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**Geotechnical, Environmental
& Earth Science Consultants**

Draft Basic Assessment Report:

**Proposed Construction of the Ideal
Shavings Poultry Breeders Facility,
Dargle, uMngeni Local Municipality,
KwaZulu-Natal Midlands.**

October 2015

Draft

Commissioned by:

IDEAL SHAVINGS CC

PO Box 59
Dargle, 3265
Tel: 079 888 7058
Contact: Mr Wesley Smit
Email: info@idealshavings.co.za


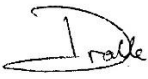


Prepared by:

TERRATEST (PTY) LTD

PO Box 794
Hilton
3245
Telephone: (033) 343 6700
Email: drallel@terratest.co.za

DRAFT BASIC ASSESSMENT REPORT

PROPOSED CONSTRUCTION OF THE IDEAL SHAVINGS POULTRY BREEDERS FACILITY, DARGLE, UMNGENI LOCAL MUNICIPALITY, KWAZULU-NATAL MIDLANDS

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By Author	Environmental Scientist	L. Dralle		21/09/2015
Checked by	Environmental Scientist	I. Summers		04/10/2015
Authorised by	Executive Associate	M. van Rooyen		06/10/2015

Executive Summary

Terratest (Pty) Ltd has been appointed by Ideal Shavings cc to undertake the environmental services required for the proposed construction of a poultry facility in the Dargle, uMngeni Local Municipality, KwaZulu-Natal Midlands.

The proposed development entails the construction of two (2) rearing houses and eight (8) laying houses. Construction will occur in a phased manner, whereby one (1) rearing house and four (4) laying houses will initially be constructed. Once established and operational, the remaining rearing house and laying houses will be constructed. Construction will further entail the development of a facility office, ablutions (to be serviced via septic tanks), fencing, an access road, water pipelines and electricity infrastructure.

In terms of water requirements, it is proposed that a weir be constructed on the stream which runs through the property, to provide water to the chicken houses as necessary. Further, an existing borehole is located on the site, which will provide water should demand requirements from the stream not be met. The appropriate Water Use Licence Applications have been made to the Department of Water and Sanitation (DWS) in this regard, as per the National Water Act (Act No. 36 of 1998).

The Public Participation Process involves consultation with the relevant authorities, non-government organisations (NGO's), neighbouring landowners, community members and other identified Interested and Affected Parties (IAPs). Newspaper advertisements were published at the outset of the project to inform the general public of the BA Process. An advertisement was published in English on 17 August 2015 in The Witness newspaper. Three site notices were placed on site and on the surrounding roads. Background Information Documents were distributed via post and email. A Public Meeting was not deemed necessary as no significant interest was received by the community with respect to this project.

The Draft Basic Assessment (BA) Report and Environmental Management Programme (EMPr) have been circulated to IAPs for review and comment. Comments received on the Draft BA Report and EMPr will be consolidated and included into a Final BA Report, which will be submitted to the KwaZulu-Natal Department of Economic Development, Tourism and Environmental Affairs (EDTEA) for a decision on Environmental Authorisation.

This BA Report has been drafted in accordance with the EIA Regulations, 2014 and adheres to the requirements contained in Appendix 1 of GNR 982, as noted in Table 1.

TABLE 1: Content of a BA Report (2014 EIA Regulations)

2014 EIA Regulations	Description of EIA Regulations Requirements for BA Reports	Location in the BAR
Appendix 1, Section 3 (a)	Details of – (i) The EAP who prepared the report; and the expertise of the EAP; and (ii) The expertise of the EAP, including a curriculum vitae.	Section 2 & Appendix 1
Appendix 1, Section 3 (b)	The location of the activity, including – (i) The 21 digit Surveyor General code of each cadastral land parcel; (ii) Where available, the physical address and farm name; (iii) Where the required information in items (i) and (ii) is not available, coordinates of the boundary of the property or properties	Section 3
Appendix 1, 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 9
Appendix 1, Section 3 (d)	A description of the scope of the proposed activity, including – (i) All listed and specified activities triggered; (ii) A description of the activities to be undertaken, including associated structures and infrastructure.	Section 4
Appendix 1, Section 3 (e)	A description of the policy and legislative context within which the development is proposed including an identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks and instruments that are applicable to this activity and are to be considered in the assessment process.	Section 6

2014 EIA Regulations	Description of EIA Regulations Requirements for BA Reports	Location in the BAR
Appendix 1, 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 location.	Section 7
Appendix 1, Section 3 (h)	A full description of the process followed to reach the proposed preferred activity, site and location within the site, including- (i) Details of all alternatives considered; (ii) Details of the Public Participation Process undertaken in terms of Regulation 41 of the Regulations, including copies of the supporting documents and inputs; (iii) A summary of the issues raised by interested and affected parties, and an indication of the manner in which the issues were incorporated, or the reasons for not including them; (iv) The environmental attributes associated with the alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects; (v) The impacts and risks identified for each alternative, including the nature, significance, consequence, extent, duration, and probability of the impacts, including the degree to which the impacts- (aa) Can be reversed; (bb) May cause irreplaceable loss of resources; and (cc) Can be avoided, managed, or mitigated. (vi) The methodology used in deterring and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks associated with the alternatives; (vii) Positive and negative impacts that the proposed activity and alternatives will have on the environment and on the community that may be affected focusing on the geographic, physical, biological, social, economic, heritage and cultural aspects; (viii) The possible mitigation measures that could be applied and level of residual risk; (ix) The outcome of the site selection matrix; (x) If no alternatives, including alternative locations for the activity were investigated, the motivation for not considering such and; (xi) A concluding statement indicating the preferred alternatives, including preferred location of the activity.	Section 8 Section 9 Section 9 Section 10 Section 12 Section 12 Section 13 Section 14 Section 14 Section 14 Section 14
Appendix 1, Section 3 (i)	A full description of the process undertaken to identify, assess and rank the impacts the activity will impose on the preferred location through the life of the activity, including- (i) A description of all environmental issues and risks that were identified during the environmental impact assessment process; and (ii) An assessment of the significance of each issue and risk and an indication of the extent to which the issue and risk could be avoided or addressed by the adoption of mitigation measures.	Section 12
Appendix 1, 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 avoided, managed or mitigated.	Section 13
Appendix 1, Section 3 (k)	Where applicable, a summary of the findings and impact management measures identified in any specialist report complying with Appendix 6 to these Regulations and an indication as to how these findings and recommendations have been included in the final report.	Section 11
Appendix 1, 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 site indicating any areas that should be avoided, including buffers; and (iii) A summary of the positive and negative impacts and risks of the proposed activity and identified alternatives.	Section 15
Appendix 1, Section 3 (m)	Based on the assessment, and where applicable, impact management measures from specialist reports, the recording of the proposed impact management objectives, and the impact management outcomes for the development for inclusion in the EMPr.	Section 16
Appendix 1, Section 3 (n)	Any aspects which were conditional to the findings of the assessment either by the EAP or specialist which are to be included as conditions of authorisation.	Section 16
Appendix 1, Section 3 (o)	A description of any assumptions, uncertainties, and gaps in knowledge which relate to the assessment and mitigation measures proposed;	-
Appendix 1, Section 3 (p)	A reasoned opinion as to whether the proposed activity should or should not be authorised, and if the opinion is that it should be authorised, any conditions that should be made in respect of that authorisation.	Section 16
Appendix 1, Section 3 (q)	Where the proposed activity does not include operational aspects, the period for which the environmental authorisation is required, the date on which the activity will be concluded, and the post construction monitoring requirements finalised.	Section 17
Appendix 1, Section 3 (r)	An undertaking under oath or affirmation by the EAP in relation to- (i) The correctness of the information provided in the report;	Section 19

2014 EIA Regulations	Description of EIA Regulations Requirements for BA Reports	Location in the BAR
	(ii) The inclusion of the comments and inputs from stakeholders and interested and affected parties; (iii) the inclusion of inputs and recommendations from the specialist reports where relevant; and (iv) Any information provided by the EAP to interested and affected parties and any responses by the EAP to comments or inputs made by interested and affected parties.	
Appendix 1, Section 3 (s)	Where applicable, details of any financial provisions for the rehabilitation, closure, and ongoing post decommissioning management of negative environmental impacts.	-
Appendix 1, Section 3 (t)	Where applicable, any specific information required by the Competent Authority.	-
Appendix 1, Section 3 (u)	Any other matter required in terms of section 24(4) (a) and (b) of the Act.	-

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1 INTRODUCTION

Terratest (Pty) Ltd has been appointed by Ideal Shavings cc to undertake the environmental services required for the proposed construction of a poultry facility in the Dargle, uMngeni Local Municipality, KwaZulu-Natal Midlands.

The proposed development entails the construction of two (2) rearing houses and eight (8) laying houses. Construction will occur in a phased manner, whereby one (1) rearing house and four (4) laying houses will initially be constructed. Once established and operational, the remaining rearing house and laying houses will be constructed. Construction will further entail the development of an office facility, ablutions (to be serviced via septic tanks), fencing, an access road, water pipelines and electricity infrastructure.

In terms of water requirements, it is proposed that a weir be constructed on the stream which runs through the property. Further, an existing borehole is located on the site, which will provide water should demand requirements from the stream not be met. The appropriate Water Use Licence Applications have been made to the Department of Water and Sanitation (DWS) in this regard, as per the National Water Act (Act No. 36 of 1998).

As per GN R982 of the EIA Regulations, 2014, a Basic Assessment (BA) Process must be undertaken in such a manner that the environmental outcomes, impacts and residual risks of the proposed Listed Activities being applied for are noted in the BA Report and assessed accordingly by the Environmental Assessment Practitioner (EAP). In this regard, the requirements of the BA Process are noted in the EIA Regulations (2014), Listing Notice 1, Appendix 1 of GNR 982 and are consequently adhered to in this report (please refer to Table 1 of the Executive Summary). For reference purposes, it is important to note that the Listed Activities in terms of GN R983 of the EIA Regulations, 2014, applicable to this proposed project pertain only to the development and operation of infrastructure associated with the poultry facility. In this regard, this BA Report focuses only on construction and operational phase impacts and mitigation measures.

Ultimately, the outcome of the BA Process is to provide the Competent Authority, the Department of Economic Development, Tourism and Environmental Affairs (EDTEA), with sufficient information to provide a decision on the Application in terms of Environmental Authorisation (EA), in order to avoid or mitigate any detrimental impacts that the activity may inflict on the receiving environment.

2 DETAILS OF THE ENVIRONMENTAL ASSESSMENT PRACTITIONER (EAP)

As noted previously, Terratest (Pty) Ltd has been appointed by Ideal Shavings cc to undertake the BA Process for the proposed poultry facility, Dargle, uMngeni Municipality, KwaZulu-Natal. Details of the qualified EAPs involved in undertaking the BA Process are noted in Table 2 and the Curriculum Vitae (CV) of the relevant EAPs are attached as Appendix 1.

TABLE 2: Details of the EAP

EAP	Qualifications & Professional affiliations	Experience at environmental assessments	Contact details
Mr M. van Rooyen Executive Associate	BSc, BSc Hons, MPhil. (Environmental Management), Pr. Sci. Nat, IAIAsa	11 years	Terratest (Pty) Ltd Tel: (033) 343 6789 Email: vanrooyenm@terratest.co.za
Ms I. Summers Environmental Scientist	BSc. Hons Environmental Science, IAIAsa	4 years	Terratest (Pty) Ltd Tel: (033) 343 6789 Email: summersi@terratest.co.za
Ms L. Dralle Environmental Scientist	BSc. Hons Environmental Management, IAIAsa	9 years	Terratest (Pty) Ltd Tel: (033) 343 6789 Email: drallel@terratest.co.za

3 LOCATION OF THE ACTIVITY

The proposed activity is located within Ward 4 of the uMgeni Local Municipality. The project description, 21 digit Surveyor General (SG) code and property co-ordinates are provided in Table 3. A Locality Map is provided in Figure 1.

TABLE 3: Site details

PROPERTY DESCRIPTION	Portion 6 of the Farm Middel Bosch No. 897
21 DIGIT SG CODE	NOFT00000000089700006
CO-ORDINATES	29°28'52.81"S; 30°05'49.56"E

4 ACTIVITY DESCRIPTION

4.1 APPLICABLE LISTED ACTIVITIES

In terms of the Environmental Impact Assessment (EIA) Regulations (2014), promulgated in terms of the National Environmental Management Act, 1998 (NEMA), certain Listed Activities are specified for which either a Basic Assessment (GN R 983 and 985) or a full Scoping and EIA (GN R 984) is required.

The following Listed Activities in Government Notice (GN) R 983 (Listing Notice 1), requiring a Basic Assessment (BA) Process are applicable to the proposed poultry facility construction:

- **GNR 983, Item 05:** "The development and related operation of facilities or infrastructure for the concentration of (ii) more than 5000 poultry per facility situated outside an urban area, excluding chicks younger than 20 days."
 - *This Listed Activity is relevant as the proposed development requires building facilities for the concentration of more than 5 000 poultry in a rural area.*
- **GNR 983, Item 19:** "The infilling or depositing of any material of more than 5m³ into, or the dredging, excavation, removal or moving of soil, sand, shell grit, pebbles or rock of more than 5m³ from (i) a watercourse".
 - *The construction of a weir will necessitate the movement or deposition of 5m³ or more of material into or from a watercourse.*

Based on the above proposed activities a BA Process is required. The associated EA Application form is attached to this Report as Appendix 2 and an organogram of the BA Process is provided in Figure 2 for reference purposes.

