



Client | **ASTRAL FOODS LTD.**

Project | **VLAKFONTEIN BREEDER FARM EXPANSION_
ENVIRONMENTAL MANAGEMENT PROGRAMME**

Date | **JUNE 2022**

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VLAKFONTEIN BREEDER FARM EXPANSION

Environmental Management Programme (EMPr)

EIA Ref No. NWP/EIA/17/2022

Lourens de Villiers
Managing Director and Environmental Assessment Practitioner

Plot 24
Haakdoornboom AH
Soutpan Road (M35)
Pretoria North

Cell: 082 789 6525

FINAL ENVIRONMENTAL MANAGEMENT PROGRAMME

Changes brought forward on the Final Environmental Management Programme

After consultation with the applicant and affected Interested and Affected Parties (I&APs), it was concluded that the site layout for the proposed Vlakfontein Breeder Farm Expansion needed revision. It was decided that both Alternative Rearing Site 7 (R7) and Alternative Laying Site 3 (L3) would be removed from the site layout plan and ultimately the environmental authorisation application. This included the removal of Portion 3 of the Farm Bokfontein 385 JQ and the Remainder of Portion 6 of the Farm Bokfontein 385 JQ from the application.

As a result of the changes brought forward on the site layout plan the following changes were made in the Final Environmental Management Programme the proposed project:

- Page 12-13, Section 4: Farm Portions and Farm Boundary Coordinates
- Page 14, Figure 1: Site Locality Map
- Page 17, Section 5 (5.1): Description of activities to be undertaken
- Page 21, Section 5 (5.1): Alternative sites
- Page 24, Figure 2: Site Layout Plan
- Page 25, Section 5 (5.2): Activity number 27 (changed to 12Ha instead of 17ha)
- Page 29, Figure 4: Sensitivity Map

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DEFINITIONS

Alternatives

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 used in the activity; or
 - e) operational aspects of the activity;
- and includes the option of not implementing the activity.

Application

An application for an Environmental Authorisation (EA).

Basic Assessment Report

A report contemplated in regulation 21 of the EIA Regulations, 2014.

Biodiversity Plan

A spatial plan that identifies one or more categories of biodiversity priority areas, using the principles and methods of systematic biodiversity planning.

Buffer Area

Unless specifically defined, means an area extending 10 kilometres from the proclaimed boundary of a world heritage site or national park and 5 kilometres from the proclaimed boundary of a nature reserve, respectively, or that defined as such for a biosphere.

Building and Demolition Waste

Means waste, excluding hazardous waste, produced during the construction, alteration, repair or demolition of any structure, and includes rubble, earth, rock and wood displaced during that construction, alteration, repair or demolition [NEM:WA, Act No 59 of 2008].

Critical Biodiversity Areas

Terrestrial and aquatic areas required to meet biodiversity targets for ecosystems, species or ecological processes, as identified in a systematic biodiversity plan.

Cumulative Impact

In relation to an activity, means the past, current and reasonably foreseeable future impact of an activity, considered together with the impact of activities associated with that activity, that in itself may not be significant, but may become significant when added to the existing and reasonably foreseeable impacts eventuating from similar or diverse activities.

Dangerous Good

Goods containing any of the substances as contemplated in South African National Standard No. 10234, supplement 2008 1.00: designated "List of classification and labelling of chemicals in accordance with the Globally Harmonized Systems (GHS)" published by Standards South Africa, and where the presence of such goods, regardless of quantity, in a blend or

mixture, causes such blend or mixture to have one or more of the characteristics listed in the Hazard Statements in section 4.2.3, namely physical hazards, health hazards or environmental hazards.

Development

The building, erection, construction or establishment of a facility, structure or infrastructure, including associated earthworks or borrow pits, that is necessary for the undertaking of a listed or specified activity, including any associated post development monitoring, but excludes any modification, alteration or expansion of such a facility, structure or infrastructure, including associated earthworks or borrow pits, and excluding the redevelopment of the same facility in the same location, with the same capacity and footprint.

Development footprint

Any evidence of physical alteration as a result of the undertaking of any activity.

EAP

An environmental assessment practitioner as defined in section 1 of NEMA.

