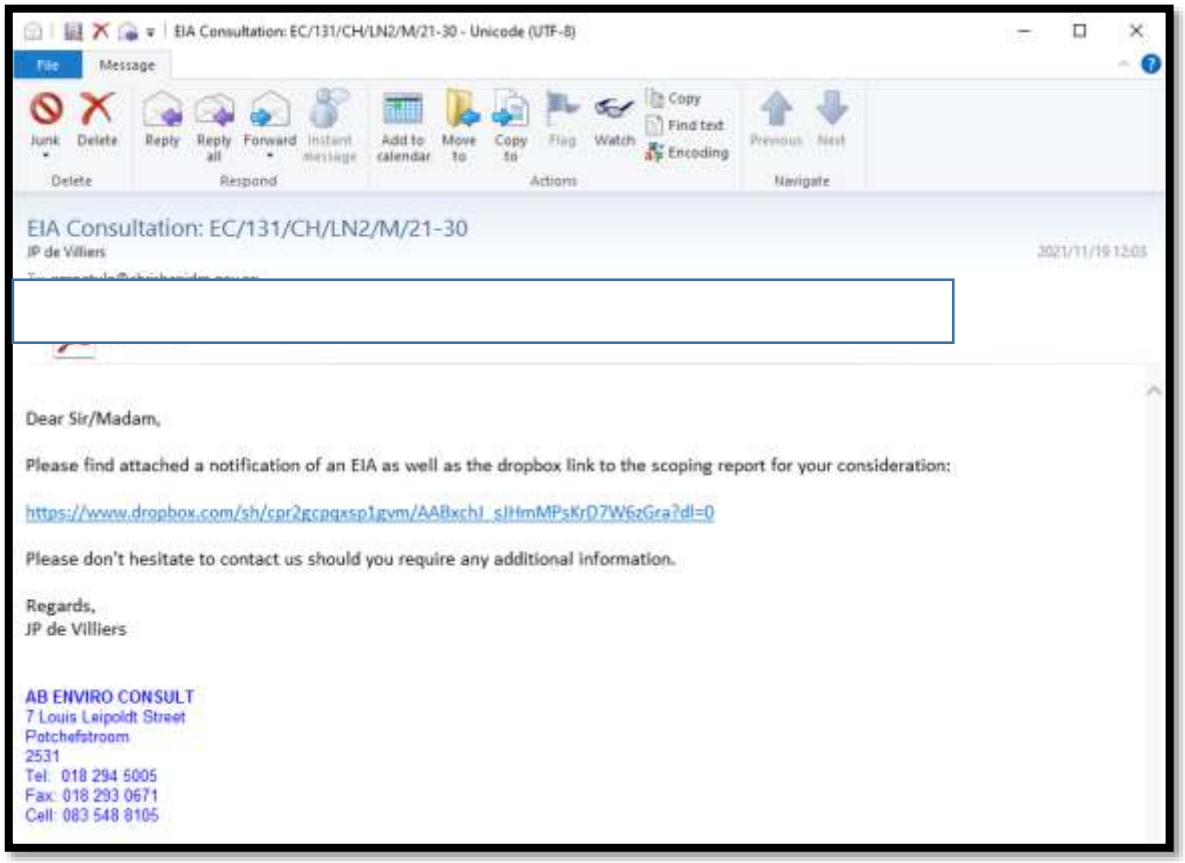
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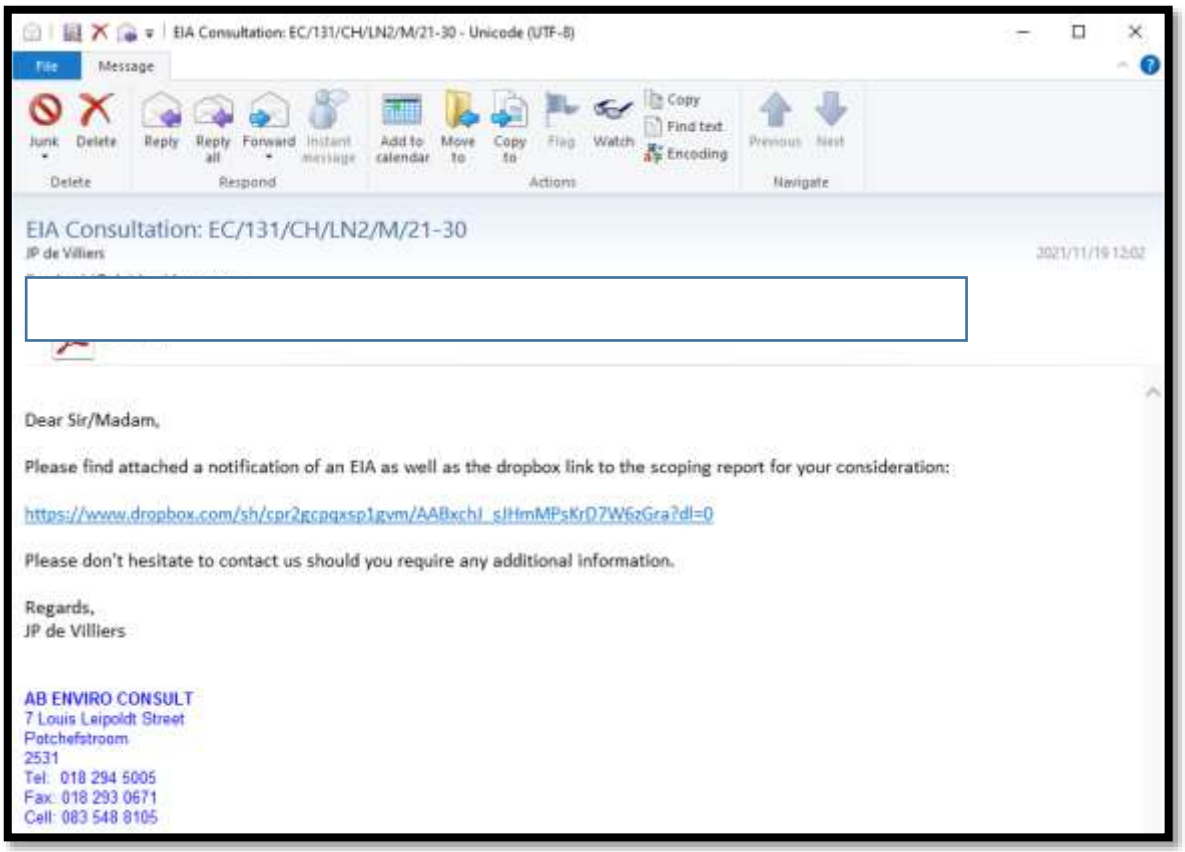
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JP de Villiers
2021/11/19 12:02
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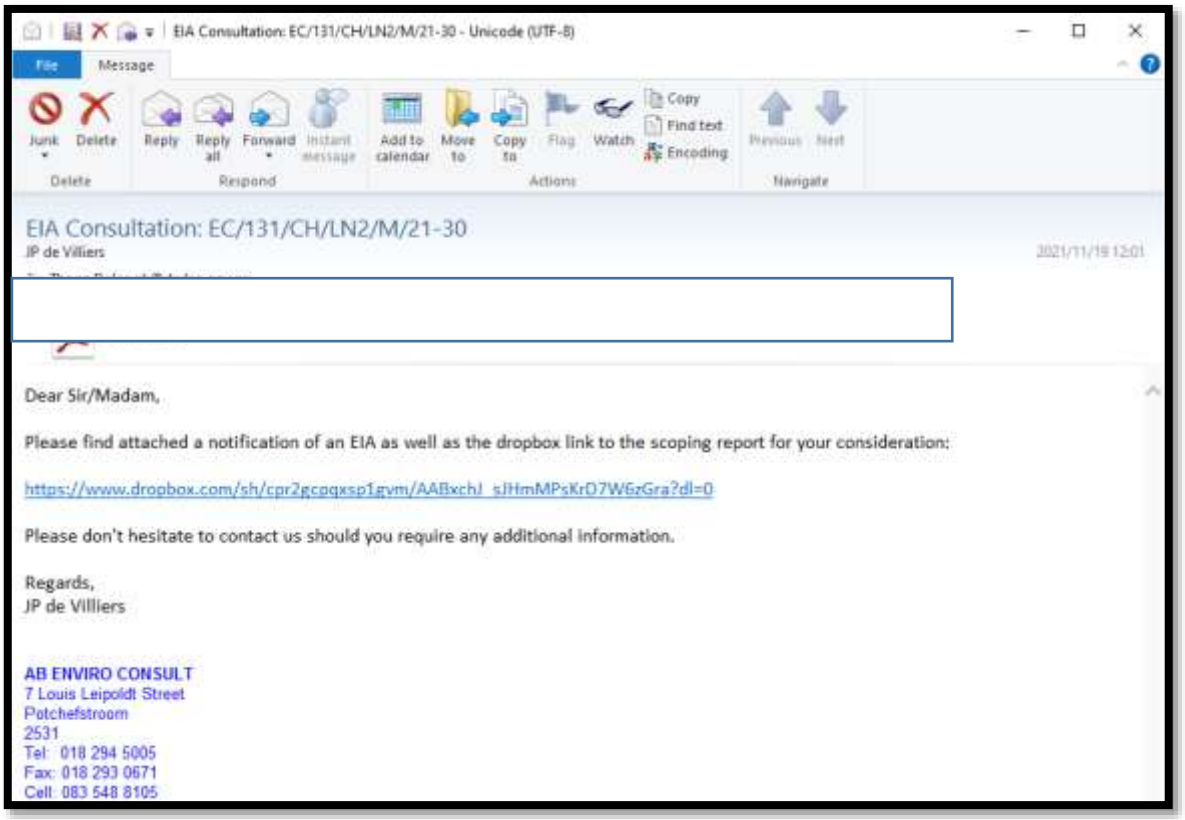
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Cell: + 27 (83) 5488 105
E-mail: jp@abenviro.co.za

19/11/2021

Chris Hani District Municipality
C
q za

D

Integrated Environmental Impact Assessment for the proposed clearance of 40,537 hectares of indigenous vegetation in order to establish a Feed Mill, Agricultural Recreation Area, Solar Farm and Sheep Feedlot on Portion 15 of Portion 1 of the Farm Bultfontyn, Inxuba Yethemba Local Municipality, Eastern Cape Province. The proposed development will also entail the construction of three Sedimentation ponds and two Evaporation ponds.

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19/11/2021

Chris Hani District Municipality

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19/11/2021

Mr Tim De Jongh
Environmental Affairs Dept of Economic Development, Environmental Affairs & Tourism

Integrated Environmental Impact Assessment for the proposed clearance of 40,537 hectares of indigenous vegetation in order to establish a Feed Mill, Agricultural Recreation Area, Solar Farm and Sheep Feedlot on Portion 15 of Portion 1 of the Farm Bultfontyn, Inxuba Yethemba Local Municipality, Eastern Cape Province. The proposed development will also entail the construction of three Sedimentation ponds and two Evaporation ponds.

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19/08/2021

Department of Water and Sanitation
Region: Eastern Cape

Dear Sir/Madam

Integrated Environmental Impact Assessment for the proposed clearance of 40,537 hectares of indigenous vegetation in order to establish a Feed Mill, Agricultural Recreation Area, Solar Farm and Sheep Feedlot on Portion 15 of Portion 1 of the Farm Bultfontyn, Inxuba Yethemba Local Municipality, Eastern Cape Province. The proposed development will also entail the construction of three Sedimentation ponds and two Evaporation ponds.

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19/08/2021

The MEC:
Eastern Cape Rural development and Agragarian Reform
Private Bag X0040
5600

Dear Sir/Madam

Integrated Environmental Impact Assessment for the proposed clearance of 40,537 hectares of indigenous vegetation in order to establish a Feed Mill, Agricultural Recreation Area, Solar Farm and Sheep Feedlot on Portion 15 of Portion 1 of the Farm Bultfontyn, Inxuba Yethemba Local Municipality, Eastern Cape Province. The proposed development will also entail the construction of three Sedimentation ponds and two Evaporation ponds.

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The HOD: Biodiversity Management
Regional Manager: Environmental Affairs Dept of Economic Development, Environmental Affairs & Tourism: Chris Hani Region
[redacted]
5320

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SANRAL

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19/08/2021

Province of the Eastern Cape Transport
Planning Section
Private Bag X0022
5601

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19/08/2021

Chris Hani District Municipality
[redacted]iyi
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MR.J.P. DE VILLIERS (M Sc, HED, EAP-EAPASA); MRS.J.E. DU PLOOY (M.E.M, EAP-EAPASA)

AB ENVIRO-CONSULT CC

Reg no. 2000/016653/23

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Fax: + 27 (18) 293 0671
Cell: + 27 (83) 5488 105
E-mail: jp@abenviro.co.za

19/08/2021

The Municipal Manager

[redacted]unicipality

Dear Sir/Madam

Integrated Environmental Impact Assessment for the proposed clearance of 40,537 hectares of indigenous vegetation in order to establish a Feed Mill, Agricultural Recreation Area, Solar Farm and Sheep Feedlot on Portion 15 of Portion 1 of the Farm Bultfontyn, Inxuba Yethemba Local Municipality, Eastern Cape Province. The proposed development will also entail the construction of three Sedimentation ponds and two Evaporation ponds.

AB ENVIRO CONSULT was appointed by **De Heus PTY (LTD)** to submit an application to the Eastern Cape department of Economic development, Environmental Affairs & Tourism for the above mentioned proposed development.

Attached please find a notification of the proposed development as well as a copy of the draft Scoping report for your comments. We must receive your comments within a period of 30 days from the date of this letter. In the event of your organisation/department not wishing to comment on this matter, it would be appreciated if we could receive written confirmation thereof to enable us to continue with the finalisation of the application.

If no response is however received from your Department/organisation within the said time, it will be assumed that your department/organisation does not wish to comment on this matter and the application will be processed further.

Please do not hesitate to contact us should any further information or clarification be required.

Yours sincerely,

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19/08/2021

The Councillor Ward 7

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19/08/2021

Eskom

[redacted]