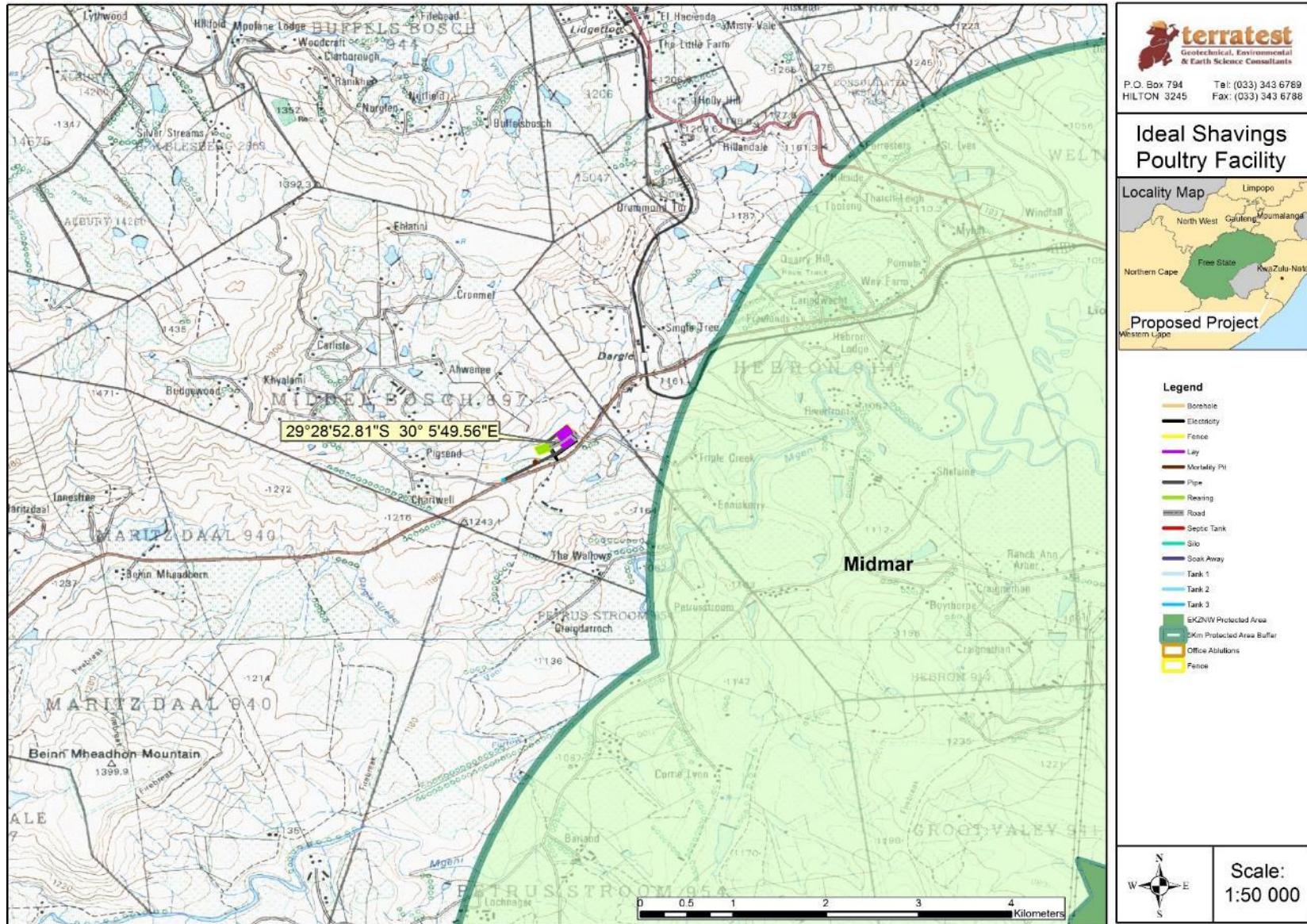


FIGURE 1: Locality Map

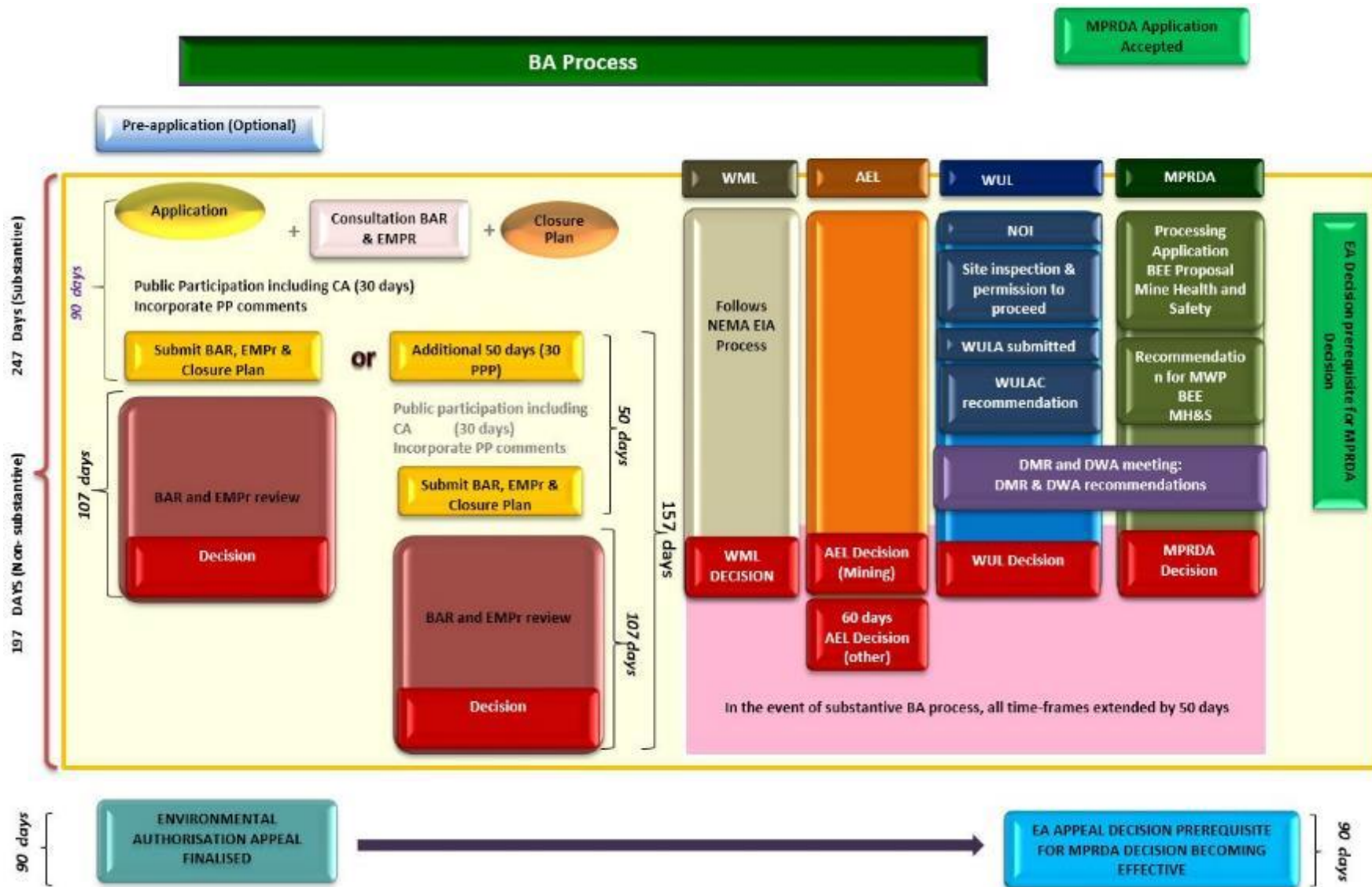


FIGURE 2: Basic Assessment Process Organogram

5 ACTIVITY DESCRIPTION

5.1 Project Overview

Ideal Shavings cc propose to develop a poultry facility with the intention of housing parent stock and layers for the production and supply of fertile eggs to National Chicks (Pty) Ltd. National Chicks (Pty) Ltd is currently one of the largest suppliers of day-old chicks to independent broiler producers.

5.2 Construction details

Construction includes the development of the proposed poultry facility. Associated infrastructure includes the development of a weir for the supply of water to the poultry facility.

5.2.1 Poultry houses

The poultry facility is proposed to be comprised of two (2) rearing houses and eight (8) laying houses. Construction will occur in a phased manner, whereby one (1) rearing house and four (4) laying houses will initially be constructed. Once established and operational, the remaining rearing house and laying houses will be constructed. Construction will further entail the development of a facility office, ablutions (to be serviced via septic tanks), fencing, an access road, water pipelines and electricity infrastructure.

The purpose of a rearing house is to raise rearing stock for the production of broiler eggs. Once the rearing stock is able to produce eggs, they are relocated to the laying houses. All eggs produced in the laying houses are collected and sent to an off-site incubation facility for hatching. All hatched chicks will be classified as broilers and be suitable for market as day old chicks.

Each rearing house will contain 10 000 birds. These birds will remain in the rearing houses for 20 weeks. Thereafter they will be moved to the layer houses. Each layer house will contain 5 000 birds, for a period of 44 weeks. Table 4 provides a breakdown of construction dimensions, as well as the number of birds to be housed in each poultry house.

TABLE 4: Construction dimensions

CHICKEN HOUSES	NUMBER OF BIRDS	HOUSING DIMENSIONS
Rearing House x 2	10 000 x 2 = 20 000	108m x 15m = 1 620m ²
Laying House x 8	5 000 x 8 = 40 000	72m x 15m = 1 080m ²

5.2.2 Weir

A contracted Cipolletti Weir is proposed to be constructed in a small stream located on the property. Dimensions of the weir can, however, only be finalised during excavation, but flow can be measured once operational. An example of a Cipolletti Weir is presented in Figure 3.



FIGURE 3: Example of a contracted Cipolletti Weir to be installed.

The weir will supply water to the poultry facility. An Application to the DWS has been made in terms of abstraction from the stream. A catchment simulation GISAP (Tylcoat, 2010) has been used to determine the runoff which would feed into the stream. Please refer to Figure 4. This information, as well as detailed catchment assessment information will feed into the Water Use Licence Application (WULA) made to the DWS. The WULA is a separate process conducted outside of the BA Process.

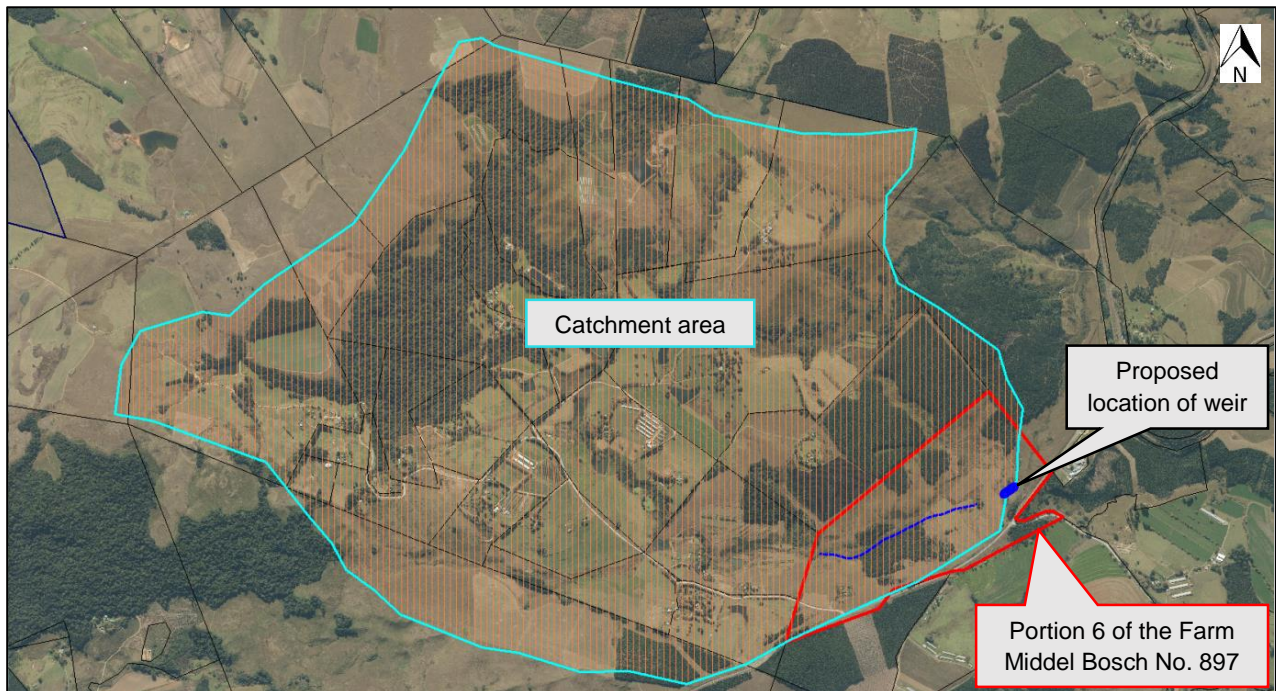


FIGURE 4: Catchment of a simulated weir on Portion 6 of the Farm Middel Bosch No. 897.

Water will be pumped from the weir to purpose-built storage tanks on a nearby hill, located approximately 440m to the southwest of the proposed poultry facility. From the hill, the water will be gravity fed to the poultry facility. This supply can be augmented by the existing borehole if necessary.

5.3 Activity Process

The rearing process entails importing day old chicks into the rearing houses. The floor of the houses are scattered with wood shavings. The chicks are fed and watered for 20 weeks. At 20 weeks they are transferred to the layer houses.

Once the birds have been relocated to the laying houses, the wood shavings and accumulated chicken litter from the rearing houses is removed and the floors scraped down. Thereafter, the entire house is washed down with chemicals and water using high pressure cleaning equipment. Any maintenance requirements are undertaken during this time, including the flushing of the water reticulation system. The rearing house is prepped for receiving a new flock of day old chicks.

The floor of the layer houses are similarity scattered with wood shavings. The birds received from the rearing houses are kept within the open floor space of the layer house. A sufficient numbers of cocks are included in the flock to ensure adequate fertilisation. Layer racks are provided on the side of the houses where birds are able to lay eggs. All fertilised eggs are collected by hand, four times a day and graded to ensure that first grade eggs are utilised for hatching. All approved eggs are transferred to off-site incubators to hatch.