Ecological corridors

Ecological corridors, also referred to as biodiversity corridors, can be landscape structures of various size, shape and habitat composition that maintain, establish or re-establish natural landscape connectivity. They can have a continuous or interrupted structure or a structure of stepping stones (Jongman *et. al.*, 2002).

Ecological Support Areas

Terrestrial and aquatic areas that are not essential for meeting biodiversity targets, but play an important role in supporting the ecological functioning of one or more Critical Biodiversity Areas, or in delivering ecosystem services.

EMPr

An environmental management programme contemplated in regulations 19 and 23 of the EIA Regulations, 2014.

Environment

The surroundings (biophysical, social and economic) within which humans exist and that are made up of:

- (i) the land, water and atmosphere of the earth;
- (ii) micro-organisms, plant and animal life;
- (iii) any part or combination of (i) and (ii) and the interrelationships among and between them; and
- (iv) the physical, chemical, aesthetic and cultural properties and conditions of the foregoing that influence human health and wellbeing.

Environmental Impact

Any change to the environment, whether adverse or beneficial, wholly or partially resulting from an organization's activities, products or services.

Environmental Impact Assessment

A systematic process of identifying, assessing and reporting environmental impacts associated with an activity and includes Basic Assessment and Scoping and Environmental Impact Reporting.

General Waste

Means waste that does not pose immediate hazard or threat to health or to the environment, and includes:

- a) domestic waste;
- b) building and demolition waste;

- c) business waste; and
- d) inert waste [NEM:WA, Act No 59 of 2008].

Hazardous Waste

Means any waste that contains organic or inorganic elements compounds that may, owing to the inherent physical, chemical or toxicological characteristics of that waste, have detrimental impact on health and the environment [NEM:WA, Act No 59 of 2008].

Independent

In relation to an EAP, a specialist or the person responsible for the preparation of an environmental audit report, means-

- a) that such EAP, specialist or person has no business, financial, personal or other interest in the activity or application in respect of which that EAP, specialist or person is appointed in terms of the EIA Regulations; or
- b) that there are no circumstances that may compromise the objectivity of that EAP, specialist or person in performing such work;

excluding -

- (i) normal remuneration for a specialist permanently employed by the EAP; or
- (ii) fair remuneration for work performed in connection with that activity, application or environmental audit.

Indigenous Vegetation

Vegetation consisting of indigenous plant species occurring naturally in an area, regardless of the level of alien infestation and where the topsoil has not been lawfully disturbed during the preceding ten years.

Land Use

The various ways in which land may be employed or occupied. Planners compile, classify, study and analyse land use data for many purposes, including the identification of trends, the forecasting of space and infrastructure requirements, the provision of adequate land area for necessary types of land use, and the development or revision of comprehensive plans and land use regulations.

Mitigation

To anticipate and prevent negative impacts and risks, then to minimise them, rehabilitate or repair impacts to the extent feasible.

Phased Activities

An activity that is developed in phases over time on the same or adjacent properties to create a single or linked entity.

Pollution Prevention

Any activity that reduces or eliminates pollutants prior to recycling, treatment, control or disposal.

Present Ecological State (PES)

The PES of a river is expressed in terms of various components. That is, drivers (physico-chemical, geomorphology, hydrology) and biological responses (fish, riparian vegetation and aquatic invertebrates), as well as an integrated state, the EcoStatus.

Public Participation Process

A process of involving the public in order to identify needs, address concerns, to contribute to more informed decision making relating to a proposed project, programme or development.

Registered Interested and Affected Party

In relation to an application, means an Interested and Affected Party whose name is recorded in the register opened for that application in terms of regulation 42 of the EIA Regulations, 2014.

Significant Impact

An impact that may have a notable effect on one or more aspects of the environment or may result in non-compliance with accepted environmental quality standards, thresholds or targets and is determined through rating the positive and negative effects of an impact on the environment based on criteria such as duration, magnitude, intensity and probability of occurrence.

Specialist

A person that is generally recognised within the scientific community as having the capability of undertaking, in conformance with generally recognised scientific principles, specialist studies or preparing specialist reports, including due diligence studies and socio-economic studies.