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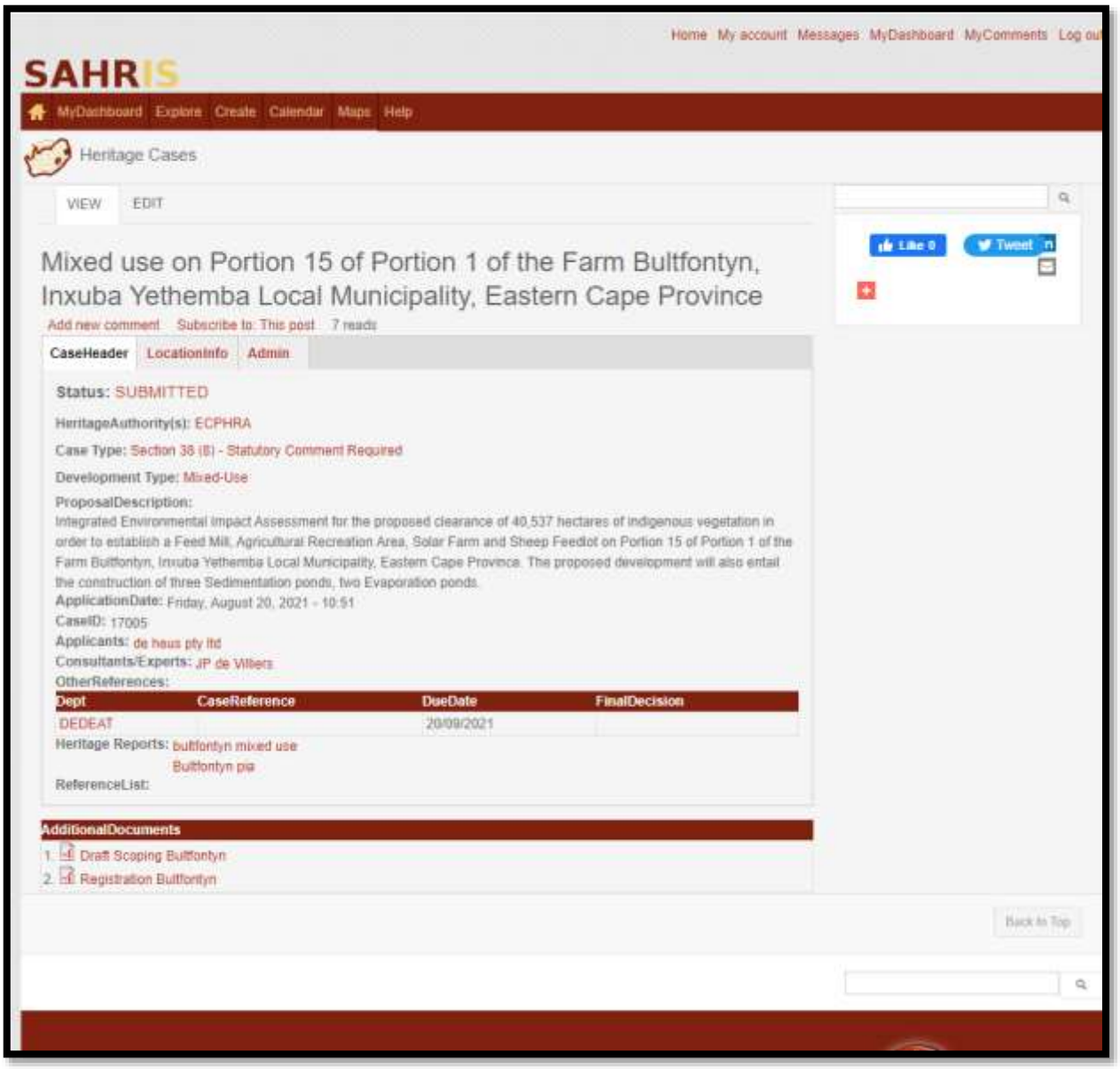
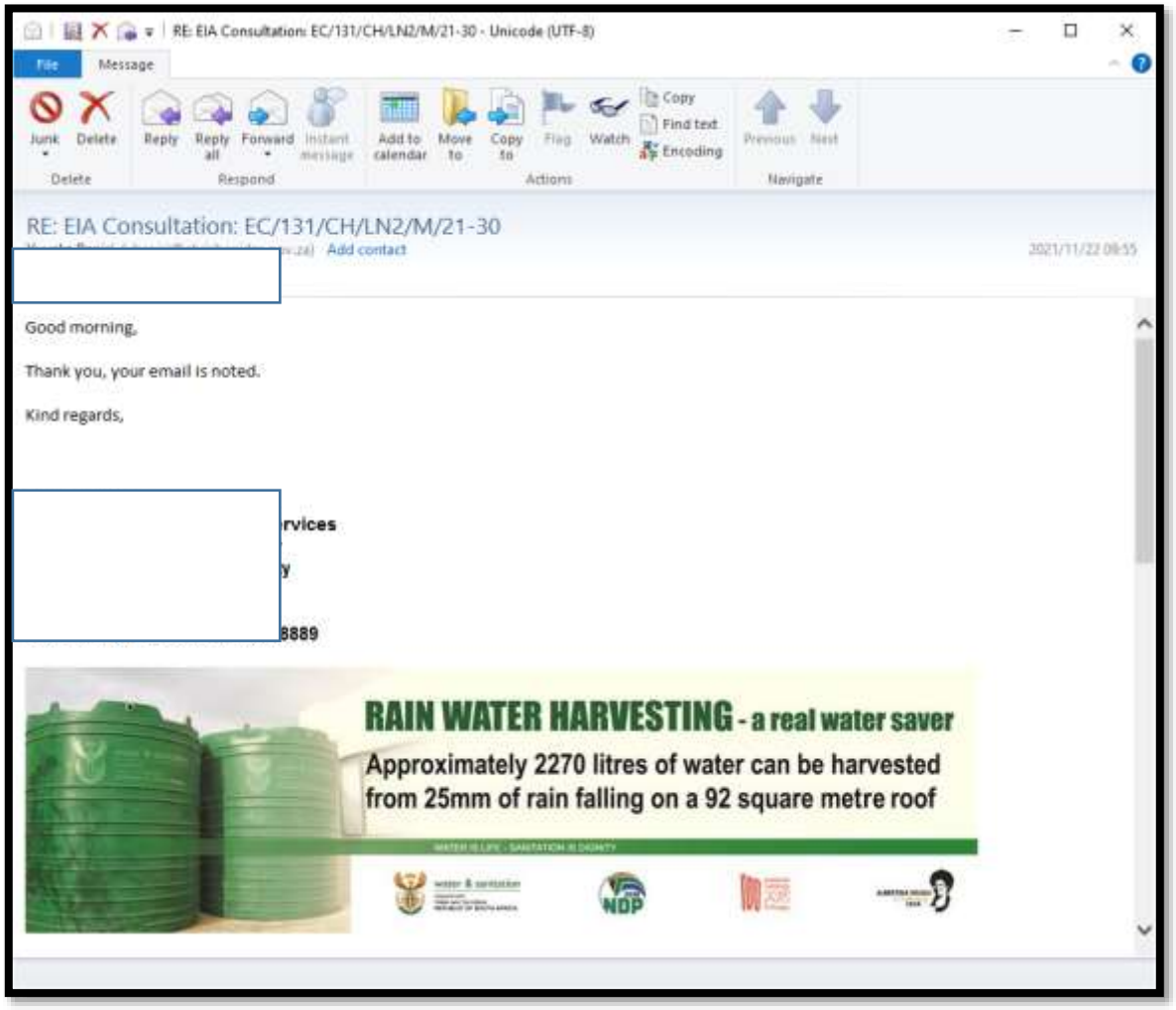


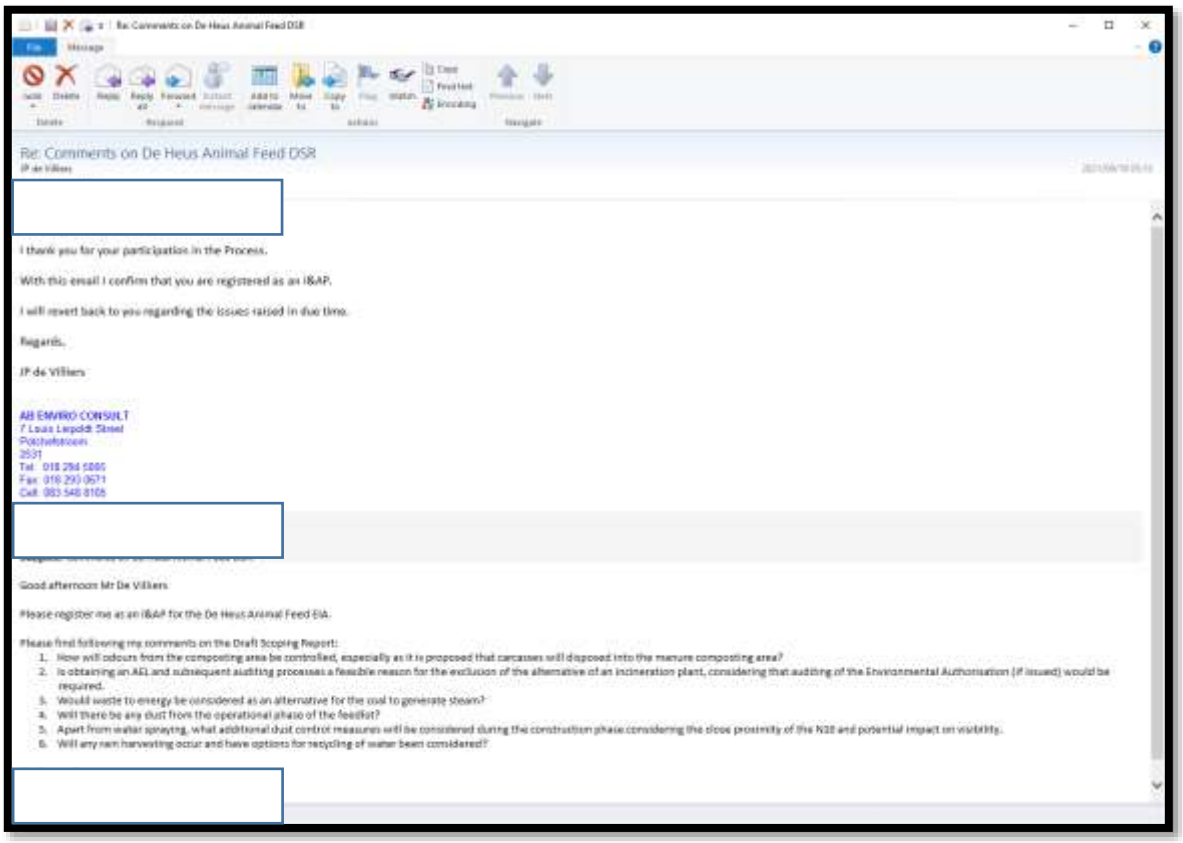
10.4 ISSUES RAISED BY INTERESTED AND AFFECTED PARTIES

Summary of main issues raised by I&APs	Summary of response from EAP
Questions how odours from the composting area will be controlled considering carcasses will be disposed of into the manure composting area	Explained process and how odours will be controlled via regulated composting practises, also considering prevailing wind direction and the amount of carcasees that will be disposed of.
Is obtaining an AEL and subsequent auditing processes a feasible reason for the exclusion of the alternative of an incineration plant, considering that auditing of the Environmental Authorisation (if issued) would be required.	The installation and operating costs of an incinerator, relative to the volume of carcasses that can be expected, have been considered and it was deemed not be a feasible alternative
Would waste to energy be considered as an alternative for the coal to generate steam?	The volume of solid waste generated by the feed mill is low. Due to low volume this was not considered as boiler feed stock.

	The feedlot is relatively small and the stormwater containment dams is not considered a viable source of energy (methane gas).
Will there be any dust from the operational phase of the feedlot	The dust that will be produced will be minimal. Except for the areas where ewes will lamb, (these surfaces will be impermeable, highly compacted gravel) all surfaces will be concrete and will be cleaned daily. The accumulation of manure that will give raise to dust pollution will be negligible. All roads will be surfaced and will not give raise to dust pollution.
Apart from water spraying, what additional dust control measures will be considered during the construction phase considering the close proximity of the N10 and potential impact on visibility.	Revegetation and stabilised as soon as practically possible. Erodable material handling excavation and transport will be avoided under high wind conditions or when a visible dust plume is present. Construction camp will be watered during dry and windy conditions to control dust fallout. Regular watering of roads and work areas. Recommendations as to whether working should cease if under high working conditions. Erosion control measures as well as speed limits. Also consider prevailing wind direction.
Will any rain harvesting occur and have options for recycling of water been considered	Rain harvesting will not occur *per se*, but all stormwater will be directed towards the evaporation ponds to assist in the dilution of manure accumulated within these ponds

Comments received from I&APs





Re: Comments on De Heus Animal Feed DSR

I thank you for your participation in the Process.

With this email I confirm that you are registered as an I&AP.

I will revert back to you regarding the issues raised in due time.

Regards,

IP de Villiers

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Fax: 018 293 0671
Cell: 083 548 8105

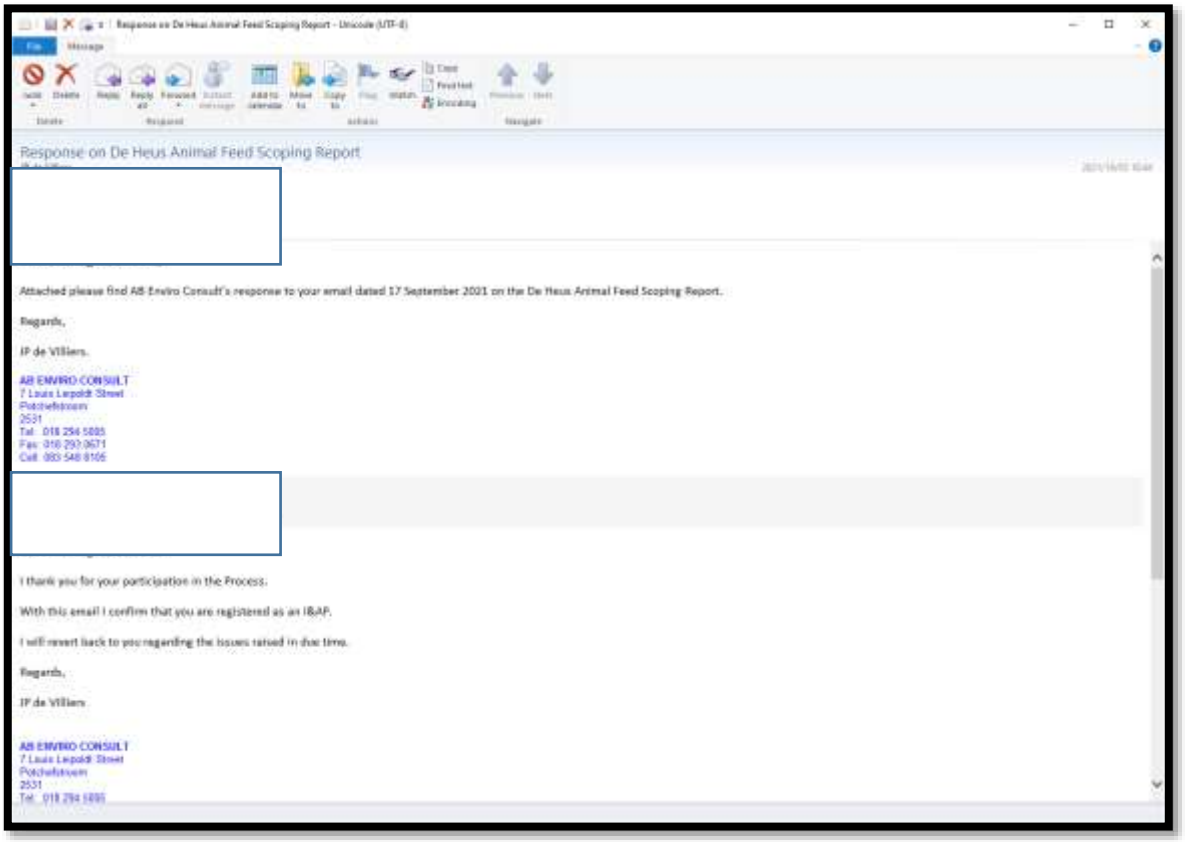
Good afternoon Mr De Villiers

Please register me as an I&AP for the De Heus Animal Feed EIA.

Please find following my comments on the Draft Scoping Report:

1. How will odours from the composting area be controlled, especially as it is proposed that carcasses will disposed into the manure composting area?
2. Is obtaining an AEL and subsequent auditing processes a feasible reason for the exclusion of the alternative of an incineration plant, considering that auditing of the Environmental Authorisation (if issued) would be required.
3. Would waste to energy be considered as an alternative for the coal to generate steam?
4. Will there be any dust from the operational phase of the feedlot?
5. Apart from water spraying, what additional dust control measures will be considered during the construction phase considering the close proximity of the N18 and potential impact on visibility.
6. Will any rain harvesting occur and have options for recycling of water been considered?

EAP'S Response and proof of letter sent 10/05/2021:



Response on De Heus Animal Feed Scoping Report

Attached please find AB Enviro Consult's response to your email dated 17 September 2021 on the De Heus Animal Feed Scoping Report.

Regards,

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05/10/2021

Dear Madam,

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Your E-mail dated 17 September 2021 has reference:

Your bullet 1: How will odours from the composting area be controlled, especially as it is proposed that carcasses will disposed into the manure composting area?

Under controlled conditions, composting is accomplished in two main stages: an active stage and a curing stage (Figure 1). In the active composting stage, microorganisms consume oxygen (O_2) while feeding on organic matter in manure and produce heat, carbon dioxide (CO_2) and water vapour. During this stage, most of the degradable organic matter is decomposed. A management plan is needed to maintain proper temperature, oxygen and moisture for the organisms. Testing temperature, moisture content, and oxygen levels can help make decisions on composting activities, such as turning, aerating, or adding moisture. These tests can be performed quite simply on site giving quick feedback - from minutes for temperature or oxygen to overnight for moisture content. In the curing phase, microbial activity slows down and as the process nears completion, the material approaches ambient air temperature. Finished compost takes on many of the characteristics of humus, the organic fraction of soil. The material will have been reduced in volume by 20 to 60%, the moisture content by 40% and the weight by up to 50%. One of the key challenges in composting is to retain as much nitrogen as possible.

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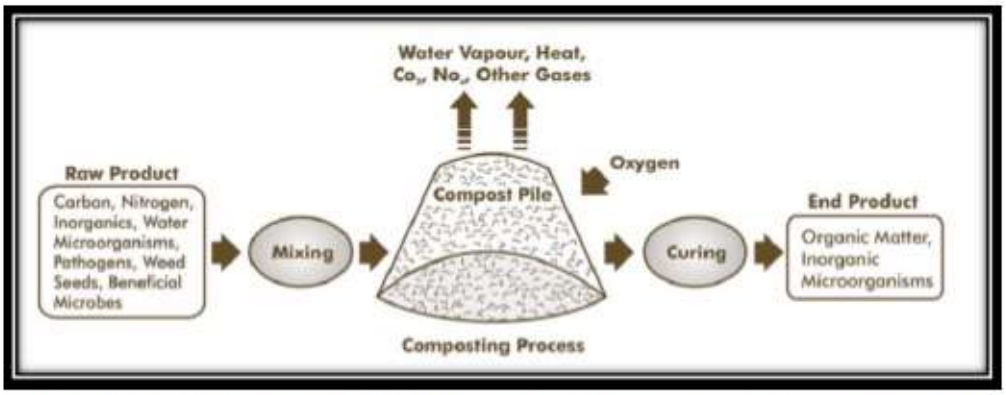

Figure 1: Material flow for the conventional composting process. (Source: Alberta Agriculture, Food and Rural Development, 2005)

Controlling the process factors can accelerate the natural composting process. Each of these factors has the potential to significantly affect the composting process. Some of the important factors in the composting process are shown in Table 1 with their acceptable ranges.