At the end of the laying cycle (i.e. after 44 weeks), the birds are termed “cull fowl” and are no longer utilised for egg production. They are removed from site and disposed of via an outsourced contract. The wood shavings and accumulated chicken litter is collected from each house and loaded directly onto a truck / trailer and transported off site for disposal to agricultural land.

5.3.1 Waste

The main waste streams will be from chicken litter, wash water and chicken mortalities. The chicken litter, mixed with wood shavings, will be cleaned out of each chicken house at the end of every cycle, loaded onto a truck / trailer and transported off site for disposal to agricultural land. Disposal will be undertaken by private farmers and landowners. Such disposal does not trigger any Listed Activities as per the National Environmental Management: Waste Act (Act No. 59 of 2008). The use of chicken litter as manure is common practice given the low processing cost and in general, transportation costs.

Wash water, from washing the floors of the chicken houses, will be conveyed via a system of interlinking open concrete drains between the chicken houses into a lined reservoir. The collected effluent will be removed from the reservoir and disposed of to land on site via overhead irrigation. The application of wastewater to land (i.e. irrigation of wash water) will not exceed 2mm / day, in accordance with the guidelines pertaining to effluent disposal to land. The volume of wastewater disposed of per day will not exceed 50m³, as per compliance with GN 665 (30 August 2013) of the National Water Act (Act No. 36 of 1998).

Wash water samples will be taken prior to the disposal to land via irrigation. The samples will be sent to an accredited laboratory for analysis, where it is assumed that they will meet the wastewater limit values as specified in the NWA for biodegradable industrial wastewater. GN 665 states that a person may irrigate up to 50m³ of domestic or biodegradable industrial waste on any given day provided that the following conditions are met:

- pH - not less than 6 or more than 9pH units
- Electrical Conductivity - not exceed 200mS m⁻¹
- Chemical Oxygen Demand - not exceed 5 000mg l⁻¹ after removal of algae
- Faecal Coliforms - not exceed 100 000 per 100ml
- Sodium Absorption Ratio - not exceed 5 for biodegradable industrial wastewater

A purpose-built mortality pit will be sunk approximately 100m southwest of the rearing houses. The mortality pit will be comprised of a 10 000 litre JoJo tank i.e. a polyethylene tank, raised above ground level by one (1) metre. This will prevent the ingress of rainwater runoff. The lid will be 400mm in diameter and will be attached with swivels to allow for easy opening and closing, and also to prevent fly and odour nuisance. Industry approved enzymes will be added to the mortalities to assist in decomposition.

Should disease be detected in any bird, the State Vet will be consulted. Dependent on the State Vet's recommendation, disposal will either be via incineration at an approved facility or via disposal in the mortality pit.

5.3.2 Water requirements

The annual amount of water required for the proposed poultry facility operation is 6 840m³. Based on one layer bird requiring 0.30 litres of water / day, and one rearing bird requiring 0.25 litres of water / day, the daily, monthly and annual requirements are noted in Table 5.

TABLE 5: Water requirements

WATER REQUIREMENT	NUMBER	TOTAL WATER CONSUMPTION		
		DAILY	MONTHLY	ANNUALLY
Layer birds	40 000	12 000	360 000	4 320 000
Rearing birds	20 000	5 000	150 000	1 800 000
Domestic & wash water	-	2 000	60 000	720 000
TOTAL		19 000	570 000	6 840 000

In terms of cleaning and washout requirements, this activity will only occur at the end of each cycle. The amount of water utilised during this process will not exceed 50m³ per day.

The property already holds an existing registered water use, which is recorded in the DWS WARMS database as (Registration No.) 10027115/1. There is also a borehole on the site sunk prior to 1989 when registration of such was not required. The borehole is proposed to be utilised as a contingency should the supply of water from the proposed weir falter.

5.3.3 Access

Access to Portion 6 of the Farm Middel Bosch No. 897 exists off the D765, opposite the Petrus Stroom Road. An existing farm road runs to the site identified for the laying houses. It then continues up the hill towards the proposed location of the rearing houses. The access road is proposed to bisect the cluster of laying houses, with four laying houses located on either side of the road. The rearing houses are also proposed to be constructed on either side of the existing farm road.

The farm road will be upgraded accordingly to accommodate heavy vehicles such as those associated with feed delivery.

6 APPLICABLE LEGISLATION, POLICIES AND/OR GUIDELINES

Table 6 provides a list of all the applicable legislation, policies and/or guidelines of any sphere of government that are relevant to the application as contemplated in the EIA regulations.

TABLE 6: Applicable legislation, policies and/or guidelines.

Title of legislation, policy or guideline:	Administering authority:	Date:
National Environmental Management Act (Act 107 of 1998) – for its potential to cause degradation of the environment (Section 28).	Department of Environmental Affairs	1998
National Environmental Management: Waste Act (Act No 59 of 2008 [NEMWA]) – for the management of waste	Department of Environmental Affairs	2008
Environmental Conservation Act (Act 73) – for potential environmental degradation.	Department of Environmental Affairs	1989
National Water Act (Act 36 of 1998) – for potential to cause pollution of water resources defined under the Act (Section 19).	Department of Water Affairs and Forestry	1998
Conservation of Agricultural Resources Act, 1983 (Act 43 of 1983) – for protection of agricultural resources and for control and removal of alien invasive plants.	National Department of Agriculture	1983
National Environmental Management: Biodiversity Act, 2004 (Act 10 of 2004) – for protection of biodiversity.	Department of Agriculture and Environmental Affairs & Ezemvelo KZN Wildlife	2004
The National Heritage Resources Act (Act No 25 of 1999 as amended) – for the identification and preservation of items of heritage importance.	Department of Arts and Culture (Amafa KwaZulu-Natal)	1999
Guideline 4: Public Participation in support of the EIA Regulations (2005)	Department of Environmental Affairs and Tourism	2006
Guideline 7: Detailed Guide to Implementation of the Environmental Impact Assessment Regulations (2006)	Department of Environmental Affairs and Tourism	2007
Umgeni Municipal By-Laws	Umgeni Municipality	Updated accordingly

7 NEED AND DESIRABILITY

National Chicks (Pty) Ltd, one of the largest producers of day old chicks, requires good sustainable sources of supply of suitable fertilised broiler eggs, in addition to their own breeding and production programmes. The development of the proposed poultry facility will be able to cater to this need.

The proposed poultry facility will therefore contribute to food security (broiler chickens cater for a large majority of the population's diet), employment and skills development and transfer. It will also utilise agricultural land for its intended use.

In support of the proposed Poultry Facility, it is recognised that the Dargle area is well known for poultry production given its temperate climate. Several poultry enterprises exist in the area to substantiate this claim. The site is also well placed for market with ease of access to main distribution roads.

8 MOTIVATION FOR THE PREFERRED SITE, ACTIVITY AND TECHNOLOGY ALTERNATIVE

The proposed poultry facility development triggers Listing Notice GNR 983, Activities 09 and 19 of the EIA Regulations. As per GNR 982, Appendix 1(2)(b), alternatives for the proposed development are to be identified and considered. Chapter 1 of the EIA Regulations provides an interpretation of the word “alternatives”, which is to mean “*in relation to a proposed activity, means different means of meeting the general purpose and requirements of the activity, which may include alternatives to the -*

- a) *Property on which or location where the activity is proposed to be undertaken;*
 - b) *Type of activity to be undertaken;*
 - c) *Design or layout of the activity;*
 - d) *Technology to be in the activity; or*
 - e) *Operational aspects of the activity;*
- And includes the option of not implementing the activity.”*

Based on the above, the following alternatives are presented for the proposed development of the poultry facility:

8.1 PREFERRED SITE ALTERNATIVE

The preferred site alternative is located on the southern portion of Portion 6 of the Farm Middel Bosch No. 897. This is the only site alternative that the Applicant has available that would meet the need and desirability of the Application. The property currently is comprised of a homestead, staff quarters, individual stands of *Eucalyptus* plantation, pastures, a borehole, historical earth-lined irrigation furrow and rehabilitated grasslands. The poultry facility is proposed to be located on previously cultivated, disturbed land.

8.2 LAYOUT ALTERNATIVE

8.2.1. Preferred Layout Alternative

The rearing houses have been sited on previously disturbed land which is currently utilised for grazing (kikuyu). A portion of the identified area was also previously utilised as a *Eucalyptus* plantation. The Applicant has since felled the stand (approximately two years ago) and intends to fell the remaining *Eucalyptus* stands on the property as motivation in his Water Use Licence Application. The Preferred Layout Alternative includes the construction of two rearing houses, each with the following dimensions: 72m x 15m = 1 080m². The rearing houses are proposed to be located at the end of the existing farm road. This area has a steeper gradient when compared to the locality of the laying houses.

The laying houses are proposed to be located on previously cultivated lands. In total, eight houses are proposed to be constructed, each with the following dimensions: 72m x 15m = 1 080m². The laying houses are proposed to be located near the entrance of the existing access road. The gradient of this area is less steep when compared to the locality of the rearing houses.

This alternative will utilise the proposed weir for water supply, to be augmented by the existing borehole if required. The existing access off the D765 will be used. The alignment of the existing farm road will also be utilised, running parallel to the D765 at a distance of approximately 170m. Please refer to Figure 5.

Site photographs of the site are presented in Plates 1 – 6. Figure 6 indicates where on site the photographs were taken, corresponding to the relevant Plate number.

SITE PHOTOGRAPHS: Plates 1 - 6



PLATE 1: Proposed location of laying houses on previously disturbed land. Site is relatively flat.



PLATE 2: Proposed location of laying houses on previously disturbed land. Site is relatively flat.



PLATE 3: Open field on left, laying houses proposed to be constructed on the right. D765 in the background.



PLATE 4: Rearing houses to be placed on previously disturbed land, sloping land. Existing farm road in background.



PLATE 5: Rearing houses to be placed on previously disturbed, sloping land.



PLATE 6: Panoramic view of site, including proposed site for rearing and laying house.



FIGURE 6: Location of photographs numbered 1 – 6, represented by yellow numbers. Layout of poultry facility provided for reference purposes. [Map source: Google Earth, 2015].

8.2.2. Layout Alternative 1

Layout Alternative 1 involves the construction of three rearing houses and six laying houses. In this alternative the rearing houses are proposed to be $72\text{m} \times 15\text{m} = 1\,080\text{m}^2$ (i.e. smaller than the Preferred Alternative) and the laying houses are proposed to be $88 \times 15\text{m} = 1\,320\text{m}^2$ (i.e. larger than the Preferred Alternative).

This alternative will utilise the proposed weir for water supply, to be augmented by the existing borehole if required. The existing access off the D765 will be used. The alignment of the existing farm road will not be utilised, necessitating the need to construct a new access road on the property. The access road would run parallel to the D765 at a distance of approximately 90m.

The rearing houses are proposed to be located near the entrance to the access road, while the laying houses are proposed to be located at the end of the access road. Please refer to Figure 7.

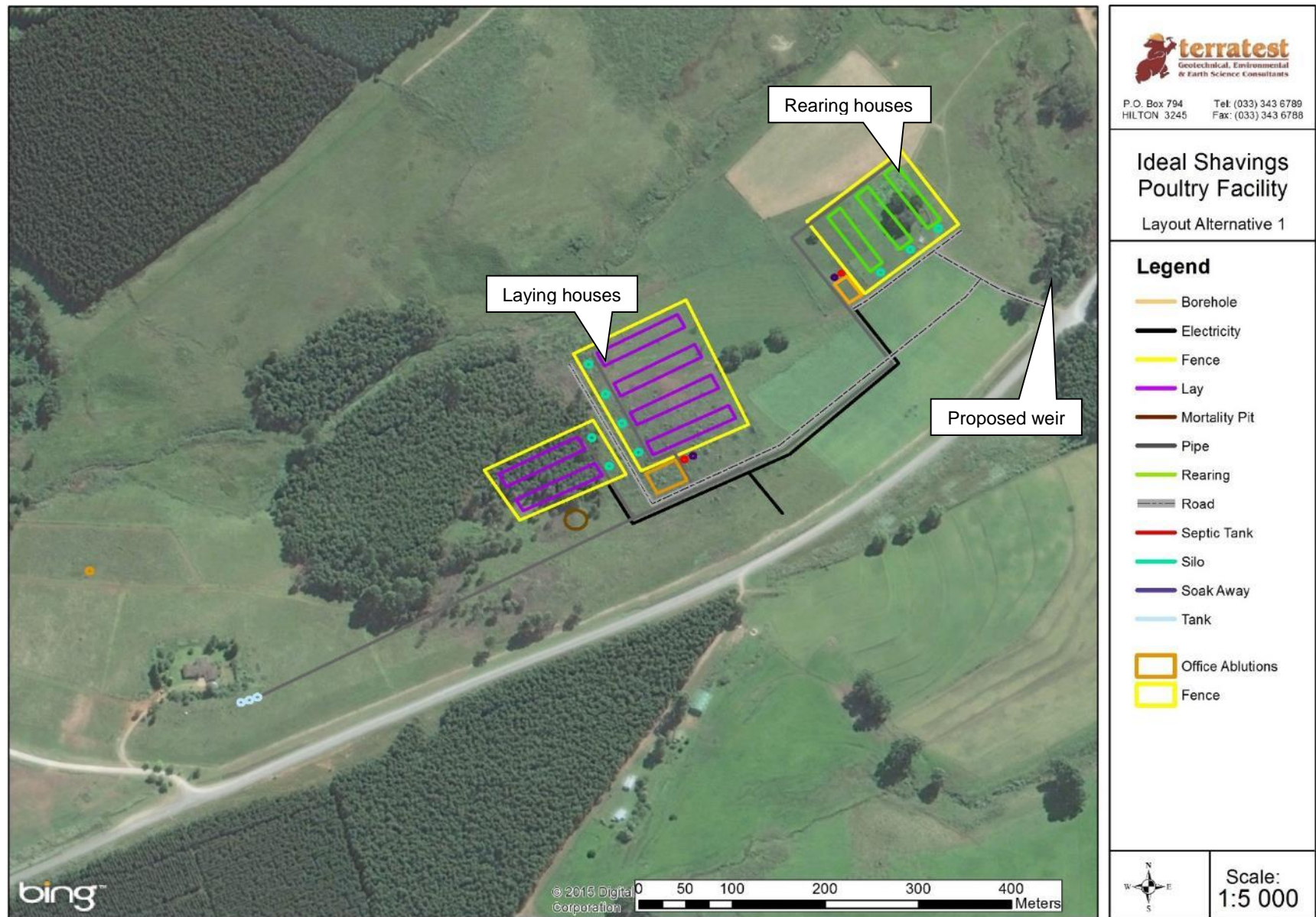


FIGURE 7: Layout Alternative 1

8.2.3. Motivation for Preferred Layout Alternative

A comparison of the Preferred Layout Alternative and Layout Alternative 1 construction dimensions are provided in Table 7.