Systematic Biodiversity Plan

A plan that identifies important areas for biodiversity conservation, taking into account biodiversity patterns (i.e. the principle of representation) and the ecological and evolutionary processes that sustain them (i.e. the principle of persistence). A systematic biodiversity plan must set quantitative targets/thresholds for aquatic and terrestrial biodiversity features in order to conserve a representative sample of biodiversity pattern and ecological processes.

Topography

Topography, a term in geography, refers to the "lay of the land" or the physio-geographic characteristics of land in terms of elevation, slope and orientation.

Vegetation

All of the plant life growing in and characterizing a specific area or region; the combination of different plant communities found there.

Waste

Waste is unwanted or undesired material left over after the completion of a process. "Waste" is a human concept: in natural processes there is no waste, only inert end products.

Watercourse

(a) a river or spring;
(b) a natural channel in which water flows regularly or intermittently;
(c) a wetland, pan, lake or dam into which, or from which, water flows; and
any collection of water which the Minister may, by notice in the Gazette, declare to be a watercourse as defined in the National Water Act, 1998 (Act No. 36 of 1998); and
a reference to a watercourse includes, where relevant, its bed and banks.

Wetland

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

ABBREVIATIONS

BAR	-	Basic Assessment Report
BID	-	Background Information Document
CBA	-	Critical Biodiversity Area
CRR	-	Comments and Response Report
DWA	-	Department of Water Affairs
DWS	-	Department of Water and Sanitation
EA	-	Environmental Authorisation
EAP	-	Environmental Assessment Practitioner
ECA	-	Environmental Conservation Act of 1989
EIA	-	Environmental Impact Assessment
EIR	-	Environmental Impact Report
EMF	-	Environmental Management Framework
EMP	-	Environmental Management Programme
ESA	-	Ecological Support Area
GN	-	Government Notice
Ha	-	Hectare
I&AP	-	Interested and Affected Party
IWULA	-	Integrated Water Use Licence Application
NEMA	-	National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended
NEM:WA	-	National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008), as amended
NHRA	-	National Heritage Resources Act, 1999 (Act No. 25 of 1999), as amended
NWA	-	National Water Act, 1998 (Act No. 36 of 1998)
NWDEDECT	-	North West Department of Economic Development, Environment, Conservation and Tourism
PA	-	Protected Area
R	-	Regulation
SAHRA	-	South African Heritage Resources Agency
SANS	-	South African National Standards
SAWIC	-	South African Waste Information Centre

1. PROJECT TITLE

Vlakfontein Breeder Farm Expansion.

2. APPLICANT DETAILS

Applicant Name	ASTRAL Foods Ltd.
Contact Person	Hannes Uys
Postal Address	18 Industry Road, Olifantsfontein, 1665
Telephone Number	017 720 0219
Cell phone Number	072 284 6448
Email Address	Hannes.Uys@astralfoods.com

3. ENVIRONMENTAL ASSESSMENT PRACTITIONER DETAILS

Environmental Assessment Practitioner Company	Labesh (Pty) Ltd
Contact Person	Lourens de Villiers
Postal Address	Postnet Box 469, Private Bag X504, Sinoville, 0129
Telephone Number	082 789 6525
Email Address	info@labesh.co.za
Qualifications	B.Sc Earth Science (North West University) Hons B.Sc Geography and Environmental Studies (North West University) M.Sc Water Resource Management (University of Pretoria)
Relevant experience	20 years' experience conducting Environmental Impact Assessment processes

The EAP's Company Details are attached to this report under Appendix E.

4. LOCATION OF THE PROPOSED DEVELOPMENT AND ACTIVITIES

The property for the proposed development and its associated activities is as follows:

Property/Land Parcel	21 digit Surveyor General Code	Property size (Hectares)
Portion 35 of the Farm Bokfontein 385 JQ	T0JQ0000000038500035	± 60Ha
Remainder of Portion 33 of the Farm Bokfontein 385 JQ	T0JQ0000000038500033	± 51Ha
Portion 39 of the Farm Bokfontein 385 JQ	T0JQ0000000038500039	± 22Ha
Portion 34 of the Farm Bokfontein 385 JQ	T0JQ0000000038500034	± 64Ha
Remainder of Portion 9 of the Farm Bokfontein 385 JQ	T0JQ0000000038500009	± 65Ha
Portion 32 of the Farm Hartbeesfontein 38 IQ	T0IQ0000000003800032	± 33Ha
Total Area Size		± 295Ha