Table 1. Factors affecting the composting process and acceptable ranges (Source: Alberta Agriculture, Food and Rural Development, 2005)

Factor	Acceptable Range
Temperature	54 - 60°C
Carbon to Nitrogen ratio (C:N)	25:1 - 30:1
Aeration, percent oxygen	> 5%
Moisture content	50 - 60%
Porosity	30 - 36
pH	6.5 - 7.5

Temperature

Temperature is a very good indicator of the process occurring within the composting material. The temperature increases due to the microbial activity and is noticeable within a few hours of forming a pile as easily degradable compounds are consumed. The temperature usually increases rapidly to 50 - 60°C where it is maintained for several weeks. This is called the active composting stage. Biochemical reaction rates approximately double with each 10°C increase in temperature, yet higher temperatures will increase ammonia loss during the composting process. The temperature gradually drops to 40°C as the active composting slows down and the curing stage begins. Eventually, the temperature will become that of the surrounding air. The highest rates of decomposition occur when temperatures are in the range of 43 - 66°C. During the active composting stage, the temperature may start to fall because of a lack of oxygen. Turning the material introduces new oxygen and the active composting stage continues. The temperatures can exceed 70°C but many microorganisms begin to die, which stops the active composting stage. Cooling the material by turning helps to keep the temperature from reaching these damaging levels. Heat loss occurs primarily because of water evaporation from the material. Heat loss can also occur if the pile is too small or is exposed to cold weather. If the moisture content falls too low it increases the chance of obtaining damaging high temperatures.

The temperature should be maintained at 55°C or higher for a minimum of 14 days to destroy the viability of many pathogens and weed seeds. Remember, the edges of the windrow are cool, therefore they must be turned into the centre to kill the weed seeds.

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Carbon to Nitrogen Ratio

The carbon to nitrogen ratio (C:N) of manure is a very important factor that affects the whole composting process because microbes need 20 to 25 times more carbon than nitrogen to remain active. The ratio should be between 25:1 and 30:1 at the beginning. The microorganisms digest carbon as an energy source and ingest nitrogen for protein and reproduction. Softwood shavings, sawdust and straw are good sources of carbon. Other inexpensive sources of carbon include municipal waste and shredded newsprint or cardboard. Most manures are a good source of nitrogen but may be low in carbon depending on the amount of bedding used. The content of materials can be estimated using the table or a laboratory can perform the analysis. If the ratio is too high (insufficient nitrogen), the decomposition slows. If the ratio is too low (too much nitrogen), it will likely be lost to the atmosphere in the form of ammonia gas. This can lead to odour problems. Most materials available for composting do not fit the ideal ratio so different materials must be blended. Proper blending of carbon and nitrogen helps ensure that composting temperatures will be high enough for the process to work efficiently and ensures other nutrients are available for microbes in adequate supply.

Aeration

The minimum desirable oxygen concentration in the composting material is 5%. Greater than 10% is ideal to avoid anaerobic conditions and high odour potential. Aeration adds fresh air in the centre of the composting material. Rapid aerobic decomposition can only occur in the presence of sufficient oxygen. Aeration occurs naturally when air warmed by the compost rises through the material, drawing in fresh air from the surroundings at the base of the windrow. Initial mixing of materials usually introduces enough air to start composting. Porosity and moisture content affect air movement through the composting material. Regular mixing of the material, referred to as turning, enhances aeration in the composting material. Good aeration during composting will encourage complete decomposition of carbon (C) to carbon dioxide (CO_2) rather than releasing carbon as methane (CH_4). Too much aeration, however, can actually reduce the rate of decomposition by cooling the composting material and may cause the release of too much CO_2. Excessive air flow can remove a lot of moisture. Another consequence of excessive aeration is ammonia loss, especially with high nitrogen (low C:N ratio) mixes. As the material dries out, more ammonia volatilizes and consequently, more nitrogen is lost. The oxygen concentration can be measured with an oxygen probe. However, temperature provides an adequate indication of the process conditions. If the supply of oxygen is limited, the composting process slows and the temperature begins to fall. In this case the composting materials should be turned.

Moisture Content

Moisture plays an essential role in the metabolism of microorganisms and indirectly in the supply of oxygen. Microorganisms can utilize only those organic molecules that are dissolved in water. Moisture content between 50 and 60% (by weight) provides adequate moisture without limiting aeration. If the moisture content falls below 40%, bacterial activity will slow down and will cease entirely below 15%. When the moisture content exceeds 60%, nutrients are leached, porosity is reduced, odours are produced (due to anaerobic conditions) and decomposition slows. The squeeze test can be used to check the moisture content. The material is too wet if water can be squeezed out of a handful and too dry if the material doesn't form a ball when squeezed.

If the pile becomes too wet, it should be turned. This allows air to circulate back into it and loosens the materials for better draining and drying. Adding dry material, such as straw, sawdust or finished compost can also remedy excess moisture problems. If the material is too dry, water can be added. An effective practice is to turn the material and rewet materials in the process. Shaping the pile can assist in shedding excess water from the pile. A windrow cover can be used to keep unwanted moisture from the elements out of the windrow and conserve moisture within the windrow. Optimum moisture content of raw materials should be between 50 and 60% (wet basis), depending on particle size, available nutrients and physical characteristics.

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Porosity

Porosity refers to the spaces between particles in the compost material. These spaces are partially filled with air that can supply oxygen to the organisms and provide a path for air circulation. As the material becomes water saturated, the space available for air decreases, thus slowing the composting process. Compacting the composting material reduces the porosity. Excessive shredding can also impede air circulation by creating smaller particles and pores. Turning fluffs up the material and increases its porosity. Adding coarse materials such as straw or woodchips can increase the overall porosity, although some coarse materials will be slow to decompose.

pH of Materials

The optimum pH for microorganisms involved in composting lies between 6.5 and 7.5. The pH of most animal manures is approximately 6.8 to 7.4. Composting alone leads to major changes in materials and their pH as decomposition occurs. For example, release of organic acids may, temporarily, lower the pH (increase acidity), and production of ammonia from nitrogenous compounds may raise the pH (increase alkalinity) during early stages of composting. On-site laboratory tests of pH can be used to maintain process control and product quality at a composting site.

Nutrients

Adequate levels of phosphorus (P), potassium (K), carbon (C), nitrogen (N), etc. are important in the composting process and are normally present in farm organic materials such as manure and livestock mortalities. Nutrient loss can occur through volatilization, losses to the atmosphere and leaching. Composting converts the nutrients in manure to stable forms that have a low ability to be lost by volatilization and leaching when applied to the land. However, during the composting process substantial amounts of nitrogen will be lost through ammonia volatilization. The ammonia emissions during composting reduce the fertilizer value of the finished compost. Nitrogen losses can also occur from emission of nitrous oxides or nitrogen gas.

COMPOSTING METHOD

As outlined in Table 2 (below), some basic composting methods use bins, passive windrows, turned windrows, aerated static piles and in-vessel channels. The proper approach depends on the time to complete composting, the material and volume to be decomposed, space available, the availability of resources (labour, finances, etc.) and the quality of finished product required.

Table 2: Basic composting methods ranges (Source: Alberta Agriculture, Food and Rural Development, 2005)

Variable	Bin	Passive Windrow	Active Windrow (Preferred alternative.)	Aerated Static Windrow	In-Vessel Channel
General	Low technology, medium quality.	Low technology, quality problems.	Active systems most common on farms.	Effective for farm and municipal use.	Large-scale systems for commercial applications.
Labour	Medium labour required.	Low labour required.	Increases with aeration frequency and poor planning.	System design and planning important. Monitoring needed.	Requires consistent level of management/ product flow to be cost efficient.
Site	Limited land but requires a composting structure.	Requires large land areas.	Can require large land areas.	Less land required given faster rates and effective pile volumes.	Very limited land due to rapid rates and continuous operations.
Bulking Agent	Flexible.	Less flexible, must be porous.	Flexible.	Less flexible, must be porous.	Flexible.
Active Period	Range: 2 - 6 months	Range: 6 - 24 months	Range: 21 - 40 days	Range: 21 - 40 days	Range: 21 - 35 days

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Curing	30+ days	Not applicable.	30+ days	30+ days	30+ days
Size: Height	Dependent on bin design.	1 - 4 metres	1 - 2.8 metres	3 - 4.5 metres	Dependent on bay design
Size: Width	Variable.	3 - 7 metres	3 - 6 metres	Variable.	Variable
Size: Length	Variable.	Variable.	Variable.	Variable.	Variable.
Aeration System	Natural convection and mechanical turning.	Natural convection only.	Mechanical turning and natural convection.	Forced positive/negative airflow through pile.	Extensive mechanical turning and aeration.
Process Control	Initial mix or layering and one turning.	Initial mix only.	Initial mix and turning.	Initial mix, aeration, temperature and/or time control.	Initial mix, aeration, temperature and/or time control, and turning.
Odour Factors	Odour can occur, but generally during turning.	Odour from the windrow will occur. The larger the windrow the greater the odours	From surface area of windrow. Turning can create odours during initial weeks.	Odour can occur, but controls can be used, such as pile insulation and filters on air systems.	Odour can occur. Often due to equipment failure or system design limitations.

Active Windrow Composting (Turned)

This will be the preferred method of composting. Active windrow composting is the production of compost in windrows using mechanical aeration by a front-end loader or a specially designed windrow turner. Loaders, although inexpensive compared to turners, have a tendency to compact the composting material, are comparatively inefficient, and can result in longer composting periods and less consistent quality. Turned windrow composting represents a low technology and medium labour approach and produces a uniform product.

The most commonly used windrow turners have a series of heavy tines that are placed along a rotating horizontal drum, which turns, mixes, aerates and reforms the windrow as the machine moves forward. These windrow turners are either self-contained units that straddle the row or are towed by a tractor and powered by a tractor PTO (Figure 2). The optimum height and width of the windrows depends on the type of equipment used to turn them.

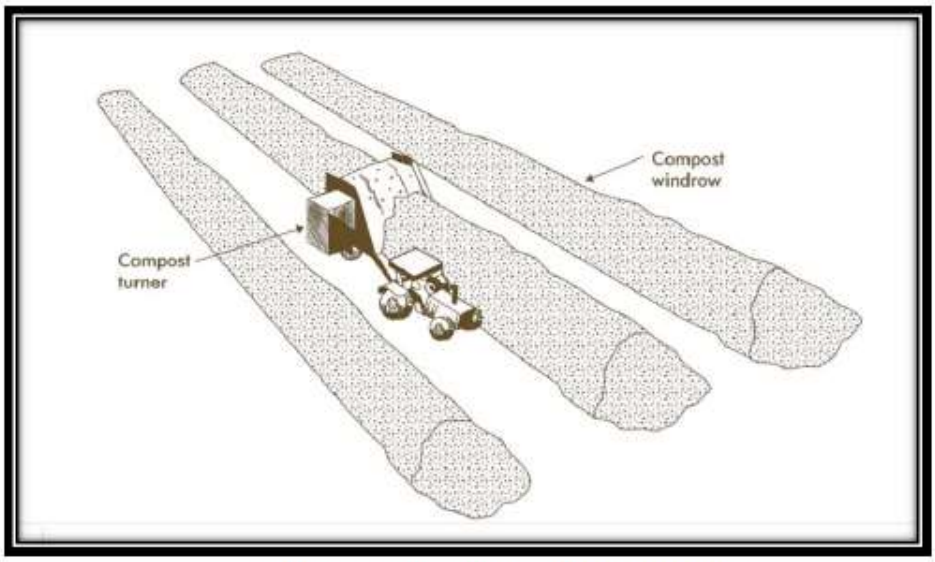

Figure 2: Windrow turning with a pull-type turner.

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Windrow composting can produce excellent compost using a variety of diverse materials. Wastes such as manure solids and paunch manure (offal), if in a secure compost area to eliminate scavengers, can be composted with bulking agents such as sawdust, straw and recycled paper products. Windrow composting efficiency and product quality are dependent primarily upon two major factors:

1. The initial compost mix.

2. Management practices." (Alberta Agriculture, Food and Rural Development, 2005)

All of the above mentioned principals will be implemented and managed, to ensure an odour free composting process even with the carcasses proposed to be disposed. Also to bear in mind that it would be a maximum of 2 sheep/day @ approx. 75kg each. In addition to the afore mentioned, the prevailing wind direction also needs to be considered, which in this instance would be North North-westerly and that the proposed development is located approximately 2,5 kilometres from the nearest residential development, which is located towards the north.

Your Bullet 2: Is obtaining an AEL and subsequent auditing processes a feasible reason for the exclusion of the alternative of an incineration plant, considering that auditing of the Environmental Authorisation (if issued) would be required.

The installation and operating costs of an incinerator, relative to the volume of carcasses that can be expected, have been considered and it was deemed not be a feasible alternative.

Your Bullet 3: Would waste to energy be considered as an alternative for the coal to generate steam?

1. The volume of solid waste generated by the feed mill is low. Due to low volume this was not considered as boiler feed stock.
2. The feedlot is relatively small and the stormwater containment dams is not considered a viable source of energy (methane gas).

Your Bullet 4: Will there be any dust from the operational phase of the feedlot?

The dust that will be produced will be minimal. Except for the areas where ewes will lamb, (these surfaces will be impermeable, highly compacted gravel) all surfaces will be concrete and will be cleaned daily. The accumulation of manure that will give raise to dust pollution will be negligible. All roads will be surfaced and will not give raise to dust pollution.

Your Bullet 5: Apart from water spraying, what additional dust control measures will be considered during the construction phase considering the close proximity of the N10 and potential impact on visibility.

Removal of vegetation will be avoided until such time as soil stripping is required and similarly exposed surfaces will be revegetated or stabilised as soon as is practically possible.

Excavation, handling and transport of erodible materials will be avoided under high wind conditions or when a visible dust plume is present.

The construction camp will be watered during dry and windy conditions to control dust fallout.

Dust production will be controlled by regular watering of roads and work area, should the need arise

During high wind conditions, the ECO will evaluate the situation and make recommendations as to whether dust damping measures are adequate, or whether working will cease altogether until the wind speed drops to an acceptable level

PROF A B DE VILLIERS (M Sc, Ph D, SACNASP)
MR.J.P. DE VILLIERS (M Sc,HED, EAP-EAPASA, IAIA); MRS.J.E. DU PLOOY (M.E.M; EAP-EAPASA, IAIA)

Where possible, soil stockpiles will be located in sheltered areas where it is not exposed to the erosive effects of the wind

Where erosion of stockpiles becomes a problem, erosion control measures will be implemented at the discretion of the ECO

Vehicle speeds will not exceed 40 km/h along dust roads and 20 km/h when traversing unconsolidated and non-vegetated areas.

It is once again necessary to note that the prevailing wind direction is North North-westerly, and the N10 is located towards the north.

Your Bullet 6: Will any rain harvesting occur and have options for recycling of water been considered?
Rain harvesting will not occur *per se*, but all stormwater will be directed towards the evaporation ponds to assist in the dilution of manure accumulated within these ponds.

Once again we thank you for your participation in the PPP.

Sincerely yours,

JP de Villiers
EAP-EAPASA 2019/808

PROF A B DE VILLIERS (M Sc, Ph D, SACNASP)
MR.J.P. DE VILLIERS (M Sc,HED, EAP-EAPASA, IAIA); MRS.J.E. DU PLOOY (M.E.M; EAP-EAPASA, IAIA)

PROOF OF ADDITIONAL CONSULTATION WITH SPECIFIED STAKEHOLDERS IN RELATION TO THE DEIR:

AB ENVIRO-CONSULT CC

Reg no. 2000/016653/23

7 Louis Leipoldt Street,
Potchefstroom, 2531
Fax: + 27 (18) 293 0671
Cell: + 27 (83) 5488 105
E-mail: jp@abenviro.co.za

25/01/2022

The MEC:
Eastern Cape Rural development and Agragarian Reform
[redacted]
5606

Dear Sir/Madam

Integrated Environmental Impact Assessment for the proposed clearance of 40,537 hectares of indigenous vegetation in order to establish a Feed Mill, Agricultural Recreation Area, Solar Farm and Sheep Feedlot on Portion 15 of Portion 1 of the Farm Bultfontyn, Inxuba Yethemba Local Municipality, Eastern Cape Province. The proposed development will also entail the construction of three Sedimentation ponds and two Evaporation ponds.

AB ENVIRO CONSULT was appointed by **De Heus PTY (LTD)** to submit an application to the Eastern Cape department of Economic development, Environmental Affairs & Tourism for the above mentioned proposed development.

Attached to this e-mail, please find an electronic copy of the draft Environmental Impact Assessment report for your comments. We must receive your comments within a period of 30 days from the date of this letter. In the event of your organisation/department not wishing to comment on this matter, it would be appreciated if we could receive written confirmation thereof to enable us to continue with the finalisation of the application.