TABLE 7: Comparison of construction dimensions

	PREFERRED LAYOUT ALTERNATIVE		LAYOUT ALTERNATIVE 1	
	Number	Dimensions	Number	Dimensions
REARING HOUSES	2	108 x 15 = 1 620m ²	3	72 x 15 = 1 080m ²
LAYING HOUSES	8	72 x 15 = 1 080m ²	6	88 x 15 = 1 320m ²

The Preferred Layout Alternative has been identified as such based on the following:

- Fewer, larger rearing houses are preferable compared to an increase in smaller rearing houses (i.e. two verses three) as the overall footprint of disturbance is less and the construction and operational cost of two rearing houses is less when compared to maintenance and operation of three. Conversely, an increased number of smaller sized laying houses are preferable when compared to a decreased number of larger laying houses (i.e. eight versus six) as the chicken welfare is improved given that more space is available;
- Trucks will collect eggs from the laying houses twice a week. Locating the laying houses closer to the entrance to the poultry facility and on flatter terrain will ensure a quicker collection time and less disturbance to the chicks in the rearing houses (as the rearing houses will not be passed);
- Feed will be delivered to the laying houses more frequently than the rearing houses; and
- Chicks are susceptible to stress influences and the relatively high traffic volumes due to egg collection and feed delivery may impact on their wellbeing (i.e. activities frequently conducted at the laying houses). Therefore it is proposed to locate the rearing houses further away from traffic influences;
- The establishment of Layout Alternative 1 would require more extensive ground works and the consequent terracing of the land to establish the laying houses.

8.3. PREFERRED TECHNOLOGY ALTERNATIVE

Best available technology will be utilised for construction and operation of the poultry facility.

8.4. NO-GO ALTERNATIVE

The No-go Alternative is to not to construct the poultry facility on Portion 6 of the Farm Middel Bosch No. 897. As such the site will remain undeveloped and will continue to serve as grazing lands. The economic potential of the land will therefore not be realised and there will be no addition to the current poultry market supply.

9. PUBLIC PARTICIPATION

To fulfil the necessary public participation required as part of the BA Process, the following methods of stakeholder engagement were conducted by the EAP, as outlined below.

9.2. NEWSPAPER ADVERTISEMENT

A newspaper advertisement was published at the outset of the project to inform the general public of the BA Process. The advertisement was published in English on 17 August 2015 in The Witness newspaper. Proof of publication is provided in Appendix 3 of this report.

9.3. SITE NOTICE BOARDS

Three (3) site notice boards in total were placed on site and alongside the D765 on 06 September 2015. The notice boards were written in English. Figure 8 provides a copy of the site notice, while Figure 9 provides an illustration of the location of the notice boards on site.

The purpose of the notice boards was to inform neighbours, community members and passers-by of the proposed BA Application. The details of the EAP were also provided should any member of the public require additional information or wish to register as an IAP in the Application. Photographs 7 – 10 provide proof that the notice boards were placed on site.

SITE PHOTOGRAPHS: Plates 7 – 10 PUBLIC PARTICIPATION



PLATE 7: Example of Site Notice on site.

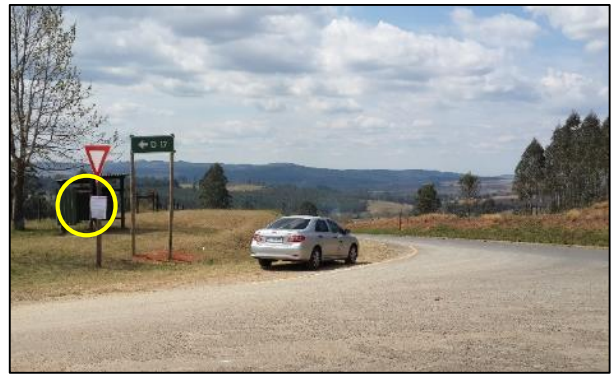


PLATE 8: Site Notice – corner of D765 and D17.



PLATE 9: Site Notice – corner of D765 and Petrus Stroom Road (southbound).



PLATE 10: Site Notice – corner of D765 and Petrus Stroom Road (northbound).

NOTICE OF ENVIRONMENTAL IMPACT ASSESSMENT APPLICATION (BASIC ASSESSMENT REPORT)
EDTEA REFERENCE: PENDING

PROPOSED CONSTRUCTION OF THE IDEAL SHAVINGS POULTRY BREEDERS FACILITY, PORTION 6 OF FARM MIDDELBOSCH 897, DARGLE.

Notice is hereby given in terms of the National Environmental Management Act, (NEMA, Act 107 of 1998), published in Government Notice No. R982 (2014), of the intent to carry out a Basic Assessment Process for the abovementioned development. Activities No 5 and 11, listed under GNR. 983, will be applied for with the Department of Economic Development, Tourism and Environmental Affairs (EDTEA).

LOCATION: The site is located on Portion 6 of the Farm Middel Bosch No. 897, which falls within the Umgeni Local Municipality and the Umgungundlovu District Municipality, KwaZulu-Natal.

SCOPE OF WORKS:

The proposed development entails the construction of two rearing houses and eight laying houses. The houses will have the capacity to hold 20 000 to 24 000 birds. Construction will be undertaken in a phased approach in which one rearing house and four laying house will initially be constructed, followed by the construction of the rearing house and four laying houses during second phase. The construction will include facilities such as an office, ablutions, septic tanks, fencing, an access road, water pipes and electricity lines.

PROponent: Ideals Shavings (Pty) Ltd

CONTACT: Imke Summers
Terratest (Pty) Ltd
PO Box 794, Hilton, 3245
Phone: 033 343 6789
Fax: 033 343 6701
E-mail: summersi@terratest.co.za

In order to ensure that you are identified as an interested and/ or affected party please submit your name, email address, and other contact information and interest in the matter, in writing, to the contact person given above.

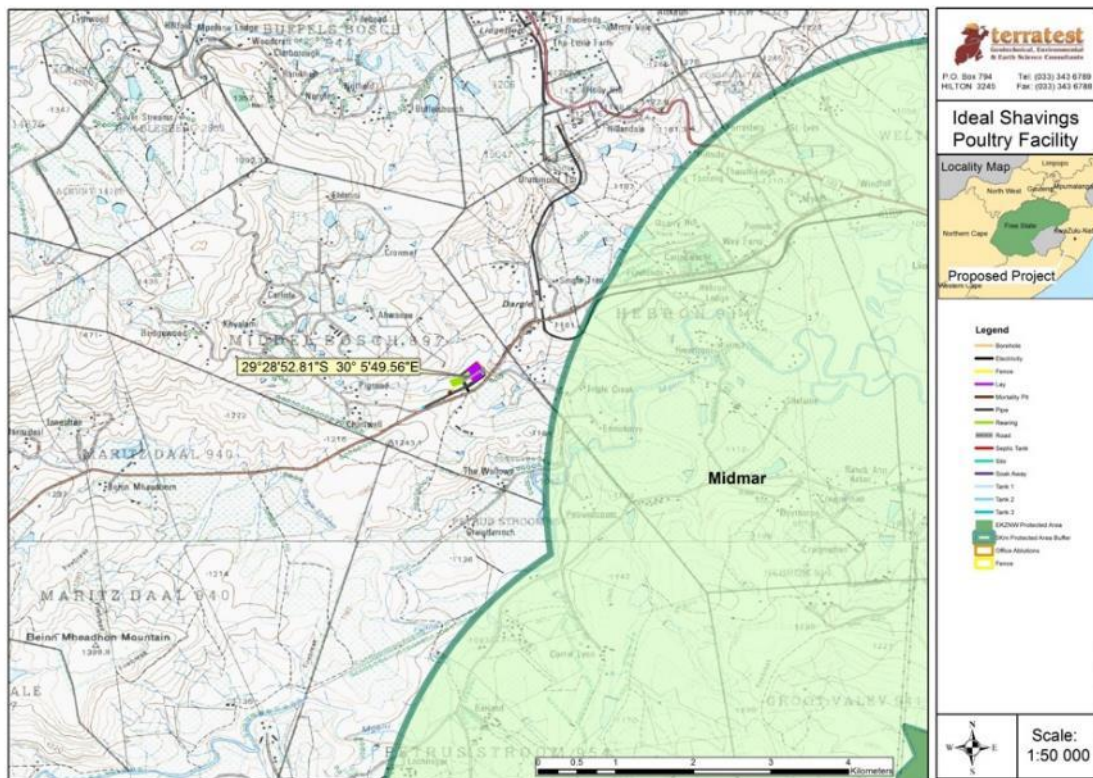


Figure 1. The locality of the proposed site for the construction of the Ideal Shavings poultry facilities.

FIGURE 8: Copy of the poster placed on site.

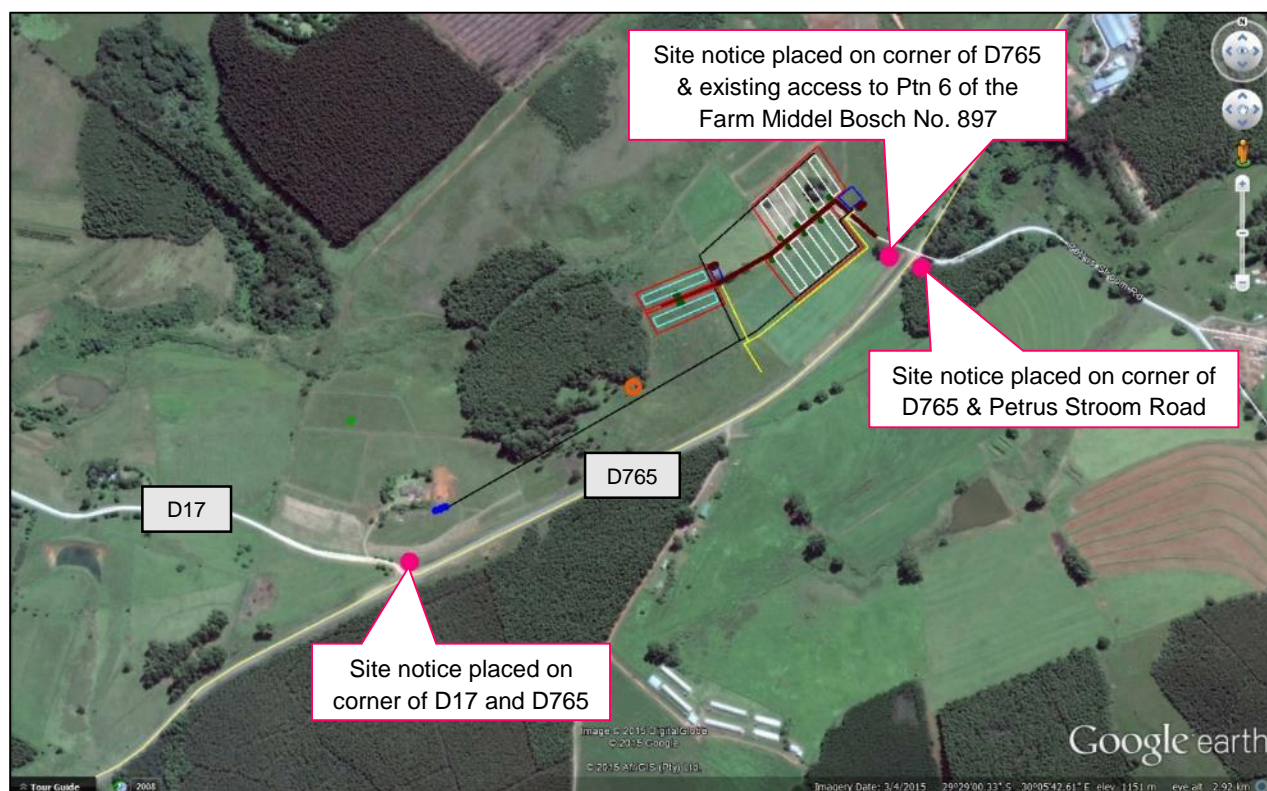


FIGURE 9: Location of Site Notices placed on site [Map Source: Google Earth, 2015].

9.4. WRITTEN NOTIFICATION TO AUTHORITIES AND NEIGHBOURS

9.4.2. Interested and Affected Parties (IAPs)

A register of IAPs was compiled as per Section 42 of the EIA Regulations, 2014. This included all relevant authorities, Government Departments, the Local Municipality, the District Municipality, relevant conservation bodies and non-governmental organisations (NGO's), as well as neighbouring landowners and the surrounding community. This register was regularly updated to include those IAPs responding to the newspaper advertisements, site notice boards and Notification Letters. A copy of the IAP Register is included as Appendix 4 of this report.