The project location is approximately 58km east, south-east of Koster, in the Rustenburg Local Municipality of the Bojanala District Municipality, North West Province. The GPS coordinates for the project site are as follows:

Centre Point (Latitude; Longitude):

26° 0'7.63"S; 27°25'17.51"E

Farm Boundary (Latitude; Longitude):

25°59'28.56"S; 27°24'59.74"E

26°0'25.36"S; 27°25'58.51"E

26°0'32.14"S; 27°25'57.60"E

26°0'43.14"S; 27°25'41.95"E

26°0'43.91"S; 27°25'42.38"E

26°0'48.34"S; 27°25'36.12"E

26°0'35.99"S; 27°25'23.22"E

26°0'41.52"S; 27°25'20.80"E

26°0'37.87"S; 27°24'57.23"E

26°0'13.34"S; 27°24'59.79"E

25°59'45.12"S; 27°24'30.80"E

25°59'40.10"S; 27°24'36.66"E

25°59'29.74"S; 27°24'25.88"E

A locality map, provided on the next page, shows the location of the project property, at an appropriate scale.

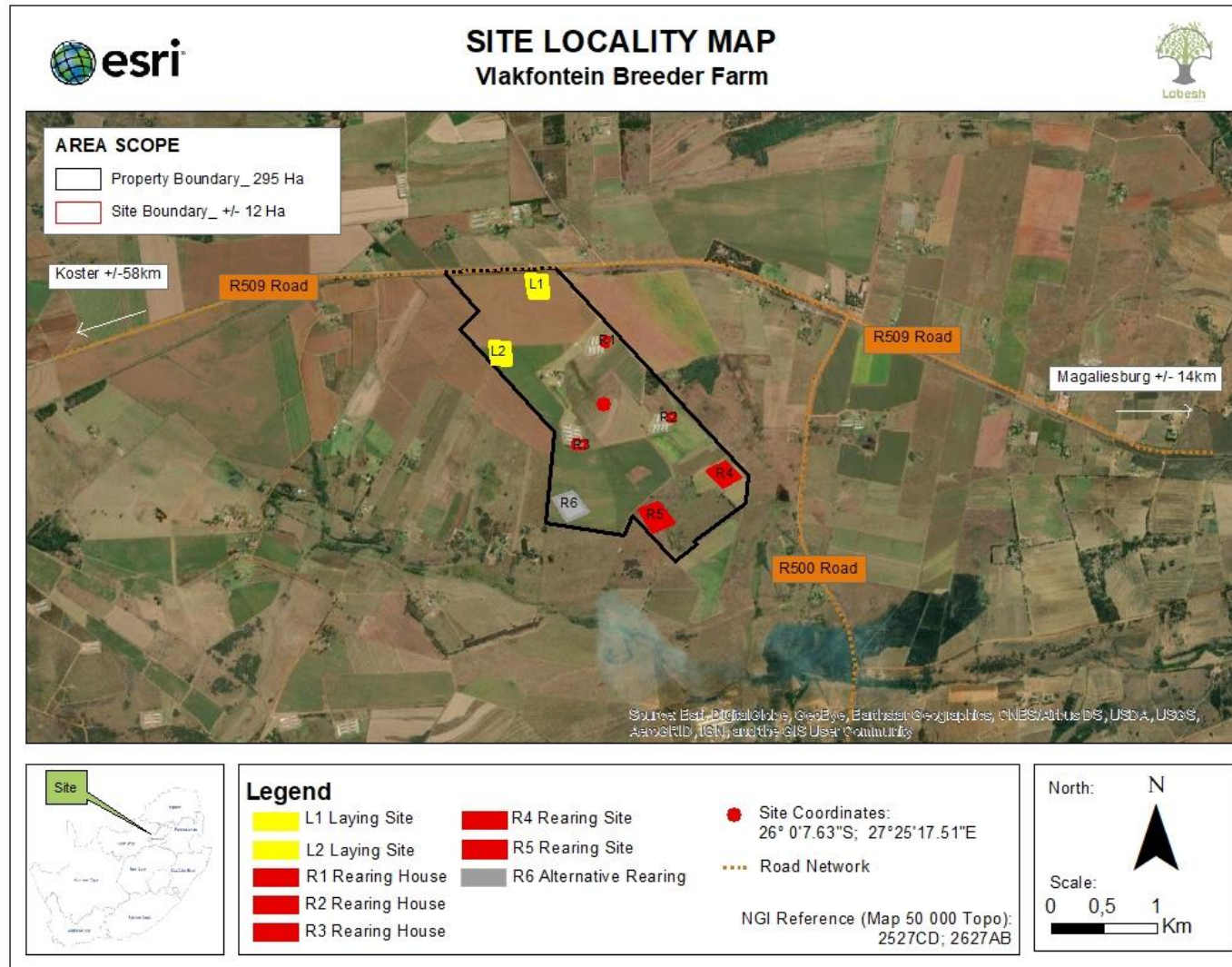


Figure 1: Site Locality Map

The following photographs give an indication of the current status of the project property.





5. DESCRIPTION OF THE ASPECTS OF THE ACTIVITY THAT ARE COVERED BY THE EMPr AS IDENTIFIED BY THE PROJECT DESCRIPTION

5.1 Description of the activities to be undertaken

The land, on which the proposed expansion is to take place, is owned by ASTRAL foods Ltd. (herein after referred to as the 'applicant') and consists of various farm portions. The farm boundary consists of Portion 35 of the Farm Bokfontein 385 JQ, Remainder of Portion 33 of the Farm Bokfontein 385 JQ, Portion 39 of the Farm Bokfontein 385 JQ, Portion 34 of the Farm Bokfontein 385 JQ, Remainder of Portion 9 of the Farm Bokfontein 385 JQ and Portion 32 of the Farm Hartbeesfontein 38 IQ and the area size is approximately 295Ha in extent.

The farm portions on which the proposed expansions will take place are

- Remainder of Portion 9 of the Farm Bokfontein 385 JQ;