If no response is however received from your Department/organisation within the said time, it will be assumed that your department/organisation does not wish to comment on this matter and the application will be processed further.

Please do not hesitate to contact us should any further information or clarification be required.

Yours sincerely,

PROF. A.B. DE VILLIERS

PROF A B DE VILLIERS (M Sc, Ph D, SACNASP)
MR.J.P. DE VILLIERS (M Sc, HED, EAP-EAPASA); MRS.J.E. DU PLOOY (M.E.M, EAP-EAPASA)

AB ENVIRO-CONSULT CC

Reg no. 2000/016653/23

7 Louis Leipoldt Street,
Potchefstroom, 2531
Fax: + 27 (18) 293 0671
Cell: + 27 (83) 5488 105
E-mail: jp@abenviro.co.za

25/01/2022

The Civil Aviation Authority

Dear Sir/Madam

Integrated Environmental Impact Assessment for the proposed clearance of 40,537 hectares of indigenous vegetation in order to establish a Feed Mill, Agricultural Recreation Area, Solar Farm and Sheep Feedlot on Portion 15 of Portion 1 of the Farm Bultfontyn, Inxuba Yethemba Local Municipality, Eastern Cape Province. The proposed development will also entail the construction of three Sedimentation ponds and two Evaporation ponds.

AB ENVIRO CONSULT was appointed by **De Heus PTY (LTD)** to submit an application to the Eastern Cape department of Economic development, Environmental Affairs & Tourism for the above mentioned proposed development.

Attached to this e-mail, please find a dropbox link to the copy of the draft Environmental Impact Assessment report for your comments. We must receive your comments within a period of 30 days from the date of this letter. In the event of your organisation/department not wishing to comment on this matter, it would be appreciated if we could receive written confirmation thereof to enable us to continue with the finalisation of the application.

If no response is however received from your Department/organisation within the said time, it will be assumed that your department/organisation does not wish to comment on this matter and the application will be processed further.

Please do not hesitate to contact us should any further information or clarification be required.

Yours sincerely,

PROF. A.B. DE VILLIERS

PROF A B DE VILLIERS (M Sc, Ph D, SACNASP)
MR.J.P. DE VILLIERS (M Sc, HED, EAP-EAPASA); MRS.J.E. DU PLOOY (M.E.M, EAP-EAPASA)

CONFIRMATION FROM THE TOWN PLANNER THAT NO ALTERATIONS ARE PROPOSED TO THE ACCESS AND OR EXISTING ROAD MARKINGS:

Townscape PlanningSolutions

Date: 24-01-2022 Our ref: P21746_Cover letter to AB Enviro

The Manager
AB ENVORO CONSULT
7 Louis Leipoldt Street
Potchefstroom
2531

- BY Email -

Sir/Madam,

DEVELOPMENT ON THE REMAINDER OF PORTION 15 (A PORTION OF PORTION 1) OF THE FARM BULTFONTYN NO. 128, DIVISION OF MIDDELBURG, PROVINCE OF THE EASTERN CAPE,

The above-mentioned application has reference.

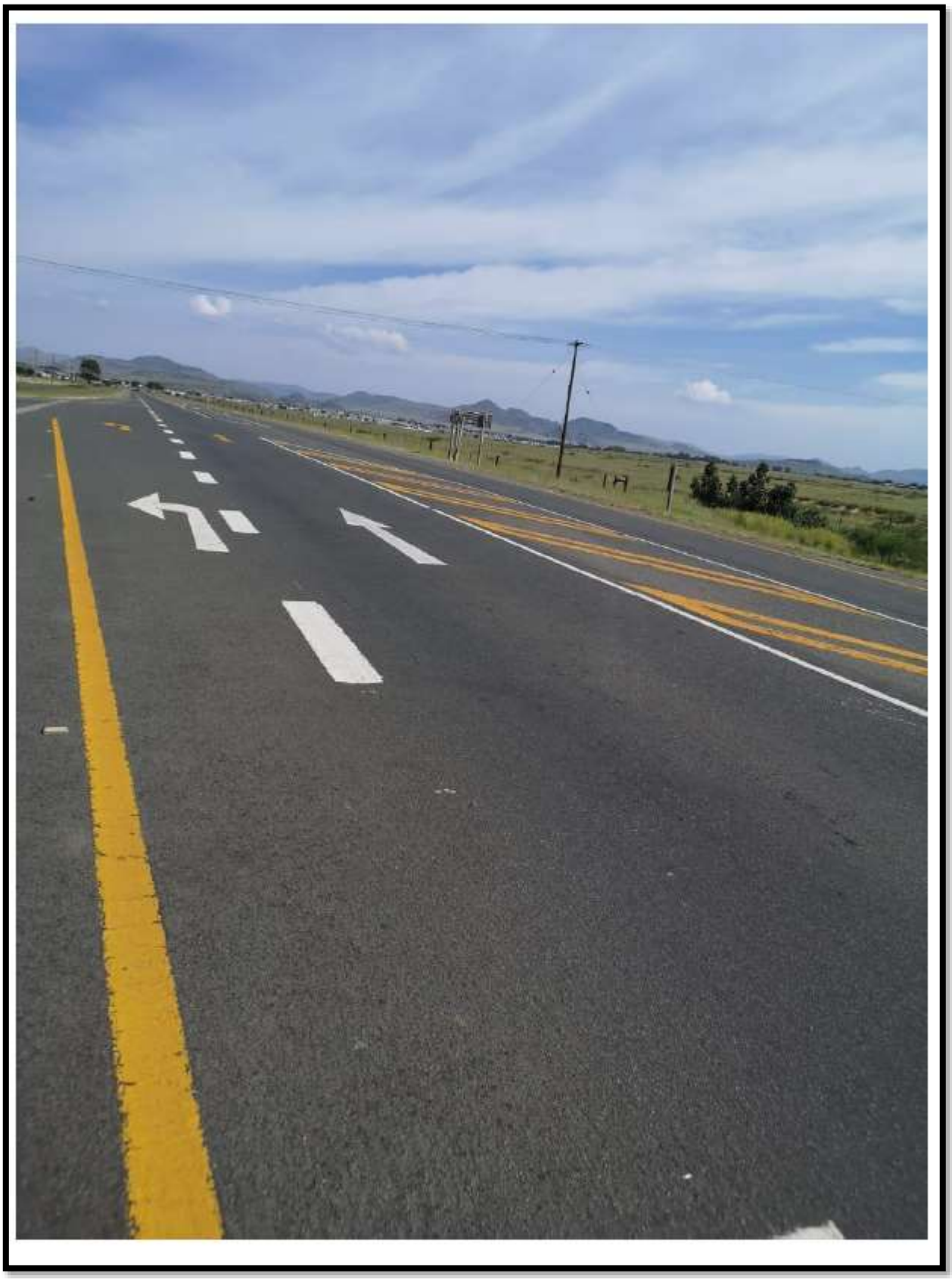
Herewith we confirm that the existing entrance to the property will be used as the entrance to the new development. Please see attached photos of the existing entrance as well as all the road markings.

Trust you find this in order. Please feel free to contact us should you have any further queries in this regard.

Yours faithfully,

MR K.W. ROST
TOWNSCAPE PLANNING SOLUTIONS CC

• P.O. Box 20831, Noordbrug, 2522 • 5 Dahlia Street, Potchefstroom, 2520 •
☎ 082 662 1105 • 086 693 9341 •
• CK 2000/045930/23 • VAT no 4520225600 • wilhelm@tpsplanners.co.za •
• K.W. Rost Pr. Pln •



PROOF OF APPOINTMENT OF SPECIALIST TO CONDUCT WATER USE LICENCE APPLICATION:

de heus
powering progress

Department Water and Sanitation
185 Francis Baard Street
Pretoria
0001

19 July 2021

Re: Appointment letter: Aquatox Consulting Pty Ltd

De Heus (Pty) Ltd (De Heus) hereby appoint Aquatox Consulting (Pty) Ltd as consultant to apply and represent De Heus in all matters with regards to the water use license application.

Client/Company Information:

1. Name: De Heus (Pty) Ltd
2. Registration number: 1999/022029/07
3. Province of Main Activities / Operations: Eastern Cape
4. Contact Person: Jacobus Johannes Kooy (Koos Kooy)
5. Identity number of contact person: 7211075101085
6. e-Mail of contact person: kkooy@deheus.com
7. Contact number: 031- 785 1575
8. Mobile number: +27 72 293 0213

We hereby request that the following consultant be linked to our application:

Consultant Name: Erika van der Linde
Consultant Cell: +27 83 441 0239
Consultant e-Mail: erika@atox.co.za

.....
Mr. J.J. Kooy (Director)

De Heus Pty Ltd
P.O. Box 179, Umlaas Road, 3730 | Remainder of Erf 38, Umlaas Road, KZN, South Africa | infosa@deheus.com | www.deheus.co.za
T 031 785 1575 F 031 785 2983 | Company Reg no. 1999/022029/07 | VAT Reg no. 4210185098
For Accounts: P.O. Box 179, Umlaas Road, 3730
Director: JJ Kooy
a company of Royal De Heus

10.5 COMMENTS AND RESPONSE REPORT

I&AP registered:	Comment received:	Response by the EAP:
	Questions how odours from the composting area will be controlled considering carcasses will be disposed of into the manure composting area	Explained process and how odours will be controlled via regulated composting practises, also considering prevailing wind direction and the amount of carcasees that will be disposed of.
	Is obtaining an AEL and subsequent auditing processes a feasible reason for the exclusion of the alternative of an incineration plant, considering that auditing of the Environmental Authorisation (if issued) would be required.	The installation and operating costs of an incinerator, relative to the volume of carcasses that can be expected, have been considered and it was deemed not be a feasible alternative
	Would waste to energy be considered as an alternative for the coal to generate steam?	The volume of solid waste generated by the feed mill is low. Due to low volume this was not considered as boiler feed stock. The feedlot is relatively small and the stormwater containment dams is not considered a viable source of energy (methane gas).
	Will there be any dust from the operational phase of the feedlot	The dust that will be produced will be minimal. Except for the areas where ewes will lamb, (these surfaces will be impermeable, highly compacted gravel) all surfaces will be concrete and will be cleaned daily. The accumulation of manure that will give raise to dust pollution will be negligible. All roads will be surfaced and will not give raise to dust pollution.
	Apart from water spraying, what additional dust control measures will be considered during the construction phase considering the close proximity of the N10 and potential impact on visibility.	Revegetation and stabilised as soon as practically possible. Erodable material handling excavation and transport will be avoided under high wind conditions or when a

		visible dust plume is present. Construction camp will be watered during dry and windy conditions to control dust fallout. Regular watering of roads and work areas. Recommendations as to whether working should cease if under high working conditions. Erosion control measures as well as speed limits. Also consider prevailing wind direction.
	Will any rain harvesting occur and have options for recycling of water been considered	Rain harvesting will not occur *per se*, but all stormwater will be directed towards the evaporation ponds to assist in the dilution of manure accumulated within these ponds

11. SUMMARY OF THE FINDINGS AND RECOMMENDATIONS OF SPECIALISTS

11.1 GEO-TECHNICAL REPORT (See Appendix A for a copy of this report)

11.1.1 Terms of Reference

Southern Geotechnical Engineering (SGE) was appointed by MDCC (Pty) Ltd, acting on behalf of De Heus (Pty) Ltd, to undertake a geotechnical investigation for the proposed industrial development to be situated on Portion 15 of Portion 1 of the Farm Bultfontyn, situated just outside of Middelburg in the Eastern Cape Province.

11.1.2 Methodology

The following was received via email correspondence and consulted during the geotechnical investigation and the preparation of this report:

- "***Geotechnical Engineering Services – Project Specification***" prepared by MDCC.
- "***Site Layout Option B1f***"; Drawing number 2000 Rev 3W prepared by MDCC.
- "***Land Use Plan Layout***"; Drawing number 4669/2003 prepared by MDCC.
- "***Locality Plan***"; Drawing number 4669/2004 prepared by MDCC.

Fieldwork was undertaken on 10 February 2021 and consisted of the excavation, profiling and sampling of 12 test pits located across the site development area. Ten test pits were positioned within the footprint of the plant areas whilst two test pits were excavated to the south of the plant area. All the test pit positions were noted with a handheld GPS unit.

The 12 test pits were named *DH01 to DH12.* All the test pits except DH09 were excavated with a TLB to a maximum depth of around 2.8m or until refusal conditions were encountered. Test pit DH09 positioned within the footprint of the bunker were advanced to a depth of 4.0m below surrounding ground level. All the test pits were backfilled with the excavated spoils and loosely compacted with the bucket of the TLB.

The test pits were profiled by a geotechnical engineer and samples were collected and submitted for laboratory testing at LTG Civil Services in Pretoria. Laboratory testing comprised the following:.

- Foundation Indicator: Sieve and hydrometer analyses plus Atterberg limits,
- Maximum Dry Density (MDD) and Optimum Moisture Content (OMC) determination,
- California Bearing Ratio (CBR) testing.

11.1.3 Recommendations and Conclusions

RECOMMENDATIONS

Initial considerations
Piling of structures are NOT recommended
Structures are expected to be moderately light and not overly settlement sensitive. Furthermore, there is a high probability that the site is at least partially (or totally) underlain by alluvium formations at depth, comprising cobbles, small boulders and clean sands, typically as horizontal 'lenses' inside the coarser materials. All these materials will serve to hamper auger excavation operations for the installation of conventional piles (such as Auger-Cast-In-Situ or Continuous Flight Auger type piles). Bridging these alluvium materials by specialised piling techniques and equipment will be prohibitively expensive.

Collapsible soils treated by High Energy Impact Compaction (HEIC)
The site area, outside of the '*erosion*' areas, is mantled by thick layers of potentially collapsible soils (colluvium and weakly developed pedogenic soils). This mode of deformation can be readily addressed/rectified by saturation (not just moistenening) of these potentially collapsible soils, followed by conventional compaction operations. Structures can be founded within this compacted stratum at a slightly reduced/adjusted soil allowable bearing capacity which will result in acceptable total and differential movements of the structure.

Considering the size and layout of the site, remedial measures to 'pre-collapse' the potentially collapsible soils mantling the site will most probably be best achieved by ***High Energy Impact Compaction (HEIC)*** of the entire site area prior to development (see recommendations that follow).

Highly expansive soils within '*erosion'* areas
Laboratory testing suggest that the '*erosion*' areas are underlain by highly expansive soils with a high plasticity and high percentage of clayey sized particles. It at all possible, structures must be located outside *'erosion'* areas to avoid large total and differential movements (large differential movements possible between structures situated on expansive lacustrine soils and collapsible colluvium soils).

The approximate extent of the 'erosion' areas is indicated in the drawing contained within Appendix C. However, due to the relatively wide spacing of test pits, the given delineation is just an indication. The actual delineation of the 'erosion' areas will have to be determined on site, preferably prior to the start of bulk earthworks.

Bulk earthworks
The following guidelines are given for the proposed ***HEIC*** operation in areas underlain by potentially collapsible soils:

- Remove the upper 100mm to 150mm thick surface layer of topsoil, vegetation and plant roots. This material can be temporarily stockpiled for later use in landscaping applications.
- Remove trees as required, including roots. The resulting 'craters' must be backfilled with excavated soils (obtained from other excavations on site), in maximum 300mm thick layers, with each layer compacted to a dense state with a 'Wacker' or pedestrian roller.
- The entire footprint area of the planned development must be impact rolled with a 25kJ, 3-sided Impact Roller. The number of passes must be determined to ensure minimal additional settlement with successive passes of the roller. The compacted soil must be at a soil moisture content enabling effective compaction. The optimum moisture content and number of passes must be confirmed by the contractor supplying the impact roller.
- Once the bulk compaction operation is completed, level building platforms can be constructed by means of cut to fill operations. As the site area is relatively flat, only moderate cut depths and fill heights are foreseen. Fill of at least G7 quality (colluvium and pedogenic soils obtained from other excavations on site), must be placed in maximum 150mm thick layers (conventional smooth drum roller), or 500mm (impact roller), with each layer compacted to a minimum of 95% of Maximum Dry Density at OMC +/- 2%. Compaction of layer works can be undertaken with either a minimum 15 ton smooth -drum roller operating in vibratory mode, or alternatively, a 15kJ, 5-sided impact roller (see suggested maximum layer thicknesses for each above).

Founding of structures
'*Erosion*' areas:
If possible, it is recommended that no structures be positioned within the '*erosion*' areas. '*Erosion*' areas are situated within the south-eastern corner of the study area and the general area around Test Pits DH11 and DH12. If unavoidable, structures to be placed within the *'erosion'* areas must be designed for H2

conditions implying estimated total heave between 15mm and 30mm. The most appropriate foundation system within the *'erosion'* areas will probably be a stiffened of cellular raft and/or soil raft type foundation.