9.4.3. Background Information Document (BID)

A Background Information Document (BID) was compiled and circulated to all identified IAPs by email and post. The purpose of the BID was to provide preliminary information regarding the project and its location. Furthermore, the BID invited preliminary comments from IAPs and requested those notified to provide details of other potential IAPs which they may be aware of. A copy of the BID is included as Appendix 5 of this report.

9.5. PUBLIC MEETING

A public meeting was not held due to limited interest in the proposed activity.

9.6. COMMENTS RECEIVED

Comments received from IAPs following the publication of the advertisement, placement of site notices and circulation of the BID and are summarized and responded to in Table 8.

TABLE 8: Comments and responses received in terms of the Notification Letters, Site Notices and Newspaper Advertisement.

DATE RECEIVED	IAP	COMMENT	RESPONSE
13/08/2015 received via email	Telkom SA SOC Limited: Mr R. Couch	<p>Your notification date 13 August 2015 refers.</p> <p>In reference to the Electronic Communications Act (Act No. 36 of 2005), Telkom SA SOC Ltd has no objection to this Application for Basic Environmental Impact Assessment.</p> <p>Approval of the proposed is valid for six months. If construction has not yet commenced within this time period, then the file must be resubmitted to approval. Any changes / deviations from the original planning construction must be immediately communicated to this office.</p>	Noted.
26/08/2015 received via email	Department of Agriculture, Forestry and Fisheries: Mr N. Sontangane	<p>The Department of Agriculture, Forestry and Fisheries (DAFF) appreciates the opportunity given to review and comment on the BID received on 14 August 2015 for the above mentioned development.</p> <p>The vegetation description provided in the BID indicated that the site has been predominantly transformed for agricultural purposes, with very little indigenous vegetation remaining. Furthermore, the aerial image shows the presence of trees within the development footprint, although they do not constitute a natural forest.</p> <p>The Department requires that a Vegetation Assessment is conducted for the site and the report should be included in the Draft Basic Assessment Report. This study will assist in determining the presence of the protected tree species in terms of the National Forests Act of 1998 (Act No. 84 of 1998). Further comments will be issued upon receipt and review of the Draft Basic Assessment Report.</p> <p>This letter does not exempt you from considering other environmental legislation.</p>	<p>Comment noted. Please refer to Section 10.3 and Appendix 6 for reference to the correspondence regarding the requested Vegetation Assessment.</p> <p>Further, please note that the scattered pockets of trees noted on the aerial imagery are <i>Eucalyptus</i>. The Applicant intends felling all pocks of <i>Eucalyptus</i> as motivation for their WULA.</p>
26/07/2015 received via post	KZN Department of Transport: Mrs J. Reddy	<ul style="list-style-type: none"> Your letter dated 13 August 2015 refers. The Application was received on 18 August 2015. You are advised that the Application is in the process of being investigated and that you will be advised accordingly of this Department's comments. When communicating with this office, please supply the reference number T10/2/2/879/13. 	Noted.
Telephonic communication	Adjacent landowner: Mrs McKenzie	<ul style="list-style-type: none"> It is unfair to put these chicken houses on the property adjacent to ours. What distance will the chicken houses be from the property boundary? It is unethical. Some adjacent landowners are presently on holiday and they must be notified and given the opportunity to comment. Kevin Culverwell is on holiday but he has chickens and will not be happy with more chicken houses being put into place. Contact Gill Barker, a landowner opposite Wesley Smit's property over the dirt road. 	Comments noted. Mr Culverwell has been contacted, however no contact details are available for Ms Barker. No comment has been received from either party with respect to the Application as yet. They will, however, be notified of

DATE RECEIVED	IAP	COMMENT	RESPONSE
			<p>the availability of the Draft BA Report for review and comment.</p> <p>In terms of distance from your property, please provide coordinates of your property, or property description. The facility will be located approximately 84m from the D765 (from the fence of the closest laying house), approximately 888m from the railway line and approximately 554m from the D17.</p>
09/08/2015 received via post	Adjacent landowner: H.R. Green	<ul style="list-style-type: none"> The proposal is acceptable as per Figure 1 on page 3 of 11 of the BID. Other parties that should be contacted include justin@middledale.co.za 	It is noted that the adjacent landowner does not have an issue with the development and the layout, as noted on page 3 of 11 of the BID. Following the postal correspondence from Mr Green, the recommended party (justin@middledale.co.za) was emailed accordingly.
19/10/2015 received via email.	Adjacent landowner: Tony Stipcich	<ul style="list-style-type: none"> Thanks , I have received the e-mail copy . I have no objections to the proposed activity. 	Noted.

9.7. CIRCULATION OF DRAFT BASIC ASSESSMENT REPORT FOR COMMENT

Copies of the Draft BA Report have been circulated to the following Key Stakeholders and IAPs for review and comment on

20 October 2015:

- Ezemvelo KZN Wildlife: Mr A. Blackmore;
- Department of Water and Sanitation: Ms C. Moonsamy;
- Department of Transport: Mr R. Ryan;
- UMngeni Municipality: Mr M. Hattingh;
- UMgungundlovu District Municipality: Ms M. Khomo;
- Amafa Heritage: SAHRIS;
- DAEA: Macro Planning Directorate: Ms N. Myeni; and
- Department of Agriculture, Forestry and Fisheries: Mr Jeffrey Maivha.

All registered IAPs were notified of the availability of the Draft BA Report and the deadline for comments, being on, or before, 15 November 2015.

Further, one copy of the report has been placed in the Howick Library for public review on 21 October 2015.

10. DESCRIPTION OF THE BASELINE ENVIRONMENT

10.2. TOPOGRAPHY

The topography on the site varies greatly, from hill outcrops to flatlands. The laying houses are proposed to be located on a relatively flat area of land, while the rearing houses are proposed to be located on the side of a slope. Elevation profiles adopted from Google Earth (2015) have been provided in Figures 10 and 11. Figure 10 was taken on the northern side of the existing farm road, while Figure 11 was taken on the southern side of the existing farm road. Both elevation profiles start from the location of the proposed rearing houses and terminate at the proposed laying house location.



FIGURE 10: Elevation profile, north of existing farm road [Source: Google Earth, 2015].



FIGURE 11: Elevation profile, south of existing farm road [Source: Google Earth, 2015].

Figure 12 provides an indication of the site topography utilising 5m contour intervals.

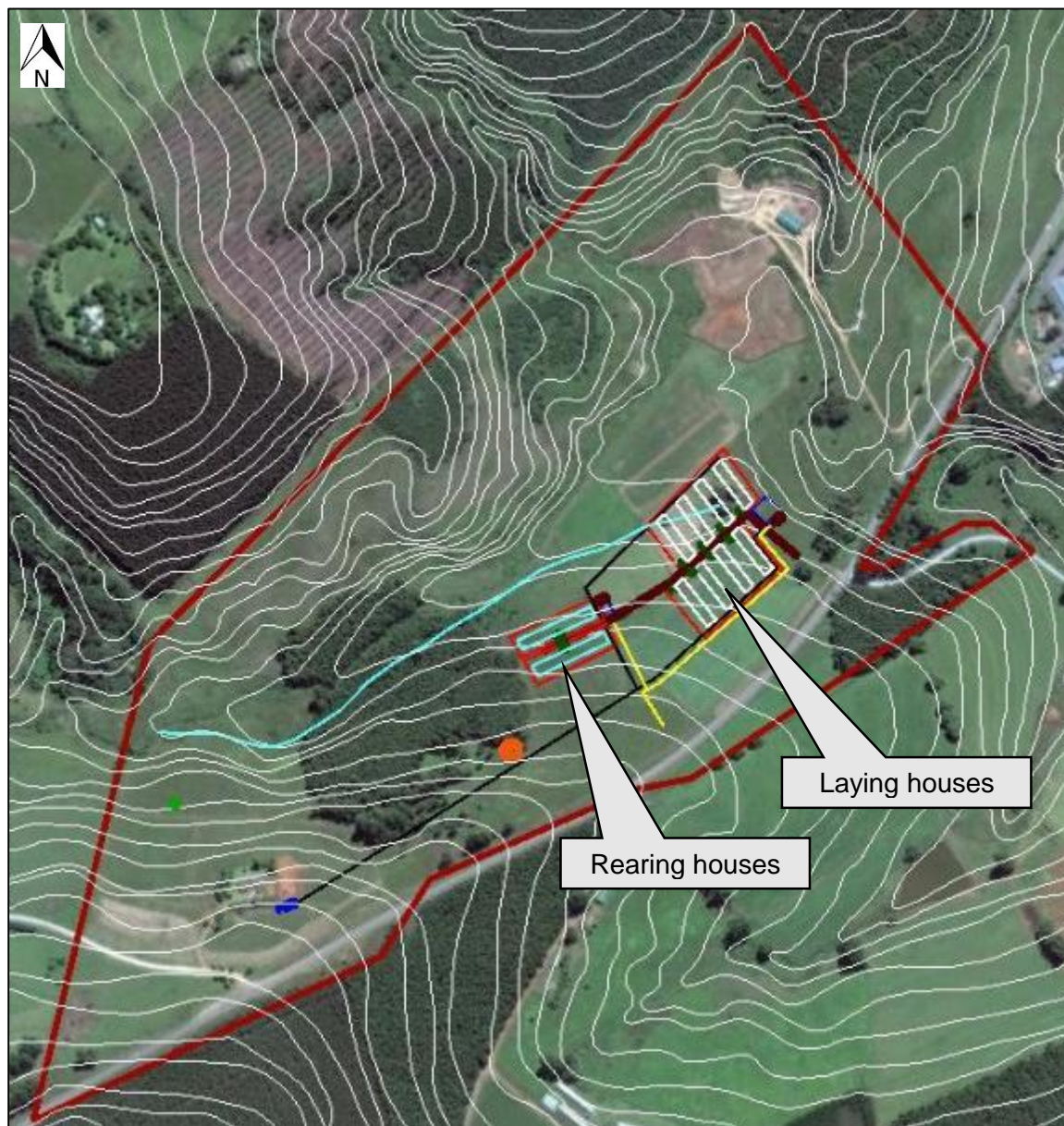


FIGURE 12: Proposed layout with 5m contours.

10.3. VEGETATION

Historically the vegetation on site consists of Midlands Mistbelt Grassland as classified by Mucina and Rutherford (2006). Midlands Mistbelt Grassland is distributed across the KwaZulu-Natal and Eastern Cape provinces, across hilly and rolling landscapes. It is dominated by forb-rich *Themeda triandra* grasslands, but has been predominantly invaded by indigenous Ngongoni grass (*Aristida junciformis* subsp. *junciformis*).

The conservation status of Midlands Mistbelt Grassland is 'Endangered'. It is one of the most threatened vegetation types in KwaZulu-Natal due to transformation of land for plantations, cultivation or urban sprawl. Uncontrolled fires and poorly regulated grazing are added threats to this vegetation type.

However, the vast majority of Portion 6 of the Farm Middel Bosch No. 897 is transformed. This is due to past agricultural practices and therefore the presence of Midlands Mistbelt Grassland is limited.

A vegetation specialist conducted a site walkover and provided the following comment: “The vegetation on site has undergone severe transformation due to agricultural practices and resulted in the vegetation having no conservation value. The stands of large trees on site are all alien invasive species. (Appendix 6).

10.4. GEOLOGY

The geology of the site consists of apedal and plinthic soil forms derived mostly from the Ecca Group shale and minor sandstones and less importantly Jurassic dolerite dykes and sills (Mucina and Rutherford, 2006). Plinthic soils are characterised by absolute iron enrichment localised, hydromorphic segregation with mottling or cementation (Fey, 2010). Generally shale based soils of this nature have a moderate to low agricultural potential. This, in conjunction with the small size of the fields, and the varied terrain (i.e. topography), yields limited grazing or crop potential.

10.5. HYDROLOGY

The study area is located within the Umvoti to Umzimkhulu Water Management Area (WMA). The existing stream on the property, in which the weir is proposed to be constructed, is the only surface water body identified. No wetlands are present on the property. This was confirmed via the National Freshwater Ecosystem Priority Areas (NFEPA) database (2011) and the Ezemvelo KZN Wildlife (2014) database. Further, a site visit was conducted and the lack of wetlands on the site was confirmed.

An existing borehole is located on the property. The borehole was established prior to 1989 and will be used to augment the weir water supply if necessary. There is also an existing registered water use on the property. This is recorded on the DWS’s WARMS database, Registration Number 10027115/1. A WULA is being applied for through the DWA in terms the proposed poultry facility. The WULA is a separate process conducted outside of the BA Process.

10.6. CLIMATE

The area is characterised by a rainy summer season and experiences intermittent rain in winter. Much of the summer rain falls in thunderstorm events. The average annual precipitation is 844mm. The annual average high in terms of temperature is 26°C, while the annual average low is 3.6°C. Table 9 provides a breakdown of the annual average temperature and perception experienced throughout the months of the year.

TABLE 9: Average climatic breakdown.

	Annual	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Rainfall (mm)	844	143	107	121	60	20	7	14	18	44	67	107	136
Max Temp (C°)	22.9	25.8	26	25	23.1	21	19	19	21	22.1	23	24	25.5
Min Temp (C°)	9.9	14.9	14.9	1.5	10.4	7	3.6	3.6	5.9	8.8	10.5	12	13.9

10.7. CULTURAL, HISTORICAL AND ARCHAEOLOGICAL RESOURCES

Given the scale of the proposed development and the fact that the site has previously been cultivated, the likelihood of discovering any items of heritage significance is considered to be low. Amafa KwaZulu-Natal (Amafa), the authority responsible for KwaZulu-Natal’s heritage, has, however, been contacted in this regard. Terratest (Pty) Ltd currently awaits feedback in this regard.

10.8. FAUNA

Any development has the potential to negatively impact upon the local fauna, given the intrusion of an unnatural object in a natural environment, or artificial environment. The Ezemvelo KZN Wildlife Minset database (2010) has been consulted and the following species of conservation significance have been highlighted as potentially being present in the area, as per Table 10.

TABLE 10: Minset data

Form	Species	Conservation Status
Plant	<i>Kniphofia buchananii</i>	Least Concern
Plant	<i>Plectranthus rehmannii</i>	Least Concern
Plant	<i>Senecio exuberans</i>	Endangered
Mollusc	<i>Euonyma lymnaeiformis</i>	Unknown
Chameleon	<i>Bradypodion thamnobates</i>	Near Threatened
Millipede	<i>Spinotarsus glomeratus</i>	Least Concern
Millipede	<i>Centrobolus tricolor</i>	Least Concern
Millipede	<i>Doratogonus peregrinus</i>	Unknown
Millipede	<i>Doratogonus natalensis</i>	Vulnerable

Given the fact that the site has previously been cultivated and thus transformed, the likelihood of significantly impacting on the above noted species, if they are found on site, is considered to be low.

10.9. CURRENT LAND USE

The current land use is zoned as agriculture. The rearing houses are located on previously disturbed land, currently utilised for grazing (kikuyu). A portion of this area was also previously utilised as a *Eucalyptus* plantation. The Applicant has since felled the stand (approximately two years ago) and intends to fell the remaining *Eucalyptus* stands on the property as motivation in his Water Use Licence Application.

The laying houses are proposed to be located on previously disturbed, cultivated land.

In terms of historical land use on Portion 6 of the Farm Middel Bosch No. 897, flood irrigation for cropping used to occur (utilising the existing stream) and dryland pastures also existed. Further, a small piggery was run on site. These agricultural activities have since ceased.

The property currently is comprised of a homestead, staff quarters, individual stands of *Eucalyptus* plantation, pastures, a borehole, historical earth-lined irrigation furrow and rehabilitated grasslands. The poultry facility is proposed to be located on previously disturbed, cultivated land.

10.10. SOCIO-ECONOMIC ENVIRONMENT

Agriculture is the dominant employment sector in the uMngeni Local Municipality, however, this has declined over recent years. This sector has been prioritised for economic growth and development in the Municipality (uMngeni Municipality IDP: 2014/2015).

Figure 14 presents the Spatial Development Framework for 2014/2015 for the Umgeni Municipality. It is pertinent to note that the proposed poultry facility is situated in close vicinity to district and national roads and to the town of Howick. Therefore access and distribution is convenient.

The proposed poultry facility will generate income for the Applicant, will create employment opportunities, increase the agricultural potential of the land, positively impact on food security, and facilitate skills development and knowledge transfer.

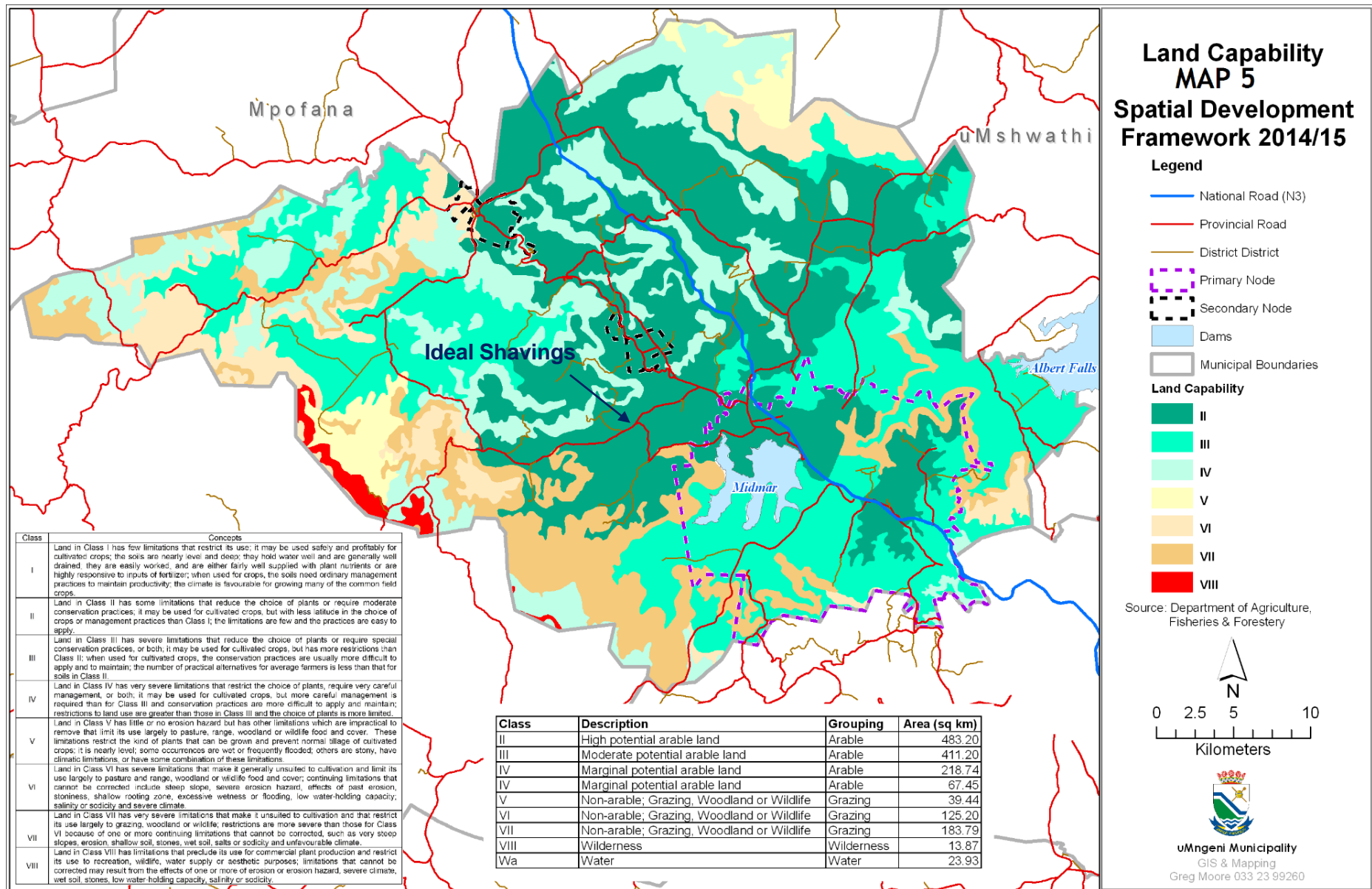


FIGURE 13: Land Capability Map of Umgeni Municipality

11. IMPACT ASSESSMENT AND MITIGATION MEASURES

11.2. IMPACT ASSESSMENT METHODOLOGY

The EIA Regulations, 2014, prescribes requirements to be adhered to and objectives to be reached when undertaking Impact Assessments. These are noted in the following sections contained within the EIA Regulations (2014):

- Regulation 982, Appendix 1, Section 2 and Section 3 – Basic Assessment Impact Requirements; and
- Regulation 982, Appendix 2 and Appendix 3 – Environmental Impact Assessment Requirements.

In terms of these Regulations, the following should be considered when undertaking an Impact Assessment:

- A description and assessment of the significance of any environmental impact including:
 - Cumulative impacts that may occur as a result of the undertaking of the activity during the project life cycle;
 - Nature of the impact;
 - Extent and duration of the impact;
 - The probability of the impact occurring;
 - The degree to which the impact can be reversed;
 - The degree to which the impact may cause irreplaceable loss of resources; and
 - The degree to which the impact can be mitigated.

The overall significance of an impact / effect has been ascertained by attributing numerical ratings to each identified impact. The numerical scores obtained for each identified impact have been multiplied by the probability of the impact occurring before and after mitigation. High values suggest that a predicted impact / effect is more significant, whilst low values suggest that a predicted impact / effect is less significant.

The interpretation of the overall significance of impacts is presented in Table 11.

TABLE 11: Interpretation of the significance scoring of a negative impact / effect.

Scoring value	Significance
>35	High - The impact is total / consuming / eliminating - In the case of adverse impacts, there is no possible mitigation that could offset the impact, or mitigation is difficult, expensive, time-consuming or some combination of these. Social, cultural and economic activities of communities are disrupted to such an extent that these come to a halt. Mitigation may not be possible / practical. <u>Consider a potential fatal flaw in the project.</u>
25 - 35	High - The impact is profound - In the case of adverse impacts, there are few opportunities for mitigation that could offset the impact, or mitigation has a limited effect on the impact. Social, cultural and economic activities of communities are disrupted to such an extent that their operation is severely impeded. Mitigation may not be possible / practical. <u>Consider a potential fatal flaw in the project.</u>
20 – 25	Medium - The impact is considerable / substantial - The impact is of great importance. Failure to mitigate with the objective of reducing the impact to acceptable levels could render the entire project option or entire project proposal unacceptable. <u>Mitigation is therefore essential.</u>
7 – 20	Medium - The impact is material / important to investigate - The impact is of importance and is therefore considered to have a substantial impact. <u>Mitigation is required to reduce the negative impacts and such impacts need to be evaluated carefully.</u>
4 – 7	Low - The impact is marginal / slight / minor - The impact is of little importance, but may require limited mitigation; or it may be rendered acceptable in light of proposed mitigation.

Scoring value	Significance
0 – 4	Low - The impact is unimportant / inconsequential / indiscernible – no mitigation required, or it may be rendered acceptable in light of proposed mitigation.

The significance rating of each identified impact / effect was further reviewed by the Environmental Assessment Practitioner (EAP) by applying professional judgement.

For the purpose of this assessment, the impact significance for each identified impact was evaluated according to the following key criteria outlined in the sub-sections below.

NATURE OF IMPACT

The environmental impacts of a project are those resultant changes in environmental parameters, in space and time, compared with what would have happened had the project not been undertaken. It is an appraisal of the type of effect the activity would have on the affected environmental parameter. Its description includes what is being affected, and how.

SPATIAL EXTENT

This addresses the physical and spatial scale of the impact. A series of standard terms and ratings used in this assessment relating to the spatial extent of an impact / effect are outlined in Table 12.

TABLE 12: Rating scale for the assessment of the spatial extent of a predicted effect / impact.

RATING	SPATIAL DESCRIPTOR
7	International - The impacted area extends beyond national boundaries.
6	National - The impacted area extends beyond provincial boundaries.
5	Ecosystem - The impact could affect areas essentially linked to the site in terms of significantly impacting ecosystem functioning.
4	Regional - The impact could affect the site including the neighbouring areas, transport routes and surrounding towns etc.
3	Landscape - The impact could affect all areas generally visible to the naked eye, as well as those areas essentially linked to the site in terms of ecosystem functioning.
2	Local - The impacted area extends slightly further than the actual physical disturbance footprint and could affect the whole, or a measurable portion of adjacent areas.
1	Site Related - The impacted area extends only as far as the activity e.g. the footprint; the loss is considered inconsequential in terms of the spatial context of the relevant environmental or social aspect.

SEVERITY / INTENSITY / MAGNITUDE

This provides a qualitative assessment of the severity of a predicted impact / effect. A series of standard terms and ratings used in this assessment which relate to the magnitude of an impact / effect are outlined in Table 13.

TABLE 13: Rating scale for the assessment of the severity / magnitude of a predicted effect / impact¹.

RATING	MAGNITUDE DESCRIPTOR
7	Total / consuming / eliminating - Function or process of the affected environment is altered to the extent that it is permanently changed.

¹ **Source:** adapted from Glasson J, Therivel R & Chadwick A. Introduction to Environmental Impact Assessment, 2nd Edition. 1999. pp 258. Spoon Press, United Kingdom.

6	Profound / considerable / substantial - Function or process of the affected environment is altered to the extent where it is permanently modified to a sub-optimal state.
5	Material / important - The affected environment is altered, but function and process continue, albeit in a modified way.
4	Discernible / noticeable - Function or process of the affected environment is altered to the extent where it is temporarily altered, be it in a positive or negative manner.
3	Marginal / slight / minor - The affected environment is altered, but natural function and process continue.
2	Unimportant / inconsequential / indiscernible - The impact temporarily alters the affected environment in such a way that the natural processes or functions are negligibly affected.
1	No effect / not applicable

DURATION

This describes the predicted lifetime / temporal scale of the predicted impact. A series of standard terms and ratings used in this assessment are included in Table 14.

TABLE 14: Rating scale for the assessment of the temporal scale of a predicted effect / impact.

RATING	TEMPORAL DESCRIPTOR
7	Long term – Permanent or more than 15 years post decommissioning. The impact remains beyond decommissioning and cannot be negated.
3	Medium term – Lifespan of the project. Reversible between 5 to 15 years post decommissioning.
1	Short term – Quickly reversible. Less than the project lifespan. The impact will either disappear with mitigation or will be mitigated through natural process in a span shorter than any of the project phases or within 0 -5 years.

IRREPLACEABLE LOSS OF RESOURCES

Environmental resources cannot always be replaced; once destroyed, some may be lost forever. It may be possible to replace, compensate for or reconstruct a lost resource in some cases, but substitutions are rarely ideal. The loss of a resource may become more serious later, and the assessment must take this into account. A series of standard terms and ratings used in this assessment are included in Table 15.

TABLE 15: Rating scale for the assessment of loss of resources due to a predicted effect / impact.

RATING	RESOURCE LOSS DESCRIPTOR
7	Permanent – The loss of a non-renewable / threatened resource which cannot be renewed / recovered with, or through, natural process in a time span of over 15 years, <u>or by artificial means.</u>
5	Long term – The loss of a non-renewable / threatened resource which cannot be renewed / recovered with, or through, natural process in a time span of over 15 years, <u>but can be mitigated by other means.</u>
4	Loss of an 'at risk' resource - one that is not deemed critical for biodiversity targets, planning goals, community welfare, agricultural production, or other criteria, but cumulative effects may render such loss as significant.
3	Medium term – The resource can be recovered within the lifespan of the project. The resource can be renewed / recovered with mitigation or will be mitigated through natural process in a span between 5 and 15 years.
2	Loss of an 'expendable' resource - one that is not deemed critical for biodiversity targets, planning goals, community welfare, agricultural production, or other criteria.