Areas outside '*erosion*' area:
Assuming that the HEIC operation was successfully completed, the following generic guidelines are given for the founding of structures within areas underlain by collapsible soils:

- Excavate conventional spread type footing foundations (pad and strip) from top of platform level, sized considering an allowable bearing capacity of 175kPa. Foundation excavations must be at least 150mm deeper than underside of concrete foundation units.
- This -150mm level must be saturated (not just moistened), left to dry out to a workable consistency, and compacted to a minimum density of 95% of Maximum Dry Density at OMC +/-2%.
- The 150mm deep overcut must be backfilled in one layer with a minimum G5 material obtained from outside sources. This material must be compacted to at least 98% of Maximum Dry Density
- Foundations must be constructed with at least nominal steel reinforcement and reinforcement in masonry around and below openings (doors and windows).

Founding of surface beds and floor slabs
Surface beds and floor slabs must be directly underlain by a minimum 150mm thick layer of G5 material, compacted to at least a density of 98% of Maximum Dry Density. The G5 layer can be founded directly on top of the compacted platform level (see bulk earthworks section above). If this surface was damaged / loosened during the construction phase, it must be re-ripped and compacted to 95% of MDD prior to placing the G5 layer. If it is required to raise the level of surface beds and floor slabs, the infill between top of (compacted) platform level and underside of G5 layer must be constructed with a minimum G7 material, placed and compacted in maximum 150mm thick layers.

Founding of roads / parking areas

Within footprint of building platform
The compacted platform level can serve as the upper selected subgrade layer. As such, additional structural road layer works will comprise a C4 cement stabilised subbase layer and a G1 crushed stone base course layer with an asphalt surfacing. Alternatively, the C4 layer can be used to directly support interlocking concrete blocks, contained between kerbs and/or other non-movable structures. The thickness of asphalt and concrete blocks must be based on an analysis of the type, speed and frequency of vehicles that will frequent these roads.

Outside footprint of building platform
The impact rolled subgrade can serve as roadbed preparation. As such, additional structural road layerworks will comprise an upper selected subgrade layer (minimum G7obtained from other excavations on site), overlain by a C4 cement stabilised subbase layer and lastly a G1 crushed stone base course layer with an asphalt surfacing. Alternatively, the C4 layer can be used to directly support interlocking concrete blocks, contained between kerbs and/or other non-movable structures. The thickness of asphalt and concrete blocks must be based on an analysis of the type, speed and frequency ofvehicles that will frequent these roads.

CONCLUDING REMARKS
A geotechnical investigation of this nature must by necessity has to rely on some interpolation between relatively widely spaced test positions and limited laboratory testing. As such it is possible that actual geological/geotechnical conditions encountered on site during the construction phase may be at variance

to those described and assumed in this report. Should this situation occur, this office must be informed immediately for a re-assessment of our conclusions and recommendations.

11.2 CIVIL ENGINEERS' REPORT (See Appendix B for a copy of this Report)

11.2.1 Civil Services

11.2.1.1 Terms of Reference for Civil Services Report

MDCC (Pty) Ltd, has been appointed by the Client to undertake project management duties, design, contract administration and site monitoring of the project which will be outlined within this report.

The purpose of this Preliminary Design Report is to provide the execution methodology in terms of consulting, design and construction services and also to enable MDCC (Pty) Ltd. to establish a services agreement with Inxuba Yethemba Local Municipality (IYLM), part of the greater Chris Hani District Municipality (CHDM).

The Preliminary Design Report will be followed by:

1. A Detailed Design Report, final bill of quantities and detailed design working drawings,
2. Establishment and finalization of a service agreement with the applicable municipality (local authority) or service provider, if required.
3. Confirmation of any wayleave applications and approvals required.
4. Confirmation of any servitudes and/or expropriations required.
5. Documentation required for the procurement of a contractor for execution of the works (if required).
6. A tender documentation evaluation report (if required).
7. Construction administration documentation, i.e. progress reports, monthly certificates and quality assurance.
8. A close-out report.
9. Section 101 and 82 certificates (if required).

The design and construction work for this project comprises out of the water supply and reticulation, the sewer drainage and treatment/outfall as well as the stormwater management for the site.

As this is a Greenfields project there is no basic services infrastructure provided at the stage and no electrical infrastructure is provided. In terms of typical developments, the services deemed necessary would include, water and sewer, roads and stormwater and electricity.

11.2.1.2 Methodology

DESIGN METHODOLOGY

Water Methodology

The following methodology is adopted in the design of the water reticulation system:

- Establish design criteria applicable to the bulk water supply and water reticulation network.
- Calculate water demand and peak flows.
- Conduct a hydraulic analysis of the proposed system to determine optimum pipe sizes and pipe pressure classes.
- Determine valve, fire hydrant and erf connection positions.
- Calculate water meter sizes.
- Borehole, Pump and Tank positions
- Compilation of layout plans.

Sewer Methodology

The following methodology is adopted in the design of the sewer reticulation network:

- Establish design criteria applicable to the treatment of effluent, the specialist installed package plant and sewer reticulation network.
- Establish connection points and determine possible link pipe routes for the proposed development.
- Calculate sewage demand and peak flows.
- Conduct a hydraulic analysis of the proposed system to determine optimum pipe sizes.
- Compilation of layout plans.

Roads and Stormwater Methodology

The following methodology is adopted in the design of the access roads and stormwater drainage reticulation network:

- Establish design criteria applicable to the class and functionality of the internal roads, also considering drainage potentials of stormwater on carriageway.
- Establish connection points at the existing municipality services and determine possible link pipe routes (storm water) for the proposed development.
- Calculate storm water run-off generated and peak flows.
- Implementation of a stormwater management plan for the site, with special focus on the Feedlots, which include drainage channels, sedimentation ponds and evaporation ponds.
- Establish connection points at the existing municipality services and determine possible link pipe routes (storm water) for the proposed development.
- Calculate storm water run-off generated and peak flows.
- Implementation of a stormwater management plan for the site, with special focus on the Feedlots, which include drainage channels, sedimentation ponds and evaporation ponds.

Waste Management Methodology

The following methodology is adopted in the design of the site Waste Management:

- Determining of classification on types of Waste
    1. Hazardous waste
    2. General Waste
- Generation of Waste.
- Management and Treatment of Waste
- Compilation of layout plans.

11.2.1.3 Recommendations and Conclusions

BULK WATER SUPPLY

No municipal Bulk Water lines are available to supply the site with its calculated water demand. As part of the development of the site, new borehole/s will be installed to supply the site's water demands. The Geo-hydrologist will provide a report on Borehole supply capacities, daily run times, and treatment of water (if required). Once more information is available, the layout will be updated to reflect borehole positions and tank positions.

Pipe routing

The design of the water reticulation network is done to provide water to demand nodes within the site, which will include fire hydrant nodes.

Hydraulic analysis of the water reticulation network

The water distribution network is analysed by utilizing Civil Designer's Aquanet Software. The appropriate pipe diameters were established by calculating peak draw-off flows from nodes and then adding fire hydrant flow (40 l/s) at each specific location. Water storage tanks will be installed on site to accommodate the water storage requirements. From there the water will be distributed to the network. Pipes are sized to limit flow velocities below 1,5 m/s for peak domestic flow only and 2,2 m/s for fire flow included.

SEWER DESIGN

Existing Infrastructure

No Existing municipal Sewerage systems exist for the site. Sewerage generated by the site will discharge into the conventional pipe network and make its way to a new Waste water package plant. The Package plant will be designed to accommodate all the effluent generated from the human populated areas. A specialist company will be approached to provide a turn-key solution for the site. Treated greywater will discharge from the package plant and will be let out into the evaporation pond.

The internal sewer drainage network was designed as a gravity system. The design was done to provide a sewerage connection to each required point with an optimised route to the Waste Water Package Plant.

The sewer reticulation network is hydraulically analysed by utilising Civil Designer software. The appropriate pipe diameter is determined by Civil Designer and adjusted to the minimum requirements of 160mm.

ROADS AND STORM WATER DESIGN

Existing Infrastructure

The following existing infrastructure is applicable to this proposed development:

- The N10, which forms the northern boundary of the site has periodic concrete culverts beneath it which assist the movement of stormwater from north to south, in line with the natural topography, these culverts disperse the stormwater on to the lower areas, where evaporation and infiltration to the soil occurs
- There is an existing stormwater drainage ditch which runs north to south across the site, which is abandoned due to changes up stream, it was previously protected by a servitude, which has since been cancelled. This ditch will be filled and closed up.
- Access to the proposed development will be from the N10, from which there is an existing widening of the road and a splay for dedicated traffic to the site.

Access to site

The internal roads will be private roads, the Roads will be 7m wide and be designed to accommodate slow moving heavy livestock trucks.

- The internal roads will be classified as a local distributor, class 4, primarily due to the heavy load requirements.

The structural design of the road pavement will be done according to the standards prescribed in the "Guidelines for Human Settlement and Planning" and TRH 14 (Catalogue Specification for Pavements).
Provision will be made for the installation of pre-cast concrete kerbs or edge beams on both sides of streets.

The long sectional gradient of the road will be varied, but will be a minimum of 0.5%.

Storm Water Design Criteria

Stormwater will be accommodated on the surface in the road prism. Shallow earth lined channels will be created to direct stormwater away from the roads and eventually discharge to the sedimentation pond and then the Evaporation Pond.

For the Sheep feedlot area, a special stormwater management plan will be implemented to comply to guidelines.

The following Standard Reference Documents, Codes of Practice, Policies and Guidelines will be used in the design of the stormwater drainage systems:

- TRH 15 – Subsurface Drainage for Roads.
- Guidelines for Human Settlement Planning and Design – (Red Book).
- Guideline for the Provision of Engineering Services in Residential Townships (Blue book).
- DoT Minimum Standards for Civil Engineering Services in Townships Draft
- SANRAL Road Drainage Manual
- SANS 1200 DB : 1989 – Earthworks (Pipe Trenches)
- SANS 1200 GA : 1982 – Concrete (Small Works)
- SANS 1200 GE : 1984 - Precast Concrete (Structural)
- SANS 1200 LB : 1983 – Bedding (Pipes)
- SANS 1200 LE : 1982 - Stormwater Drainage

General Development Considerations

- Shallow earth lined stormwater channels will be allowed, for ease of maintenance**.**
- Runoff will be caught in stormwater channels and eventually discharge into the sedimentation pond from where settling occurs and then overflow In to the evaporation pond.
- Periodic Maintenance of the stormwater system will be needed to clean out sludge. The sludge will be transported to the manure composting area where it will be mixed and utilised for compost.

Connections to existing road and stormwater infrastructure

- New roads of the proposed development will link with existing main surfaced National Road N10
- All stormwater systems will discharge into the new Sedimentation and Evaporation ponds as part of the sheep feedlot design

SOLID WASTE MANAGEMENT

Existing Infrastructure

The following existing infrastructure is applicable to this proposed development:

- No existing Solid Waste management exists for the site.
- The site is not serviced by municipal Waste collection services

Feed Mill Production

The Waste generated by the feed mill will be dumped into skips and transported to the closest municipal waste disposal site, this will be managed by the Clients' operations team and will occur on routine frequency as required.

Sheep Feed lot Production

Manure effluent will be cleaned out from the feeding pens routinely. Two actions take place in terms of management:

- Manure is manually collected and transported to the Manure Composting Area where it will be aired, dried and process as a by-product from the sheep feedlot.
- In the event of rainfall, the manure will discharge into the Stormwater channels and flow towards the sedimentation pond, where settling will occur and then overflow and enter the evaporation pond.

- The evaporation pond has been sized to accommodate the 1:20 year rainfall return period, and accompanied with high evaporation (Based on S-Pan) values, will only overflow on rare occurrences.
- Waste generated by the Sheep Feedlots will be managed by the Clients' operations team and will occur on routine frequency as required.

11.3 FAUNA AND FLORA HABITAT REPORT (See Appendix C for a copy of this report)

11.3.1 Terms of Reference for Fauna and Flora Habitat Report

The objectives of the habitat study are to provide:

- A detailed fauna and flora habitat survey;
- A detailed habitat survey of possible threatened or localized plant species, vertebrates and invertebrates;
- Evaluate the conservation importance and significance of the site with special emphasis on the current status of threatened species;
- Recording of possible host plants or food plants of fauna such as butterflies
- Literature investigation of possible species that may occur on site;
- Identification of potential ecological impacts on fauna and flora that could occur as a result of the development; and
- Make recommendations to reduce or minimize impacts, should the development be approved

Scope of study

- Surveys to investigate key elements of habitats on the site, relevant to the conservation of fauna and flora.
- Recording of any sightings and/or evidence of existing fauna and flora.
- The selective and careful collecting of voucher specimens of invertebrates where deemed necessary.
- An evaluation of the conservation importance and significance of the site with special emphasis on the current status of threatened species.
- Recording of possible host plants or food plants of fauna such as butterflies.
- Literature investigation of possible species that might occur on site.
- Integration of the literature investigation and field observations to identify potential ecological impacts that could occur as a result of the development.
- Integration of literature investigation and field observations to make recommendations to reduce or minimise impacts, should the development be approved.

11.3.2 Methodology

A desktop study comprised not only an initial phase, but also it was used throughout the study to accommodate and integrate all the data that become available during the field observations.

Surveys were conducted by R.F. Terblanche on 31 May 2021 and 1 June 2021 to note key elements of habitats on the site, relevant to the conservation of fauna and flora. The main purpose of the site visit was ultimately to serve as a habitat survey that noted the possible presence or not of threatened species and other species of particular conservation concern.

11.3.3 Recommendations and Conclusions

- Large parts of vegetation at the site have been transformed or modified. Remaining vegetation is mainly karroid with few individual trees. Exotic trees or alien invasive trees occur at the golf course section with its associated infrastructure as well as at some other parts of the site. The alien invasive succulent *Cylindropuntia imbricata* occurs at some parts of the site.
- Fairly large covers of the alien invasive herb *Atriplex lindleyi* are conspicuous at areas where the soil have been exposed in the past. Tall shrubs include the indigenous *Lycium cinereum*, *Lycium horridum* and *Hertia pallens* as well as the exotic *Atriplex nummularia*. Low shrubs include *Salsola tuberculata*, *Salsola calluna, Eriocephalus ericoides* subsp. *ericoides*, *Pentzia incana, Chrysocoma ciliata*, *Aptosimum spinescens, Aptosimum procumbens*, *Ruschia intricata*, *Osteospermum leptolobum*, *Pteronia glauca* and *Rosenia humilus*. Conspicuous indigenous grass species at the site are *Eragrostis lehmanniana*, *Aristida congesta*, *Eragrostis obtusa*, *Tragus berteronianus*, *Enneapogon desvauxii* and *Stipagrostis uniplumis*. Few indigenous trees are found at the site which include *Searsia lancea* and *Vachellia karroo*.
- Alien invasive tree species at the site include *Schinus molle*, *Eucalyptus camaldulensis*, *Agave americana* and *Ligustrum lucidum*.
- Some of the alien invasive weed species at hirtherto bare ground or ecologically disturbed areas at the site are *Salsola kali*, *Argemone ochroleuca*, *Chenopodium album*, *Alternanthera pungens*, *Datura ferox* and *Senecio inaequidens.*
- Old furrows which do not appear to have a significant function currently are present at the site.
- Large bare areas are present where signs of sheet erosion are visible. Signs of excavations or scraping of extensive areas are noticeable despite a “good rain season”. A number of pioneer and alien plant species that are conspicuous may also be reflection of possible “harsh soil conditions” and/or disturbances of the past.
- Rocky ridges and wetlands appear to be absent at the site.
- Site specific indications of sensitivity from the SANBI EIA Screening Tool for relative plant species theme sensitivity indicates a low sensitivity for the entire site.
- The indications of sensitivity from the SANBI EIA Screening Tool for relative animal species theme sensitivity indicates a very high sensitivity for the entire site. This very high sensitivity indication is owing to the distribution range of the bird species *Neotis ludwigii* (Ludwig’s Bustard). Ludwig’s Bustard is a large bird and a nomad and partial migrant. Though Ludwig’s Bustard roams over large areas and a visit by this large bird to the site cannot be totally excluded, the site does not appear to be a habitat of particular importance to this bird species. The local animal theme sensitivity of the specific site is probably low.
- Indications of sensitivity from the SANBI EIA Screening Tool for relative terrestrial biodiversity indicates a low sensitivity for the entire site.
- A low sensitivity from the SANBI EIA Screening Tool for relative aquatic biodiversity is indicated.
- The findings of the habitat survey at the site also suggest that a low sensitivity for the biodiversity themes at the site is likely.
- No Threatened or Near Threatened plant or animal species appear to be resident at the site. No other plant or animal species of particular conservation concern appear to be present at the site.
- The scope for the site to be part of a corridor of particular conservation importance is small.
- The vegetation type at the site is Eastern Upper Karoo (NKu 4) which is not listed as threatened according to the National List of Threatened Ecosystems (2011).
- Ecological sensitivity at most of the is currently low and at some parts, medium.
- Following the mitigations which will be upheld and planned footprint for development all the impact risks listed above are moderate or low.
- Establisment of exotic weeds should be monitored and exotic weeds at the site should be eradicated. A declared invader such as the mesquite tree (*Prosopis* species), should not be planted or allowed to spread from adjacent areas to the proposed footprint.