1	Short-term – Quickly recoverable. Less than the project lifespan. The resource can be renewed / recovered with mitigation or will be mitigated through natural process in a span shorter than any of the project phases, or in a time span of 0 to 5 years.
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REVERSIBILITY / POTENTIAL FOR REHABILITATION

The distinction between reversible and irreversible impacts is a very important one and the irreversible impacts not susceptible to mitigation can constitute significant impacts in an EIA (Glasson et al, 1999). The potential for rehabilitation is the major determinant factor when considering the temporal scale of most predicted impacts. A series of standard terms and ratings used in this assessment are included in Table 16.

TABLE 16: Rating scale for the assessment of reversibility of a predicted effect / impact.

RATING	REVERSIBILITY DESCRIPTOR
7	Long term – The impact / effect will never be returned to its benchmark state.
3	Medium term – The impact / effect will be returned to its benchmark state through mitigation or natural processes in a span shorter than the lifetime of the project, or in a time span between 5 and 15 years.
1	Short term – The impact / effect will be returned to its benchmark state through mitigation or natural processes in a span shorter than any of the phases of the project, or in a time span of 0 to 5 years.

PROBABILITY

The assessment of the probability / likelihood of an impact / effect has been undertaken in accordance with ratings and descriptors provided in Table 17.

TABLE 17: Rating scale for the assessment of the probability of a predicted effect / impact².

RATING	PROBABILITY DESCRIPTOR
1.0	Absolute certainty / will occur
0.9	Near certainty / very high probability
0.7 – 0.8	High probability / to be expected
0.4 - 0.6	Medium probability / strongly anticipated
0.3	Low probability / anticipated
0.2	Possibility
0.0 - 0.1	Remote possibility / unlikely

11.3. MITIGATION

In terms of the assessment process the potential to mitigate the negative impacts is determined and rated for each identified impact and mitigation objectives that would result in a measurable reduction or enhancement of the impact are taken into account. The significance of environmental impacts has therefore been assessed taking into account any proposed mitigation measures. The significance of the impact “without mitigation” is therefore the prime determinant of the nature and degree of mitigation required.

² **Source:** adapted from Glasson J, Therivel R & Chadwick A. Introduction to Environmental Impact Assessment, 2nd Edition. 1999. pp 258. Spoon Press, United Kingdom.

12. IMPACTS IDENTIFIED

The preferred site alternative is located on the southern portion of Portion 6 of the Farm Middel Bosch No. 897. The poultry facility is proposed to be located on previously disturbed, cultivated land. The chosen area of development has been determined based on environmental aspects identified and the avoidance thereof where possible. No other site alternative exists which can satisfy the need and desirability of the Application.

The preferred layout alternative includes positioning eight laying houses at the entrance to the poultry facility, and positioning two rearing houses at the end of the existing farm road which passes through the facility. The existing farm road would be upgraded as per the existing alignment. This layout alternative has been determined based on transportation requirements and frequencies, gradients and chicken welfare. The poultry facility would receive water via a dedicated weir constructed in an on-site stream. The existing borehole on site would augment the supply if required. A mortality pit will be constructed.

The alternative layout positions the proposed laying and rearing houses in converse. The rearing houses are located at the entrance to the poultry facility, while the laying houses are located at the end of the existing farm road. Further, an additional rearing house is proposed as the dimensions of the houses decrease, therefore bringing the total number of rearing houses to three. The number of laying houses are decreased from the preferred eight to six as the dimensions of the houses are proposed to be increased. The poultry facility would receive water via a dedicated weir constructed in an on-site stream. The existing borehole on site would augment the supply if required. A mortality pit will be constructed.

The No-go Alternative is to not to construct the poultry facility. As such the site will remain undeveloped and will continue to serve as grazing lands. The economic potential of the lands will therefore not be realised and there will be no addition to the current poultry market supply.

The impacts identified for the proposed construction of the poultry facility and the associated mitigation measures are provided in Table 18.

TABLE 18: Impacts identified and associated mitigation measures

IMPACT	DESCRIPTION	MITIGATION
Soil impacts	CONSTRUCTION IMPACTS	
	<ul style="list-style-type: none"> • Potential disturbances include platform cutting, compaction, physical removal and potential pollution; • Soil disturbance and potential loss of topsoil as a result of platform cutting. • The exposed soil surfaces have the potential to erode easily if left uncovered which could lead to the loss of vegetation. • Potential loss of stockpiled topsoil and other materials if not protected properly; • Insufficient stormwater control measures may result in localised high levels of soil erosion, possibly creating dongas or gullies, which may lead to decreased water quality in surrounding watercourses; • Increased erosion could result in increased sedimentation which could impact on ecological processes; • The additional hardened surfaces created during construction will increase the amount of stormwater runoff, which has the potential to cause erosion; • Physical disturbance of the soil and plant removal may result in soil erosion/loss; and • Erosion and potential soil loss from cut and fill activities. 	<ul style="list-style-type: none"> • Soil erosion prevention measures should be implemented where necessary, such as gabions, sand bags etc. whilst energy dissipaters should be constructed at any surface water outflow points. The sites should be monitored weekly for any signs of off-site siltation. All areas impacted by earth-moving activities should be re-shaped post-construction to ensure natural flow of runoff and to prevent ponding. All exposed earth should be rehabilitated promptly with suitable vegetation to stabilize the soil; and • Any exposed earth should be rehabilitated promptly with suitable indigenous vegetation to protect the soil. Vigorous grasses are very effective at covering exposed soil. If possible, fertilisers are to be used during the planting stages. It is important to note, that the use of fertilisers, must be undertaken with caution and must not be allowed, in any circumstances, to run into drainage lines or the small stream located on the property, to avoid any possible eutrophication impacts. Directions listed on the fertiliser packaging are to be strictly adhered to.
	OPERATIONAL IMPACTS	
	<ul style="list-style-type: none"> • Loss of grazing lands due to built infrastructure; and • Loss of agricultural land for cropping. 	<ul style="list-style-type: none"> • As per the geological maps of area, the site consists of apedal and plinthic soil forms derived mostly from the Ecca Group shale and minor sandstones and less importantly Jurassic dolerite dykes and sills (Mucina and Rutherford, 2006). Plinthic soils are characterised by absolute iron enrichment localised, hydromorphic segregation with mottling or cementation (Fey, 2010). Generally shale based soils of this nature have a moderate to low agricultural potential. This, in conjunction with the small size of the fields, and the varied terrain (i.e. topography), yields limited grazing or crop potential.
Vegetation and fauna	CONSTRUCTION IMPACTS	
	<ul style="list-style-type: none"> • Disturbance of the site may lead to encroachment of alien plant species on-site and to the surrounding areas; • Increase in alien invasive species, therefore a possible loss in biodiversity; • Potential off-site pollution as a result of accidental spillages of petrochemicals, bituminous substances or cement; • Disturbance and habitat loss for fauna and invertebrates; and 	<ul style="list-style-type: none"> • Identify sensitive fauna and flora prior to construction works; • Site personnel must undergo Environmental Training and be educated on keeping any vegetation disturbance to a minimum; • Poaching or harvesting of indigenous flora / fauna is strictly forbidden; • Alien plant encroachment must be monitored and prevented as outlined in the EMPr;

IMPACT	DESCRIPTION	MITIGATION
	<ul style="list-style-type: none"> Increase in road strikes of birds and wildlife, especially slow-moving organisms such as frogs. 	<ul style="list-style-type: none"> All exposed earth should be rehabilitated promptly with suitable vegetation to protect the soil. Vigorous grasses are very effective at covering exposed soil. If possible, fertilisers are to be used during the planting stages. It is important to note, that the use of fertilisers, must be undertaken with caution and must not be allowed, in any circumstances, to run into drainage lines or the small stream located on the property, to avoid any possible eutrophication impacts. Directions listed on the fertiliser packaging are to be strictly adhered to. Necessary rehabilitation measures (e.g. burning, seeding, removing alien plants etc.) should be introduced to ensure species composition reverts to a more natural state (with regards to affected areas). Indigenous vegetation with deep set root systems is advisable to limit soil loss on site. Alternatively, water dissipating mechanisms such as gabions or reno-mattresses may be implemented on-site to help stabilize the surrounding soil and provide a platform for the growth of vegetation. No hunting is permitted on-site or the surrounding areas; No animals required for hunting e.g. dogs, should be allowed into the area. All construction personnel on the property should be informed of this ruling; and Any construction personnel found to be poaching in the area should be subjected to a disciplinary hearing.
	<p>OPERATIONAL IMPACTS</p> <ul style="list-style-type: none"> Habitat loss for fauna and invertebrates as a result of constructed poultry facility. 	<ul style="list-style-type: none"> The only species identified on the Ezemvelo KZN Wildlife Minset database (2010) is the <i>Senecio exuberans</i> plant, which is listed as endangered. Given the fact that the site has previously been cultivated and thus transformed, the likelihood of significantly impacting above noted species is considered to be low, if the species is present on the site at all.
Air quality and noise pollution	<p>CONSTRUCTION IMPACTS</p> <ul style="list-style-type: none"> Potential dust generation from soil stripping, vehicle traffic on the access roads and motor vehicle fumes will have an impact on air quality; Potential increase in noise from the operation of machinery and equipment, as well as the construction vehicle traffic; and Dust and noise will be created during the Construction Phase, which may impact on the local community. 	<ul style="list-style-type: none"> All construction machinery and equipment must be regularly serviced and maintained to keep noise, dust and possible leaks to a minimum, as per the requirements of the EMP; and Road dampening should be undertaken to prevent excess dust during construction.
	<p>OPERATIONAL IMPACTS</p>	

IMPACT	DESCRIPTION	MITIGATION
	<ul style="list-style-type: none"> • Odour impacts from the chicken houses. • Odour impacts from the mortality pit. 	<ul style="list-style-type: none"> • The chicken houses will be constructed in accordance to the best available technology to prevent odour emissions. Further, management is key to avoid disease and pests. Therefore regular, thorough cleaning will be undertaken as per best practice, relevant to the category of bird and specific production cycle. • Mortalities are to be efficiently collected and disposed of. This will also assist in preventing disease. • A heavy based lid is to be attached to the opening of the mortality pit to prevent exposure to the elements. This will further assist in preventing fly nuisance as the pit will not be continuously exposed.
Traffic	CONSTRUCTION IMPACTS	
	<ul style="list-style-type: none"> • Increase in construction vehicles in the area; • Possible lane closures, traffic delays and congestion during the construction phase; • Slow-moving construction vehicles on the surrounding roads may cause accidents; and • If not properly maintained, increased road use to existing surrounding road infrastructure, for access purposes by construction personnel, may cause damage to the existing infrastructure. 	<ul style="list-style-type: none"> • Appropriate temporary traffic control and warning signage must be erected and implemented on all affected roads in the vicinity; • Construction workers / construction vehicles must take heed of normal road safety regulations, thus all personnel must obey and respect the law of the road. A courteous and respectful driving manner should be enforced and maintained so as not to cause harm to any individual; and • Any damage to surrounding roads should be repaired as soon as possible to prevent further deterioration to the road network.
	OPERATIONAL IMPACTS	
Waste	<ul style="list-style-type: none"> • Traffic in the area will be increased marginally for the collection of eggs and cull birds. Further, feed delivery will also increase traffic. 	<ul style="list-style-type: none"> • Cannot be mitigated against by the Applicant. • The South African road legislation applies to all road users and as such the drivers of all vehicles should obey the rules of the road.
	CONSTRUCTION IMPACTS	
<ul style="list-style-type: none"> • There is potential for the site and surrounding areas to become polluted if construction activities are not properly managed (e.g. oil / bitumen spills, litter from personnel on-site, sewage from ablutions etc.); and • Waste generation could be created by the following: <ul style="list-style-type: none"> - Solid waste - plastics, metal, wood, concrete, stone, asphalt; - Chemical waste- petrochemicals, resins and paints; and - Sewage as may be generated by employees. 	<ul style="list-style-type: none"> • All waste generated on-site during construction must be adequately managed. Separation and recycling of different waste materials is supported; • All solid wastes should be disposed of at a registered landfill site and records maintained to confirm safe disposal; • Adequate scavenger-proof refuse disposal containers should be supplied to control solid waste on-site; • It should be ensured that existing waste disposal facilities in the uMngeni Municipal area are able to accommodate the increased waste generated from the proposed construction; • Chemical waste should be stored in appropriate containers and disposed of at a licensed disposal facility; 	

IMPACT	DESCRIPTION	MITIGATION
		<ul style="list-style-type: none"> • Portable sanitation facilities should be erected for construction personnel. Use of these facilities should be enforced (these facilities should be kept clean so that they are a desired alternative to the surrounding vegetation). These facilities should also be monitored and serviced regularly so as to prevent contamination of the water resources; • The construction site should be inspected for litter on a daily basis. Extra care should be taken on windy days; • Soil that is contaminated with, e.g. cement, petrochemicals or paint, should be disposed of at a registered waste disposal site; • It must be ensured that all hazardous contaminants are stored in designated areas that are sign-posted, lined with an appropriate barrier and bunded to 110% of the volumes of liquid being stored to prevent the bio-physical contamination of the environment (ground and surface water and soil contamination). Hazardous substance storage must not take place within 100m of a wetland or within the 1:100 year floodline; and • Any significant spills on-site must be reported to the relevant Authority (e.g. Department of Water and Sanitation / Municipality etc.) and must be remediated as per the EMPr.
OPERATIONAL IMPACTS		

IMPACT	DESCRIPTION	MITIGATION
	<ul style="list-style-type: none"> Wash water from cleaning of the chicken houses may enter surrounding watercourses; Production of chicken litter; and Chicken mortalities. 	<ul style="list-style-type: none"> The only watercourse identified on site is the small stream referred to for the development of the proposed weir, situated some 77m from the poultry facility. Therefore the possibility of water contamination is low; Channels are to be constructed for the movement of wash water for irrigation. Wash water, from washing the floors of the chicken houses, will be conveyed via a system of interlinking open concrete drains between the chicken houses into a lined reservoir. The collected effluent will be removed from the reservoir and disposed of to land on site via overhead irrigation. Wash water samples will be taken prior to the disposal to land via irrigation. The samples will be sent to an accredited laboratory for analysis, where it is assumed that they will meet the wastewater limit values as specified in the NWA for biodegradable industrial wastewater. Chicken litter, mixed with wood shavings, will be cleaned out of each chicken house at the end of every cycle, loaded onto a truck / trailer and transported off site for disposal to agricultural land. Disposal will be undertaken by private farmers and landowners. A lined mortality pit will be sunk for mortalities. Should disease be detected in any bird, the State Vet will be consulted. Dependent on the State Vet's recommendation, disposal will either be via incineration at an approved facility or via disposal in the mortality pit.
Socio-Economic	<p>CONSTRUCTION IMPACTS</p> <ul style="list-style-type: none"> Creation of job opportunities for skilled personnel (e.g. engineers, specialists etc.) and non-skilled personnel (e.g. labourers); Skills development and knowledge transfer through employment opportunities; Social anxiety may arise should the surrounding community not be adequately notified of the proposed activity; and Possible economic benefits to suppliers of building materials in the Umgeni Local Municipality as goods and services may be purchased from these entities during the construction phase. 	<ul style="list-style-type: none"> Inform the surrounding communities and general public of the proposed activity as soon as possible. This will serve to ease potential social anxiety. Such notification can be conducted through the Public Participation Process; and Local people should be employed where possible.
	<p>OPERATIONAL IMPACTS</p> <ul style="list-style-type: none"> Employment opportunities for 19 people; Increase in food security. 	<ul style="list-style-type: none"> Positive impacts which do not require mitigation.

IMPACT	DESCRIPTION	MITIGATION
Existing infrastructure disturbance	<p>CONSTRUCTION IMPACTS</p> <ul style="list-style-type: none"> • If not properly designed the existing Eskom powerlines and telephone lines could be damaged during construction activities; and • Although unlikely, there is potential for items of heritage significance to be uncovered and/or disturbed during construction activities. 	<ul style="list-style-type: none"> • Notify IAPs as soon as possible, such as Eskom and Telkom; • No-go areas must be demarcated, such as transformers, and must be afforded a 50m buffer to prevent disturbance; and • Should any items of heritage significance be identified, the procedure as detailed in the EMPr (Appendix 7) is to be followed.
	<p>OPERATIONAL IMPACTS</p> <ul style="list-style-type: none"> • Permission is to be obtained from Eskom for electricity requirements and to determine if there is sufficient capacity available for the poultry facility. 	<ul style="list-style-type: none"> • Eskom are notified via the Public Participation Process.
Safety and security	<p>CONSTRUCTION IMPACTS</p> <ul style="list-style-type: none"> • There is potential for construction labour to trespass onto neighbouring properties; and • Construction personnel / construction vehicles – movement of construction personnel and vehicles may pose a potential health and safety risk to road users and local residents. 	<ul style="list-style-type: none"> • Any construction personnel found to be trespassing must be subjected to a disciplinary hearing; • Construction workers / construction vehicles should take heed of normal road safety regulations, thus all personnel must obey and respect the law of the road. A courteous and respectful driving manner should be enforced and maintained so as not to cause harm to any individual; and • A designated speed limit should be set by the developer to limit possible road strikes.
	<p>OPERATIONAL IMPACTS</p> <ul style="list-style-type: none"> • Trespassing may occur once operational. 	<ul style="list-style-type: none"> • The poultry houses will be fenced.
Noise	<p>CONSTRUCTION IMPACTS</p> <ul style="list-style-type: none"> • Disruption to residents through increased activity and noise in the area as a result of construction works. 	<ul style="list-style-type: none"> • All construction machinery and equipment must be regularly serviced and maintained to keep noise, dust and possible leaks to a minimum, as per the requirements of the EMPr; • Operational Hours: No works shall be executed between sunset and sunrise and on the non-working and special non-working days as stated in the Contract Data unless otherwise agreed between the Applicant and Contractor; and • Construction personnel should be made aware of the need to prevent unnecessary noise such as hooting and shouting.
	<p>OPERATIONAL IMPACTS</p> <ul style="list-style-type: none"> • Noise from chicken houses. 	<ul style="list-style-type: none"> • The chicken houses will be enclosed to prevent noise emanating into the surrounding area.

IMPACT	DESCRIPTION	MITIGATION
Water Resources	CONSTRUCTION IMPACTS	
	<ul style="list-style-type: none"> • Contamination of ground and surface water and soil; and • The additional hardened surfaces created during construction will increase the amount of stormwater runoff, which has the potential to cause erosion and create turbidity in the small stream located on site. 	<ul style="list-style-type: none"> • Appropriate stormwater / surface water management measures (See EMP in Appendix 7) must be put in place before construction commences and maintained throughout the lifetime of the development; • An appropriate number of toilets (1 toilet for every 20 workers) must be provided for labourers during the Construction Phase. These must be maintained in a satisfactory condition and a minimum of 100m away from any water resources and outside of the 1:100 year floodline; • Any contaminated water associated with construction activities must be contained in separate areas or receptacles such as Jo-Jo tanks or water-proof drums, and must not be allowed to enter into the natural drainage systems; • The Construction Camp should be positioned on previously disturbed areas (if possible) and outside of the 1:100 yr floodline; • Soil erosion prevention measures must be implemented such as gabions, sand bags etc. whilst energy dissipaters must be constructed at any surface water outflow points. The site should be monitored by the Contractor weekly for any signs of off-site siltation. All areas impacted by earth-moving activities must be re-shaped post-construction to ensure natural flow of runoff and to prevent ponding; • Appropriate silt control mechanisms must be installed around all soil excavations to prevent silt from entering surrounding watercourses; • At the end of the construction phase, the site must be fully revegetated.
	OPERATIONAL IMPACTS	
<ul style="list-style-type: none"> • Groundwater contamination from morality pit leachate. 	<ul style="list-style-type: none"> • The morality pit is to be lined to prevent leachate of decomposing birds to enter the groundwater. This will be achieved by sinking a Jo-Jo tank which is to act as a mortality pit. Jo-Jo tanks are constructed of polyethylene. 	

13. IMPACT ASSESSMENT

Table 19 and Table 20 present the impact assessment findings in relation to the proposed construction and operational activities respectively.

TABLE 19: Construction Phase Assessment of Impacts

	Nature of project impact	Spatial extent		Severity / intensity / magnitude		Duration		Resource loss	Reversibility		Probability		Significance without mitigation	Significance with mitigation
		Without	With	Without	With	Without	With		Without	With	Without	With		
CONSTRUCTION IMPACTS	Soil impacts	5	1	5	2	3	3	2	7	3	0.7	0.2	15.4	2.2
	Flora and fauna impacts	3	1	2	1	3	3	4	3	3	0.8	0.3	12	3.6
	Air quality and noise pollution impacts	4	1	4	1	1	1	1	1	1	0.8	0.2	8.8	1
	Traffic impacts	4	2	4	3	1	1	1	1	1	0.6	0.2	6.6	1.6
	Waste impacts	3	1	4	1	3	1	3	3	1	0.7	0.2	11.2	1.4
	Socio-economic impacts	2	2	1	1	3	3	3	3	3	0.5	0.5	6	6
	Existing infrastructure disturbance	3	1	4	2	3	1	3	1	1	0.4	0.1	5.6	0.8
	Safety and security impacts	3	1	5	3	3	3	1	1	1	0.5	0.2	6.5	1.8
	Noise impacts	3	1	4	1	1	1	1	1	1	0.7	0.2	7	1
	Water impacts	4	2	4	2	3	1	4	3	1	0.4	0.1	7.2	1
Overall impact significance													MEDIUM 8.63	LOW 2.04

TABLE 20: Operational Phase Assessment of Impacts

	Nature of project impact	Spatial extent		Severity / intensity / magnitude		Duration		Resource loss	Reversibility		Probability		Significance without mitigation	Significance with mitigation
		Without	With	Without	With	Without	With		Without	With	Without	With		
OPERATIONAL IMPACTS	Soil impacts	3	1	5	2	3	3	2	7	3	1	1	20	16
	Flora and fauna impacts	3	1	2	1	3	3	4	3	3	0.8	0.2	12	2.2
	Air quality and noise pollution impacts	2	1	5	1	3	3	1	3	1	0.9	0.2	12.6	1.8
	Traffic impacts	3	2	3	2	3	3	1	1	1	0.3	0.3	3.3	2.7
	Waste impacts	3	1	4	1	7	1	3	7	1	0.4	0.1	9.6	1.1
	Socio-economic impacts	2	2	1	1	3	3	3	3	3	0.5	0.5	6	6
	Existing infrastructure disturbance	3	1	4	2	3	1	3	1	1	0.4	0.1	5.6	0.6
	Safety and security impacts	1	1	5	3	3	3	1	1	1	0.5	0.3	5.5	2.7
	Noise impacts	3	1	5	1	3	1	1	3	1	0.7	0.2	10.5	1.4
	Water impacts	4	2	4	2	3	1	4	3	1	0.5	0.1	9	0.9
Overall impact significance													MEDIUM 9.41	LOW 3.54

13.2. SIGNIFICANCE

Based on the outcome of the significance scoring noted in Table 19 i.e. construction impacts, the overall significance impact without mitigation, is considered to be MEDIUM, with a score of 8.63. With mitigation, the overall significance impact is considered to be LOW, with a score of 2.04.

The operational impacts noted in Table 20 note that the overall significance of operating the poultry facility without mitigation measures is considered to be MEDIUM, with a score of 9.41. With mitigation, the overall significance impact is considered to be LOW, with a score of 3.54.

The greatest impact of significance during construction is considered to be the potential for soil impacts, while fauna and flora impacts are rated as the second highest possible impact. However, with the correct mitigation measures employed as noted in Table 18 and as per the EMPr (Appendix 7), these impacts can be significantly reduced.

The greatest impact of significance during operation is considered to be the potential for soil impacts given that once constructed, the soil will no longer be available for agricultural cropping or grazing purposes. Air quality and noise impacts are rated as the second highest possible impact. These, however, can be mitigated by implementing the following:

- The chicken houses will be constructed in accordance to the best available technology to prevent odour emissions. Further, management is key to avoid disease and pests. Therefore regular, thorough cleaning will be undertaken as per best practice, relevant to the category of bird and specific production cycle;
- Mortalities are to be efficiently collected and disposed of. This will also assist in preventing disease; and
- A heavy based lid is to be attached to the opening of the mortality pit to prevent exposure to the elements. This will further assist in preventing fly nuisance as the pit will not be continuously exposed.

14. ENVIRONMENTAL IMPACT STATEMENT

Assuming all phases of the project adhere to the conditions stated in the EMPr (Appendix 7) it is believed that the impacts associated with the proposed construction will have no significant, adverse, long term environmental impact on the surrounding environment.

Positive impacts associated with construction include:

- Food security;
- Economic growth and development; and
- Employment opportunities and skills development.

It is perceived that these impacts will be long term and have sustainable benefits.

It must be ensured that the construction phase, in no way, hampers the health of any of the ecological systems or any items of heritage significance that may be identified on site, and that post-construction rehabilitation leaves the surrounding environments in an as good, if not better, state. Further, operation is to occur according to best practice principles.

After the construction phase of the project, the contractors must ensure that all hazardous materials are removed from the site and that rehabilitation of land is undertaken according to the requirements of the EMPr.

Any alien plant management programmes that are implemented during the construction phase must be maintained during the construction defects liability period.

15. RECOMMENDATIONS OF THE EAP

The proposed development should not result in impacts on the natural or social environment that are highly detrimental, nor result in undue risks to the natural environment. The nature and types of negative impacts do not outweigh the potential benefits of this project, provided that the short term localised impacts of the construction phase are adequately mitigated. In this regard, an EMPr has been compiled and is attached to this report (see Appendix 7). It is recommended that external monthly EMPr monitoring takes place by an independent Environmental Control Officer (ECO) to ensure that the requirements of the EMPr are being correctly implemented, thus ensuring the protection of the surrounding environs during construction.

16. CONSTRUCTION TIMEFRAMES

Construction timeframes have not been estimated as yet. This information will be provided in the Final BA Report. Further, it is requested that the Environmental Authorisation, if issued by the Competent Authority, be valid for a period of five (5) years from the date of signature.

17. SUBMISSION AND CONSIDERATION OF DOCUMENTATION BY THE COMPETENT AUTHORITY

It is to be noted that in terms of the EIA Regulations (2014), GNR 982 43(2), all State Departments that administer a law relating to a matter affecting the environment, specific to the Application, must submit comments within 30 days to the EAP. Should no comment be received within the 30 day commenting period, it will be assumed that the relevant State Department has no comment to provide.

All comments received in response to the BA Report will be attached to, summarised and responded to in a final version of the BA Report, which will be submitted to the Competent Authority, (i.e. EDTEA) for consideration in terms of issuing Environmental Authorisation.

18. UNDERTAKING

Terratest (Pty) Ltd hereby confirms that the information provided in this report is correct at the time of compilation and was compiled with input provided by Ideal Shavings cc.

Terratest (Pty) Ltd further confirms that all comments received from Stakeholders and IAPs have been included in this report. Further, a record has to-date and will continue to be kept of all comments, which will be consolidated and incorporated into all subsequent reports, either submitted for comment to IAPs, or to the EDTEA for consideration and decision-making.

For Terratest (Pty) Ltd:



L. Dralle
Environmental Scientist

19. REFERENCES

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