11.4 WETLAND ASSESSMENT REPORT (See Appendix D for a copy of this report)

11.4.1 Terms of Reference for Wetland Assessment Report

A wetland assessment is required for proposed De Heus developments, approximately 4 km southeast of the centre of Middelburg, Eastern Cape Province, South Africa (elsewhere referred to as the site). If wetlands would be present at the site the assessment further focuses on the hydro-geomorphic setting, an estimate of the properties of the wetlands, an assessment of the functional aspects of wetlands and an impact assessment to wetlands, should the development be approved. If riparian zones would be present an indication of the active channel and riparian zone is given.

The objectives of the wetland habitat assessment are to provide:

- An indication of the existence of wetlands at the site and if so:
- An identification of major aspects of the hydro-geomorphic setting and terrain unit at which the wetland occur;
- An estimate of the size and roughness of the wetland
- An indication of the hydric soils at the site;
- An indication of erodability;
- An indication of the presence or absence of peat at the site;
- An outline of hydrological drivers that support the existence and character of the wetland;
- An assessment of the possible presence or absence of threatened or localised plant species, vertebrates and invertebrates of the region, at the site;
- A description of the functions provided by the wetland at the site;
- An interpretation of the priority of the wetland for local communities in the area;
- An interpretation of the priority of the wetland to biodiversity at the site;

11.4.2 Methodology

A desktop study comprised not only an initial phase, but also it was used throughout the study to accommodate and integrate all the data that become available during the field observations.

A survey consisted of visits by R.F. Terblanche during May and June 2021 to note key elements of habitats on the site, relevant to the conservation of wetlands and riparian zones.

Classification of any inland wetland systems that could be present at the site is according to the Classification System for Wetlands and other Aquatic Ecosystems in South Africa (Ollis *et al*., 2013). One of the major advantages of the Classification System for South Africa (Ollis *et al*., 2013) is that the functional aspects of wetlands are the focal point of the classification. Wetlands are very dynamic systems and their functionality weighs high against the rapid changes in their appearance, as could be seen from wetland butterfly studies (Terblanche *In prep*). In this document the main guideline for the delineation and identification of wetlands where present is the practical field procedure for identification and delineation of wetlands by DWAF (2005)).

11.4.3 Recommendations and Conclusions

- Wetlands such as floodplain wetlands, channelled valley-bottom wetlands, unchannelled valley-bottom wetlands, depressions, seeps and wetland flats appear to be absent at the site. In conclusion no wetlands are found at the site.
- Fairly large covers of the alien invasive herb *Atriplex lindleyi* are conspicuous at areas where the soil have been exposed in the past. Tall shrubs include the indigenous *Lycium cinereum*, *Lycium horridum* and *Hertia pallens* as well as the exotic *Atriplex nummularia*. Low shrubs include *Salsola tuberculata*, *Salsola calluna, Eriocephalus ericoides* subsp. *ericoides*, *Pentzia incana, Chrysocoma ciliata*, *Aptosimum spinescens, Aptosimum procumbens*, *Ruschia intricata*, *Osteospermum leptolobum*, *Pteronia glauca* and *Rosenia humilus*. Conspicuous indigenous grass species at the

site are *Eragrostis lehmanniana*, *Aristida congesta*, *Eragrostis obtusa*, *Tragus berteronianus*, *Enneapogon desvauxii* and *Stipagrostis uniplumis*. Few indigenous trees are found at the site which include *Searsia lancea* and *Vachellia karroo*.

- Old furrows which do not appear to have a significant function currently are present at the site.
- Large bare areas are present where signs of sheet erosion are visible. Signs of excavations or scraping of extensive areas are noticeable, despite substantial rainfall of the summer season. A number of pioneer and alien plant species that are conspicuous may also be reflection of possible "harsh soil conditions" and/or disturbances of the past.
- Site is part of the Fish to Tsitsikamma Water Management Area (WMA 15). The site is not part of a Freshwater Ecosystem Priority Area (FEPA) and also not part of a wetland cluster (Nel *et al*., 2011a, 2011b).
- A low sensitivity from the SANBI EIA Screening Tool for relative aquatic biodiversity is indicated.

If the site is developed there appears to be not threat to any wetland animal or plant species

11.5 HERITAGE IMPACT ASSESSMENT (HIA) (See Appendix E for a copy of this report)

11.5.1 Terms of Reference for Heritage Impact Assessment

The Terms of Reference for the study was to:

1. Identify all objects, sites, occurrences and structures of an archaeological or historical nature (cultural heritage sites) located on the portion of land that will be impacted upon by the proposed development;

2. Assess the significance of the cultural resources in terms of their archaeological, historical, scientific, social, religious, aesthetic and tourism value;

3. Describe the possible impact of the proposed development on these cultural remains, according to a standard set of conventions;

4. Propose suitable mitigation measures to minimize possible negative impacts on the cultural resources;

5. Review applicable legislative requirements;

Legislative requirements of National Heritage Resources Act (NHRA), Act 25 of 1999

Aspects concerning the conservation of cultural resources are dealt with mainly in two acts. These are the National Heritage Resources Act (Act 25 of 1999) and the National Environmental Management Act (Act 107 of 1998).

1.1 The National Heritage Resources Act

According to the above-mentioned act the following is protected as cultural heritage resources:

a. Archaeological artifacts, structures and sites older than 100 years
b. Ethnographic art objects (e.g. prehistoric rock art) and ethnography
c. Objects of decorative and visual arts
d. Military objects, structures and sites older than 75 years
e. Historical objects, structures and sites older than 60 years
f. Proclaimed heritage sites
g. Grave yards and graves older than 60 years

h. Meteorites and fossils
i. Objects, structures and sites of scientific or technological value.

The National Estate includes the following:

a. Places, buildings, structures and equipment of cultural significance
b. Places to which oral traditions are attached or which are associated with living heritage
c. Historical settlements and townscapes
d. Landscapes and features of cultural significance
e. Geological sites of scientific or cultural importance
f. Sites of Archaeological and paleontological importance
g. ***Graves and burial grounds***
h. Sites of significance relating to the history of slavery
i. Movable objects (e.g. archaeological, paleontological, meteorites, geological specimens, military, ethnographic, books etc.)

A Heritage Impact Assessment (HIA) is the process to be followed in order to determine whether any heritage resources are located within the area to be developed as well as the possible impact of the proposed development thereon. An Archaeological Impact Assessment (AIA) only looks at archaeological resources. An HIA must be done under the following circumstances:

a. The construction of a linear development (road, wall, power line, canal etc.) exceeding 300m in length
b. The construction of a bridge or similar structure exceeding 50m in length
c. Any development or other activity that will change the character of a site and exceed 5 000m^2 or involve three or more existing erven or subdivisions thereof
d. Re-zoning of a site exceeding 10 000 m^2
e. Any other category provided for in the regulations of SAHRA or a provincial heritage authority

Structures

Section 34 (1) of the mentioned act states that no person may demolish any structure or part thereof which is older than 60 years without a permit issued by the relevant provincial heritage resources authority.

A structure means any building, works, device or other facility made by people and which is fixed to land, and includes any fixtures, fittings and equipment associated therewith.

Alter means any action affecting the structure, appearance or physical properties of a place or object, whether by way of structural or other works, by painting, plastering or the decoration or any other means.

Archaeology, palaeontology and meteorites

Section 35(4) of this act deals with archaeology, palaeontology and meteorites. The act states that no person may, without a permit issued by the responsible heritage resources authority (national or provincial)

a. destroy, damage, excavate, alter, deface or otherwise disturb any archaeological or palaeontological site or any meteorite;

b. destroy, damage, excavate, remove from its original position, collect or own any archaeological or palaeontological material or object or any meteorite;

c. trade in, sell for private gain, export or attempt to export from the Republic any category of archaeological or palaeontological material or object, or any meteorite; or

d. bring onto or use at an archaeological or palaeontological site any excavation equipment or any equipment that assists in the detection or recovery of metals or archaeological and palaeontological material or objects, or use such equipment for the recovery of meteorites.

e. alter or demolish any structure or part of a structure which is older than 60 years as protected.

The above mentioned may only be disturbed or moved by an archaeologist, after receiving a permit from the South African Heritage Resources Agency (SAHRA). In order to demolish such a site or structure, a destruction permit from SAHRA will also be needed.

Human remains

Graves and burial grounds are divided into the following:

a. ancestral graves
b. royal graves and graves of traditional leaders
c. graves of victims of conflict
d. graves designated by the Minister
e. historical graves and cemeteries
f. human remains

In terms of Section 36(3) of the National Heritage Resources Act, no person may, without a permit issued by the relevant heritage resources authority:

a. destroy, damage, alter, exhume or remove from its original position of otherwise disturb the grave of a victim of conflict, or any burial ground or part thereof which contains such graves;

b. destroy, damage, alter, exhume or remove from its original position or otherwise disturb any grave or burial ground older than 60 years which is situated outside a formal cemetery administered by a local authority; or

c. bring onto or use at a burial ground or grave referred to in paragraph (a) or (b) any excavation, or any equipment which assists in the detection or recovery of metals.

Human remains that are less than 60 years old are subject to provisions of the Human Tissue Act (Act 65 of 1983) and to local regulations. Exhumation of graves must conform to the standards set out in the **Ordinance on Excavations** (**Ordinance no. 12 of 1980**) (replacing the old Transvaal Ordinance no. 7 of 1925).

Permission must also be gained from the descendants (where known), the National Department of Health, Provincial Department of Health, Premier of the Province and local police. Furthermore, permission must also be gained from the various landowners (i.e. where the graves are located and where they are to be relocated to) before exhumation can take place.

Human remains can only be handled by a registered undertaker or an institution declared under the **Human Tissues Act** (**Act 65 of 1983 as amended**).

11.5.2 Recommendations and Conclusions

In conclusion it is possible to say that the Phase 1 HIA for the proposed De Heus Mixed Used Development was conducted successfully. The development and study area is located on Portion 15 of the farm Bultfontyn 128, near Middelburg in the Eastern Cape.

Background research indicates that there are some cultural heritage sites and features in the larger geographical area within which the study area falls. A number of archaeological & recent historical sites and features were identified and recorded in the study area during the assessment. The most extensive and significant of these are a number of open-air Stone Age sites with scatters of stone tools and associated material. Some recent historical features recorded include the remnants of an aqueduct (indicated on the 1957 map of Portion 15 of the farm) and possibly associated features and a Cricket field (oval).

The 1st site is the remains of the old Cricket Oval/field close to the Golf Club. The site is demarcated by a soil berm. The site is not deemed as historically significant.

The 2nd site recorded is the water furrow. The Phase 1 assessment is seen as sufficient enough documentation. The site used to form part of the Golf course as it used to be an 18 hole course and has since been reduced to a 9 hole course. The structures referred to as site 3 are in all probability old structures associated with this activity (Old tee boxes?). They are nearly completely demolished and the Phase 1 assessment is seen as sufficient enough documentation.

The most significant sites and finds in the area are the open-air scatters of Stone Age material. These sites are characterized by fairly dense scatters of MSA & LSA flakes, cores, flake tools such as blades, scrapers and more formal tools such as points. A scatter of ostrich egg shell fragments was also recorded in one area. These open-air scatters are located in two large sheet erosion areas. The size and density of these Stone Age scatters make these sites highly significant from an Archaeological perspective. It is therefore recommended that Phase 2 Archaeological Mitigation measures be implemented before the development commences and the sites are destroyed.

The following is recommended:

1. Detailed mapping of the Stone Age scatters of material
2. Surface sampling of representative material from these scatters in order to determine their age and typology. This material will then have to be curated by a recognized institution such as the McGregor Museum in Kimberley
3. A permit from SAHRA will be required from SAHRA to conduct this Phase 2 work

It should be noted that although all efforts are made to locate, identify and record all possible cultural heritage sites and features (including archaeological remains) there is always a possibility that some might have been missed as a result of grass cover and other factors. The subterranean nature of these resources (including low stone-packed or unmarked graves) should also be taken into consideration. Should any previously unknown or invisible sites, features or material be uncovered during any development actions then an expert should be contacted to investigate and provide recommendations on the way forward.

Finally, from a Cultural Heritage perspective, based on the desktop research and results of the field assessment, it is recommended that the proposed development should be allowed to continue once the mitigation measures provided above have been successfully implemented and completed.

11.6 DESKTOP PALAEONTOLOGICAL IMPACT ASSESSMENT (See Appendix F for a copy of this report)

11.6.1 Terms of Reference for Wetland Assessment Report

A Palaeontological Impact Assessment was requested by JP de Villiers of AB Enviro Consult on behalf of De Heus (Pty) Ltd., to undertake a desktop palaeontological impact assessment in the Middelburg area of the Eastern Cape Province. The proposed De Heus Mixed Use Development is on Portion 15 of Portion 1 of the farm Bultfontyn 128, close to the town of Middelburg. The proposed development comprises a total area of 40,5 hectares

11.6.2 Methodology

The study area is deeply underlain by Permian rocks of the Karoo Supergroup which are considered to be of high palaeontological sensitivity because of the possibility of finding fossil vertebrates and plants. However, because these Permian rocks are overlain by thick Quaternary sediments in the study area and are thus not exposed (Figure 4), a desktop Palaeontological Impact Assessment was undertaken to identify possible sensitive fossil occurrences, assess the significance of possible fossil occurrences, comment on the impact of the proposed development, and to make mitigating recommendations. The thick Quaternary sediment covering over the entire study area and overlying the rocks of the Karoo Supergroup means that a field study will not yield anything of palaeontological significance.

11.6.3 Recommendations and Conclusions

From the documentation supplied regarding the development, it is extremely unlikely that the proposed development will affect palaeontological heritage. The underlying Permian rocks of the Karoo Supergroup are not exposed in the study area and it is unlikely that fossils will be preserved in the overlying Quaternary calcrete and alluvial deposits.

It is thus recommended that, in the unlikely event that fossils are exposed as a result of construction activities, a qualified palaeontologist must be contacted to assess the exposure for fossils before further development takes place so that the necessary rescue operations are implemented. Depending on the nature of the fossils discovered this could entail excavation and removal to a registered palaeontological museum collection. A list of professional palaeontologists is available from South African Heritage Resources Agency (SAHRA).

11.7 AGRICULTURAL IMPACT ASSESSMENT (See Appendix G for a copy of this report)

11.7.1 Terms of Reference

Environmental authorization in terms of 2014 EIA regulations requires a sensitivity analyses. The sensitivity of a site is determined by the screening tool of the Department of Environment. According to the screening tool, the site has a high sensitivity.

11.7.2 Recommendations and Conclusions

According to the screening tool, the site has a high sensitivity. More detailed analyses, however, found that this assessment is incorrect and for the following reasons:

- Middelburg is in the Karroo Region that has an arid climate, it has a low and erratic rainfall and high summer temperatures. Crop production is not practiced unless it is under irrigation.
- There is no irrigated cropping on the site and no water license as far as we are aware.
- The soils are mostly moderately deep and deep Clovelly soils that are arable but with no irrigation water available, has low arable potentia

It is our professional view that no high potential land will be lost and that the development proposed will only benefit farming as a land use and as an industry

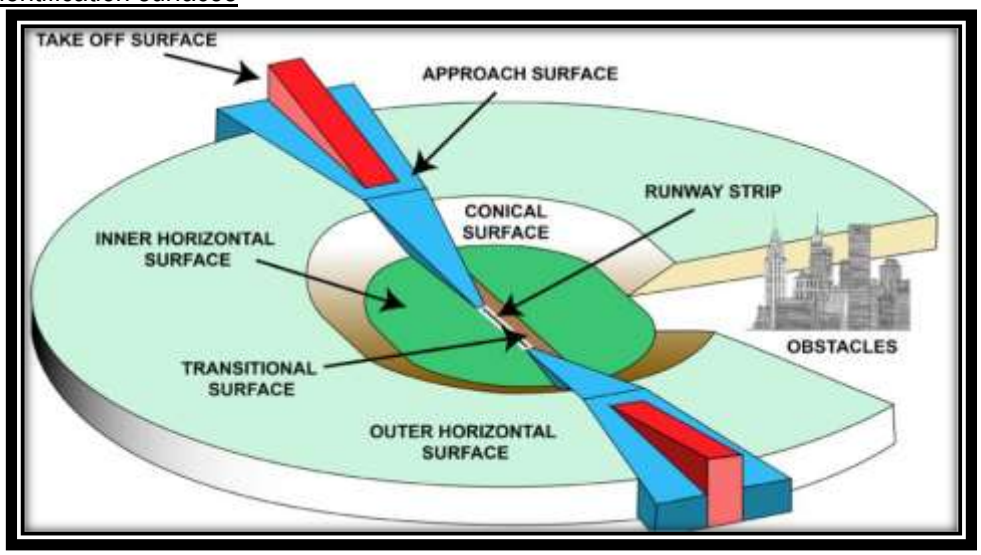
11.8 IMPACT ON CIVIL AVIATION INSTALLATIONS (See Appendix H for a copy of this report)

11.8.1 Terms of Reference

The site is rated as a "High" sensitivity site for the civil aviation theme. This is mainly due to its close proximity to the Middelburg (Cape) Aerodrome (FAMC) at location Ref. Point: S31.547259 ,E25.029453. In accordance with the Government Gazette No. 43110 a specialist assessment was performed in order to ensure the level of impact on civil aviation installations.

11.8.2 Methodology

Obstacle identification surfaces



Obstacle identification surfaces

Radio Frequency propagation modelling

Radio frequency propagation prediction modelling was performed in order to assess the degree of interference from the proposed development site on any type of electromagnetic radio waves transmitting devices that could be deployed at the Middelburg (Cape) Aerodrome (FAMC).

Precision landing systems

The proposed development site do not fall in the takeoff and approach flight path of the RF signal lobes as used by precision landing systems for the Middelburg (Cape) Aerodrome (FAMC). Although there are no precision landing systems currently deployed, it can be seen in the image below that should there be precision landing systems deployed in the future the RF signal focus area of the precision landing systems fall well outside the proposed development.

Glint and Glare

A Glint and glare analysis was performed on the influence of the planned solar plant. The reason for this is that the PV glare can be hazardous for pilots, motorists, and other observers

11.8.3 Conclusions

The proposed development will be for the establishment of a Feed Mill, Agricultural Recreation Area, Solar Farm and Sheep Feedlot on Portion 15 of Portion 1 of the Farm Bultfontyn, Inxuba Yethemba Local Municipality, Eastern Cape Province. The site is rated as a "High" sensitivity site for the civil aviation theme. This is mainly due to its close proximity to the Middelburg (Cape) Aerodrome (FAMC) at location Ref. Point:

S31.547259 ,E25.029453. In accordance with the Government Gazette No. 43110 a specialist assessment was performed in order to ensure the level of impact on civil aviation installations. After an assessment performed by a radio frequency and radar specialist the site was rated as a "Low" sensitivity site for the civil aviation theme. Therefore according to the Government Gazette No. 43110 no further assessment requirements are identified.
Initial Screening tool result: "High" Sensitivity site related to the impact on civil aviation installations.
Assessed result: "Low" Sensitivity site related to the impact on civil aviation installations

11.9 HYDROGEOLOGICAL REPORT FOR THE SITING OF BOREHOLES (See Appendix I for a copy of this report)

The terms of reference for this project include:

Determination of borehole location.

Geophysical techniques (magnetometer) will be used, if needed, to assist in the sighting of boreholes for groundwater extraction. Local knowledge of the position of the water table in the area would also assist in the placement of boreholes.

Safe yield of borehole.

A proper pump test would be conducted on each borehole in order to determine and confirm the yield and sustainability thereof. These tests would include the existing borehole on the golf course.

Quality of water.

Water samples will be collected at the boreholes and submitted to a certified laboratory for major and trace element analyses, as well as bacteriological counts to confirm the potability of the water.

Study Methodology:

The following actions were defined prior to commencement of this study and have been completed:

- Performing a feasibility study with the aim of prioritizing proposed target areas;
- Evaluating all existing data and reports;
- Interpretation of aerial photography with the aim of a detailed structure analysis;
- On-site investigation confirming desktop analyses;
- On-site hydro-census, identifying all existing water resources.

The investigation has furthermore incorporated the following procedures:

- Review of all available and applicable groundwater data and geohydrological information;
- National and Provincial databases;
- Aerial photography;
- Site characterization during a site visit conducted 8 – 10 June 2021;
- Identification of all possible boreholes, springs and streams;
- Preliminary water quality assessment and identification of potential sources of pollution.

The above-mentioned procedures were either completed or are in the process of being completed, and the completed results will be presented in due course. The current progress report only focused on the identification of appropriate location of two (2) new boreholes.

Geology

The Middelburg area is underlain by rocks of the Karoo Supergroup, which covers the larger central portion of South Africa. The current study area is underlain by the Katberg Formation that forms part of the Tarkastad Subgroup. The early Triassic Tarkastad Subgroup is characterized by a greater abundance of both sandstone and redmudstone when compared with the Adelaide Subgroup. The boundary between these two subgroups is the only one in the Beaufort Group that can be traced with certainty throughout the Main Karoo Basin. The subgroup has a maximum thickness of nearly 2 000 m in the south, decreasing to approximately 800 m in the mid-Basin and 50 m or less in the far northern extremity of the Basin. In the south, the Tarkastad Subgroup comprises a lower, sandstone-rich Katberg Formation and an upper, mudstone-rich Burgersdorp Formation. However, the sandstone: mudstone ratio decreases steadily

northwards until the Formation becomes indistinguishable from the Burgersdorp Formation. The latter is around 1 000 m thick in the southern outcrop area, with the overall sandstone content diminishing from approximately 50% in the coastal exposures to around 20–30 per cent or less, further north within the main outcrop area.

The geology at the proposed site of the De Heus feedlot, consist of mainly unconsolidated randomly sorted alluvial sediments. The sediments consist of a mixture of cobbles, boulders, gravels and/or clean sands. Several test pits (12 in total) were dug with a TLB to an average depth of approximately 2.8 meters, as part of a geotechnical investigation. Excavation conditions into these alluvium materials were not definitively quantified during this investigation.

According to the 1 : 250,000 scale geological map 3124 Middelburg, the site is underlain by calcrete1, alluvium2 and colluvium3. This has been confirmed by the above-mentioned geotechnical study. Other geological formations around the site include dolorite and grey mudstones with subordinate sandstone, but do not show to directly underly the site. Duruing the Geotechnical investigation no ground water was encountered with any of the test pit excavations (maximum depth of excavation was approximately 4 meters). In general, the site is underlain by a relative uniform soil profile.

Geohydrology

Ground water for municipal water supply to the town of Middelburg has been abstracted from a localized shallow aquifer for numerous years. Ground water is the most prominent water source in the Middelburg region and therefore the first option when considering sustainable water supply. Drilling for water can be a challenging job in many areas due to the uncertainty in the presence of water and the depth of the water table. The first step was to study the local geology using the available geological maps to look for structures that will likely host water. A classic example of such structures is a layer of permeable rock (such as sandstone) underlined by impermeable levels (such as clay), as is the case in the study area with the Katberg Formation. The water will accumulate within the permeable layer, which is sandstone in case of the Katberg Formation and bounded by the clay-containing, less permeable, shale layers.

Geophysics methods can be used to identify the presence of water at depth. These geophysical methods are based on the changes in electric conductivity caused by the water or changes in the magnetic field strength. Due to the absence of detectable geological features that dictate geological anomalies, no geophysical technics were employed. Alternatively, a test borehole should be drilled to assess the geological sequence of the strata and to identify layers potentially able to host an aquifer.

It is fair to admit that some degree of luck is often associated with finding water mostly in complex and challenging geological settings.

Drilling

Information was gathered from the existing boreholes in the study area. Data gathered included the borehole locations, the depth to water, the amount of water pumped, and the kinds of rock they penetrated. These records of the already drilled boreholes were of great value in deciding where to position two additional boreholes for the primary reason of delivering sufficient water as required by De Heus (See Figure 3). Following the positioning of the two additional boreholes, pump tests need to be performed in order to

determine the sustainability and yield of the boreholes. The pump tests need to be performed over a 72-hour timespan. Water samples also need to be collected at this stage and submitted to an accredited laboratory, in order to determine the water quality and to establish the suitability of the ground water for domestic use. The water samples need to be analyzed for both major and trace elements.

The data that needs to be collected during the pump tests include:

- Data and time at commencement of pump test
- The Static Water level at the start of the pump test
- The depth of the borehole
- The distance from the borehole to nearby boreholes (if applicable)
- Pump installation depth
- Water strike depths (if known from drilling/landowner)
- Borehole diameter
- Drawdown of the water level
- Rate of discharge (for Steps and constant Tests)
- Display measurement intervals and other relevant data.

Preliminary Findings

The preliminary findings following the site visit to the study area, resulted in the placement of the proposed boreholes at the following locations:

- Borehole 1 (25º01'59.61"E, 31º31'35.2"S) – near sample site DH2 (Geotechnical test pit), and;
- Borehole 2 (25º02'02.26"E, 31º31'39.8"S) – near sample site DH10 (Geotechnical test pit).

Drilling of the borehole can occur within a 5m radius of the proposed coordinates. The depth of the boreholes would be between 30 to 40 meters and the yield would vary from 3 to 7 liters per second.

12. CONCLUSIONS AND RECOMMENDATIONS

The Applicant, De Heus (PTY) Ltd has appointed AB Enviro Consult CC, an independent environmental consultancy, to undertake an Integrated Environmental Impact Assessment for the proposed clearance of 40,537 hectares of indigenous vegetation in order to establish a Feed Mill, Agricultural Recreation Area, Solar Farm and Sheep Feedlot on Portion 15 of Portion 1 of the Farm Bultfontyn, Inxuba Yethemba Local Municipality, Eastern Cape Province. The proposed development will also entail the construction of three Sedimentation ponds, two Evaporation ponds and a Manure Composting area in order to treat the manure and the carcasses that will originate from the Sheep Feedlot.

This Chapter of the EIR provides a summary of the findings of the EIA process, including the EAP's opinion as to whether the activity should or should not be authorised.

12.1 ENVIRONMENTAL IMPACT STATEMENT

The regulation and protection of the environment within South Africa occurs mainly through the application of various items of legislation, within the regulatory framework of the Constitution (Act 108 of 1996).

The primary legislation regulation for Environmental Impact Assessments (EIA) within South Africa is the National Environmental Management Act (NEMA, Act 107 of 1998). NEMA makes provision for the Minister of Environmental Affairs to identify activities which may not commence prior to authorisation from either the Minister or the provincial Member of the Executive Council (MEC). In addition, NEMA provides for the formulation of regulations in respect of such authorisations.

The EIA Regulations (2014) (amended 2017) allow for a Basic Assessment process for activities with limited environmental impact (listed in GN R. 327 and GN R.324, as amended in 2017) and a more rigorous two-tiered approach to activities with potentially greater environmental impact (listed in GN R. 325, 2017). This two-tiered approach includes both a Full Scoping and EIA Process.

The proposed development triggers a Full Scoping and EIA Process.

The purpose of this Application is to apply for authorization for the proposed establishment of a Feed Mill, Agricultural recreation area, Solar Farm and Sheep Feedlot on Portion 15 of Portion 1 of the Farm Bultfontyn, Inxuba Yethemba Local Municipality.

Based on the project description, a number of Listed Activities under Category A of the List of Waste Management Activities (GN R 921 of 2013) of the National Environment Management: Waste Act (NEM:WA) (Act No. 59 of 2008) are triggered

In terms of the NEM:WA List of Waste Management Activities (GN R 921 of 2013), a *person who wishes to commence, undertake or conduct a waste management activity listed under* Category A*, must conduct a basic assessment process set out in the Environmental Impact Assessment Regulations made under section 24(5) of the National Environmental Management Act, 1998 (Act No. 107 of 1998) as part of a waste management licence application contemplated in section 45 read with section 20(b) of this Act.*

As such, a S&EIR process (Please note in this regard that this application is for a combination of the NEMA or NEM:WA activities and that S&EIR process applies for the NEMA Application) including an Environmental Management Programme (EMPr) are required for submission to the Competent Authority, DEDEAT, for the Licencing of the Waste Activities.

The National Development 2030 mentions that South Africa can eliminate poverty and reduce inequality by 2030 and this will require change, hard work, leadership and unity. Its goal is to improve the life chances of all South Africans, but particularly those young people who presently live in poverty. The plan asks for a major change in how government in general go about their lives. In the past, we expected government to do things for us. What South Africa needs is for all of us to be active citizens and to work together – government, **business**, communities – so that people have what they need to live the lives they would like.

The White Paper on Local Government1 (1998) introduces the concept of "developmental local government" which is defined as: "Local government committed to working with citizens and groups within the community to find sustainable ways to meet their social, economic and material needs, and improve the quality of their lives." However the same document makes it clear that:

"Local Government is not directly responsible for creating jobs. Rather, it is responsible for taking active steps to ensure that the overall economic and social conditions of the locality are conducive to the creation of employment opportunities."

The Chris Hani District Municipality developed and adopted a District Development Agenda that focuses on the development of all its Six Local Municipalities through the identification of competitive advantages of its local municipalities. This was later translated into an **Agro Industrial Plan** that has been used as a spring board to the proposed Special Economic Zone.

The Chris Hani Regional Development Strategy provides focused areas around which resources can be leveraged and mobilised in order to contribute to the broad overall objective of ensuring that all people in the district are able to benefit from the economy. The Competitive Advantage therefore for the district points to the broadly defined **agricultural sector** as the one with the most potential to contribute to job creation, promoting of livelihoods opportunities and contributing to sustained social and economic growth and development.

Whilst crop production and agro-processing sector remain important areas of intervention, the present cost of transport to high volume markets will most likely render local production uncompetitive until substantial economies of scale and consistent quality can be achieved.

Value chain integration implies looking at all the components of a particular sector and subsector and identifying what can be done or put in place to add value to what already exists, and in doing so, promote job creation and provide more livelihood opportunities.

While the districts' agricultural potential is obvious, primary agricultural projects have had a minimal impact on unemployment. This situation necessitates strategies to increase value-added production by exploiting opportunities that exist along the various crop and livestock value chains. (Chris Hani District Municipality 2021-2022 Draft IDP)

Agriculture is one of the main economic sectors within the area. Agricultural activities can be sub-divided into two groups – crop farming and livestock farming. The Applicant has identified gaps in the value chain for both of these economic sectors being Lucerne (Crop farming) and sheep (Livestock farming). It is the intension of the applicant to add value to both of these identified agricultural sectors and in doing so, create jobs and infrastructure. The increased employment in the area during both the construction and operational phase will also result in increased expenditure, which, in addition, will mean that more than just the proposed jobs required for the proposed development will be created due to economic spin-offs that will result.

<u>Feed Mill</u>

Feed mixing, pill making, packaging and ancillary works including grain and feed storage will form part of this operation. Lucerne that is produced extensively in the area and will be used to produce feed, thus adding value to primary products that are produced in the region. Maize that is also produced in the region will also be incorporated into the production process and a limited amount of

this produce will also be value added. At full production the Feed Mill will produce 9 000 tons of feed per month and will generate 100 employment opportunities.

Agricultural recreational area.
This part of the proposed development will be for Animal display and demonstrations, auctions and ancillary activities and will be Open to the public, thus providing a platform for the people of the region to sell and display their animals and to come together as a community.

Solar Farm
Greenhouse gases (GHG), including CO2 emissions are associated with the conventional provision of energy services and are a major cause of climate change. Globally, coal is the second largest primary energy source used worldwide (preceded by oil), and the first source for power generation. In terms of electricity generation or supply, South Africa is highly dependent on coal-fired power plants and therefore energy supply is carbon dioxide-intensive.

Renewable energy sources play a role in providing energy services in a sustainable manner, and in particular in mitigating climate change. Sustainable energy can be defined as energy which provides affordable, accessible and reliable energy services that meet economic, social and environmental needs within the overall developmental context of society, while recognising equitable distribution in meeting those needs. Sustainable energy is an element of sustainable development which is defined as development that meets the present needs and goals of the population without compromising the ability of future generations to meet theirs. On the overall sustainable development is underpinned by economic development (growth efficiency), social development (culture, heritage, poverty, and empowerment) and environmental development (pollution and natural resources).

The government of South Africa considers the use of renewable energy as a contribution to sustainable development. Sustainable development also implies the provision of electricity and other modern fuels to the commercial and industrial sectors to promote their economic competitiveness and future prosperity. (Department of Environmental Affairs (2015). EIA Guideline for Renewable Energy Projects. Department of Environmental Affairs, Pretoria, South Africa)

With the current situation of unreliable electricity provision in the Country, the Applicant has opted for the option of providing his own Electricity, thus ensuring a steady flow of electricity for his operations. In providing off-grid, renewable Electricity, the Applicant is also decreasing his Ecological footprint as he will not be using Electricity that has been generated from unrenewable energy sources.

Sheep Feedlot
The Sheep Feedlot will be designed for 10 880 head of sheep. At the moment, only 24 head of sheep can be raised on the entire development site, as the area is very dry. The intensification of the Agricultural potential for the site is a huge advantage as the production capacity of the site will be raised to 10 880 head of sheep. This operation will also result in an additional 10 employment opportunities that will be generated.

Treatment Facilities

In order to treat the manure and the carcasses that will originate from the Sheep Feedlot the construction of three Sedimentation ponds, two Evaporation ponds and a Manure Composting is proposed. The need for these activities lies in the fact that in order to ensure that the proposed development does not cause any harm the Environment, potential pollution has to be curbed. The purpose of the sedimentation system is to remove settleable solid material from the feedlot runoff and prevent it from entering the evaporation ponds. The Evaporation pond is sized based on calculation of the annual water balance (Annual Rainfall versus Evaporation Statistics) and is designed to contain the runoff/ effluent from the feedlot site.

The manure composting area will have a concrete base and will be able to accommodate the composting activities. The composting facility will generate additional income as the compost will be sold, thus ensuring that a potential source of pollution has been processed to a usable product

Consistent with national priorities, environmental authorities must support *"increased economic growth and promote social inclusion",* whilst ensuring that such growth is *"ecologically sustainable".* In the National Spatial Development Perspective (NSDP) it is highlighted that, to achieve the goal of stimulating sustainable economic activities and to create long-term employment opportunities, it is required that spending on economic infrastructure is focused in priority areas with potential for economic development, with development to serve the broader societies' needs equitably

The identification, description, evaluation and comparison of alternatives are important for ensuring a sound environmental scoping process.

Alternative operational aspects of the activity

Sheep Feed lot Mortality – Biomass Waste Disposal

A predicted mortality rate of 2 sheep / day should be considered whereby each sheep could have a maximum estimated mass of 75kg. Therefore, an anticipated mass of 150kg / day will be considered when selecting a desired disposal process.

Alternatives are being investigated based on these predictions and the following options can be considered for the carcass disposal:

Manure Composting (Alternative 1)
Carcasses will be disposed into the manure composting area, whereby it will take approximately 5-6 months to decompose, per carcass, with respect to mass.

Advantages
Composting ads value to the carcass as it can be sold as compost.

Incineration plant (Alternative 2)
The incineration process neutralises the danger of possible ground water pollution and converts the post-incineration residue into a sterile, easily disposable by-product which can be re-used.

The incineration units will be sized based on the above-mentioned mortality rate requirement for the site. The units are powered by either Diesel or Gas. In this instance, the viable option would be to adopt a diesel-operated unit due to the proposed diesel tank bunker facility located in the feed mill area of the site, and for efficient access. The stored diesel would be pumped into smaller tanks and transported via trucks to the Incineration facility, located near the manure composting area of the site.

Disadvantages
The incineration process causes air pollution and an a licence will have to be obtained for this process. It will also require long-term external auditing that will render this option not viable in the long run.

Mortality pit (Alternative 3)
A mortality pit entails the construction of a sealed container (normally an underground bunker) that the carcasses are disposed in.

Disadvantages
It is envisaged that with a feedlot of this scale, the mortality pit will not be viable, as it will have to have a very large capacity.

No-go Alternative (Alternative 4)

The No-go Alternative has been considered for the proposed development as a hole. Should this Alternative be implemented the status quo will prevail and none of the advantages as listed in the "Need and desirability" section of this report will realise

From the full Public Participation Process that was followed, the Alternative of "***waste to energy*** *as an alternative for the coal to generate steam*" was suggested. As a result of this suggestion, this Alternative was also considered as **Alternative 5**. After evaluation of this Alternative, the following was concluded:

4. The volume of solid waste generated by the feed mill is low. Due to low volume this was not considered as boiler feed stock.
5. The feedlot is relatively small and the stormwater containment dams is not considered a viable source of energy (methane gas).

Specialist studies were conducted. The information gathered from these Specialist Studies was used to generate a sensitivity map that was used to assess the sustainability of the design and layout plan for the proposed development

The **Geo-Technical Engineer** has concluded that most of the study area is considered suitable for development, provided suitable precautionary and/ or mitigation measures are implemented regarding the design and construction of foundations and roads, trafficability, material re-use, and excavatability during construction.

The **Civil Engineer** has assessed the availability of services in the area and has made recommendations regarding upgrades that will have to be installed. No municipal Bulk Water lines are available to supply the site with its calculated water demand. As part of the development of the site, new borehole/s will be installed to supply the site's water demands. The Geo-hydrologist will provide a report on Borehole supply capacities, daily run times, and treatment of water (if required).

No Existing municipal Sewerage systems exist for the site. Sewerage generated by the site will discharge into the conventional pipe network and make its way to a new Waste water package plant. The Package plant will be designed to accommodate all the effluent generated from the human populated areas. A specialist company will be approached to provide a turn-key solution for the site. Treated greywater will discharge from the package plant and will be let out into the evaporation pond.

Access to the proposed development will be from the N10, from which there is an existing widening of the road and a splay for dedicated traffic to the site. Stormwater will be accommodated on the surface in the road prism. Shallow earth lined channels will be created to direct stormwater away from the roads and eventually discharge to the sedimentation pond and then the Evaporation Pond. For the Sheep feedlot area, a special stormwater management plan will be implemented to comply to guidelines

The **Fauna and Flora** study conducted also revealed that the vegetation type at the site is Eastern Upper Karoo (NKu 4) which is not listed as threatened according to the National List of Threatened Ecosystems (2011). Large parts of vegetation at the site have been transformed or modified. Remaining vegetation is mainly karroid with few individual trees. Exotic trees or alien invasive trees occur at the golf course section with its associated infrastructure as well as at some other parts of the site. The alien invasive succulent *Cylindropuntia imbricata* occurs at some parts of the site.

Ecological sensitivity at most of the site is currently low and at some parts, medium. Following the mitigations which will be upheld and planned footprint for development all the impact risks listed above are moderate or low.

No Threatened or Near Threatened plant or animal species are likely to be found at the site. Presence of other plant species of particular conservation concern at the site is unlikely. Ecological sensitivity at the site is medium-low at terrestrial zone and medium-high at the watercourse (consisting of a non-perennial river, two small in-channel dams and riparian zone) and its buffer zone (30 m).

The **Wetland Assessment** revealed that wetlands such as floodplain wetlands, channelled valley-bottom wetlands, un-channelled valley-bottom wetlands, depressions, seeps and wetland flats appear to be absent at the site. In conclusion no wetlands are found at the site. A low sensitivity from the SANBI EIA Screening Tool for relative aquatic biodiversity is indicated. If the site is developed there appears to be not threat to any wetland animal or plant species.

A **Heritage Impact Study** revealed that a number of archaeological & recent historical sites and features were identified and recorded in the study area during the assessment. The most extensive and significant of these are a number of open-air Stone Age sites with scatters of stone tools and associated material. Some recent historical features recorded include the remnants of an aqueduct (indicated on the 1957 map of Portion 15 of the farm) and possibly associated features and a Cricket

field (oval). It is therefore recommended that Phase 2 Archaeological Mitigation measures be implemented before the development commences and the sites are destroyed.

A **Palaeontological Impact Assessment** concluded that it is extremely unlikely that the proposed development will affect palaeontological heritage. The underlying Permian rocks of the Karoo Super group are not exposed in the study area and it is unlikely that fossils will be preserved in the overlying Quaternary calcrete and alluvial deposits.

The **Agricultural Study** conducted concluded that according to the screening tool, the site has a high sensitivity. More detailed analyses, however, found that this assessment is incorrect and for the following reasons:

- Middelburg is in the Karroo Region that has an arid climate, it has a low and erratic rainfall and high summer temperatures. Crop production is not practiced unless it is under irrigation.
- There is no irrigated cropping on the site and no water license as far as we are aware.
- The soils are mostly moderately deep and deep Clovelly soils that are arable but with no irrigation water available, has low arable potential

It is our professional view that no high potential land will be lost and that the development proposed will only benefit farming as a land use and as an industry.

A Specialist was also appointed to assess the impact of the proposed development on the **Civil Aviation Installations** in the area. After an assessment performed by a radio frequency and radar specialist the site was rated as a "Low" sensitivity site for the civil aviation theme. Therefore according to the Government Gazette No. 43110 no further assessment requirements are identified.

Consistent with national priorities, environmental authorities must support *"increased economic growth and promote social inclusion",* whilst ensuring that such growth is *"ecologically sustainable".* In the National Spatial Development Perspective (NSDP) it is highlighted that, to achieve the goal of stimulating sustainable economic activities and to create long-term employment opportunities, it is required that spending on economic infrastructure is focused in priority areas with potential for economic development, with development to serve the broader societies' needs equitably.

12.2 ENVIRONMENTAL MANAGEMENT PROGRAMME (EMPR)

EMPR's aim to identify and minimise the potential impacts that the proposed construction and operational phases of the project may have on the receiving environment. An EMPR has been developed which is contained in Appendix E and includes detailed mitigatory measures for the construction phase.

As a general guideline, the EMPR should be based on a comprehensive set of environmental aspects (elements of the facility that can interact with the environment), and hence, the EMPR compiled for this application includes the following key components:

- Mechanisms for the on-going identification and assessment of environmental aspects and impacts;

- Environmental management programmes; objectives and targets;
- Environmental monitoring and reporting framework;
- Environmental management procedures; and,
- Mechanisms for the recording of environmental incidents and implementing corrective and preventative actions.

12.3 EAP OPINION

The information contained in this DEIAR and Specialist Studies, provides a detailed and comprehensive description of the proposed project, baseline environment and potential environmental impacts associated with the proposed development. As no significant impacts that cannot be mitigated were identified, AB Enviro Consult is of the opinion that the project should proceed, provided that the necessary mitigation and management measures are implemented.

Under South African environmental legislation, the Applicant is accountable for the potential impacts of the activities that are undertaken and is responsible for managing these impacts. The Applicant therefore has overall and total environmental responsibility to ensure that the implementation of the construction phase of the EMPR complies with the relevant legislation and the conditions of the environmental authorisation. The applicant will thus be responsible for the implementation of the EMPR.

The environmental management programme (EMPR) should form part of the contract between the construction company and the applicant. This will help ensure that the EMPR is adhered to. It is suggested that a suitably qualified Environmental Control Officer (ECO) be appointed for the construction phase.

12.4 CONDITIONS RECOMMENDED TO BE INCLUDED IN ANY AUTHORISATION THAT MAY BE GRANTED BY THE COMPETENT AUTHORITY IN RESPECT OF THE APPLICATION

1. A full copy of the signed EA from DEDEAT in terms of NEMA and NEM:WA, granting approval for the development must be available on site
2. A full copy of the signed Registration from DEDEAT in terms of NEM.WA, granting approval for the organic composting facility must be available on site
3. A copy of the EMPr as well as any amendments thereof must be available on site
4. A suitably qualified ECO must be appointed.
5. Impacts on the environment must be minimised during site establishment and the development footprint must be kept to the approved development area.
6. Vegetation clearing may not commence until such time as the development footprint has been clearly defined.
7. No clearance of vegetation outside of the development footprint may occur.
8. At the end of the construction phase the site and its surrounding area must be free from any pollution that originated as a result of the construction activities.
9. No disturbance of topsoil & subsoil may commence until such time as the development footprint has been clearly defined.

10. No disturbance of topsoil & subsoil outside of the development footprint may occur.
11. At the end of the construction phase the site and its surrounding area must be free from any chemical, fuel, oil and cement spills that originated as a result of the construction activities.
12. At the end of the construction phase the site and its surrounding area must be free from any sewage that originated as a result of the construction activities.
13. At the end of the construction phase the site and its surrounding area must be free from any hazardous or general waste pollution that originated as a result of the construction activities.
14. Dust prevention measures must be applied to minimise the generation of dust.
15. Noise prevention measures must be applied to minimise the generation of unnecessary noise pollution as a result of construction activities on site.
16. Absolutely no burning of waste is permitted.
17. Fires will only be allowed in facilities especially constructed for this purpose.
18. No hunting of animals will be allowed.
19. No intentional destruction of any sites, features or material of cultural heritage (archaeological and/or historical) origin or significance may occur.
20. Maintain the containment barriers to ensure that neither the Sedimentation Ponds and Evaporation Ponds nor the organic waste composting facility causes any harm to the environment.
21. The site must be fenced off and secured in a manner that will prevent unauthorised entry to the areas of the Sedimentation Ponds, Evaporation Ponds and organic waste composting facility.
22. Proper ablution and decontamination facilities, for management and staff, must be provided onsite.
23. Organic waste composting facilities must register with a Waste Information System in terms of the National Waste Information System Regulations, 2012 published under Government Notice No. R. 625 in Government Gazette No.35583 on 13 August 2012.
24. The mass (tons or metric tons) of all incoming compostable organic waste must be weighed or estimated by determining the density of the waste and multiplying it by the volume of waste received, and the records thereof must be safely kept at the facility or company office for a period of 5 years.
25. All forms of dust pollution and airborne emissions must be managed in terms of the National Environmental Management: Air quality Act, 2004 (Act No 39 of 2004)).
26. 2Operational measures must be put in place to immediately blend a carbon source or cover with mature compost any highly biodegradable organics such as food waste, organic sludge and putrescible waste to minimise offensive odour emissions that may be generated by potentially odorous waste.
27. Organics that are being processed must always be kept reasonably moist (at least 25% (m/m) moisture content) to minimise the emissions of airborne pathogens.
28. Emissions of methane in aerobic processes must be controlled by keeping the organics being processed adequately aerated.
29. Facility management must put measures in place to control high concentrations of airborne particulate matter during pre-treatment (shredding and mixing} of dry organics.
30. Employees at Sedimentation Ponds, Evaporation Ponds, composting and related organic-processing operations must be protected against high levels of exposure to airborne particulate matter by ensuring that design features and operational measures are strictly

followed and monitored, and appropriate personal protective equipment is worn by employees.

31. All Contractors and sub-contractors must abide to the rules and regulations of the Occupational Health and Safety Act, 85 of 1993.

13. AFFIRMATION BY EAP

I **Mr JP De Villliers** declare under oath that I:

a. act as the independent environmental practitioner in this application ;
b. do not have and will not have any financial interest in the undertaking of the activity, other than remuneration for work performed;
c. do not have and will not have a vested interest in the proposed activity proceeding;
d. have no, and will not engage in, conflicting interests in the undertaking of the activity;
e. undertake to disclose, to the competent authority, any material information that has or may have the potential to influence the decision of the competent authority or the objectivity of any report, plan or document required;
f. will ensure that information containing all relevant facts in respect of the application is distributed or made available to interested and affected parties and the public and that participation by interested and affected parties is facilitated in such a manner that all interested and affected parties will be provided with a reasonable opportunity to participate and to provide comments on documents that are produced to support the application;
g. will ensure that the comments of all interested and affected parties are considered and recorded in reports that are submitted to the competent authority in respect of the application, provided that comments that are made by interested and affected parties in respect of a final report that will be submitted to the competent authority may be attached to the report without further amendment to the report;
h. will keep a register of all interested and affected parties that participated in a public participation process; and
i. will provide the competent authority with access to all information at my disposal regarding the application, whether such information is favourable to the applicant or not.

Signature of the Environmental Assessment Practitioner:

Name of company:

Date:

Signature of the Commissioner of Oaths:

Date

Designation

Official stamp:

14. LIST OF REFERENCES

- **Department of Environmental Affairs and Tourism. 1992.** Integrated Environmental Management. Pretoria, DEAT.
- **Department of Environmental Affairs and Tourism. 1998.** *Guideline Document - EIA Regulations*. Pretoria, DEAT.
- **Department of Environmental Affairs. 1988.** *Climate of South Africa, climate statistics up to 1984*. Weather Bureau (WB40). Pretoria, Government Printer.
- **Department of Transport, 19--.** *Climate of South Africa Part 1 Climate statistics.* Weather Bureau (WB20). Pretoria Government Printer.
- **Dowling.** E. 2004:THE ENVIRONMENTAL IMPACT OF SHEEP CONFINEMENT FEEDING SYSTEMS https://www.researchgate.net/publication/252700378
- **EveryCRSReport.com**, University of North Texas Libraries Government Documents Department
- Raw Metadata: JSON
- **PENNSYLVANIA STATE UNIVERSITY (2003)** "Manure Management Fact sheets" Available on line on http://www.inform.umd.ed/EdRes/Topic/AgrEnv/ndd/Watermgt/MANURE_MANAGEMENT.htm
- **S. Cliff. 2015**. Environmental Scoping report for the proposed high density residential township "Tanganani extension 7", to be located on a part of Portion 119 of the farm Diepsloot 388 JR, City of Johannesburg Municipality, Gauteng
- **TAIGANIDES E P (1977)** "Bio-Engineering Properties of Feedlot Wastes" Animal Wastes PP 131-153 USDA (2003): "Integrated Management Regimens that minimise the Environmental Impact of Livestock Manure"
- **WIREs Climate Change 2014**, 5605-620. Doi:10.1002/wcc.295

APPENDIX A:
GEOTECHNICAL REPORTS

APPENDIX B:
CIVIL ENGINEERS' REPORT

APPENDIX C:
FAUNA AND FLORA SPECIALIST REPORT

APPENDIX D:
WETLAND SPECIALIST REPORT

APPENDIX E:
SAHRA SPECIALIST REPORT

APPENDIX F:
DESKTOP PALAEONTOLOGICAL IMPACT ASSESSMENT REPORT

APPENDIX G:
AGRICULTURAL POTENTIAL IMPACT ASSESSMENT STATEMENT

APPENDIX H:
CIVIL AVIATION ASSESSMENT REPORT

APPENDIX I:
HYDROGEOLOGICAL REPORT

APPENDIX J:
ENVIRONMENTAL MANAGEMENT PLAN