- Portion 35 of the Farm Bokfontein 385 JQ;
- Portion 32 of the Farm Hartbeesfontein 38 IQ; and
- Portion 34 of the Farm Bokfontein 385 JQ.

The total site footprint is approximately 12Ha in extent.

Current Operations

There are currently three (3) rearing sites operational onsite:

Rearing Site 1 (R1) – Seven (7) rearing houses, each with a capacity of 7 000 chickens. Thus, a total of 49 000 chickens (7 000 chickens x 7 rearing houses = 49 000 chickens);

Rearing Site 2 (R2) - Seven (7) rearing houses, each with a capacity of 7 000 chickens. Thus, a total of 49 000 chickens (7 000 chickens x 7 rearing houses = 49 000 chickens); and

Rearing Site 3 (R3) - Seven (7) rearing houses, each with a capacity of 7 000 chickens. Thus, a total of 49 000 chickens (7 000 chickens x 7 rearing houses = 49 000 chickens).

The house dimensions are 16,5m x 58m. In total, there are therefore 147 000 birds between the three rearing sites (R1, R2 and R3). As there are two production cycles per year, this is equivalent to 294 000 birds per year (147 000 birds x2 cycles per year).

Proposed project

The proposed project will entail the expansion of the Vlakfontein Breeder Farm. The proposed expansion will include the establishment and operation of:

- 1x Additional rearing house to Rearing Site 1 (R1);
- 1x Additional rearing house to Rearing Site 2 (R2);
- 1x Additional rearing house to Rearing Site 3 (R3);
- 1x New Rearing Site (R4) with a total of eight (8) rearing houses;
- 1x New Rearing Site (R5) with a total or eight (8) rearing houses;
- 1x New Laying Site (L1) with a total of six (6) houses; and
- 1x New Laying Site (L2) with a total of six (6) houses.

Applicable Farm Portions:

Proposed Project	Applicable Farm Portion
Rearing Site 1 (R1)	Remainder of Portion 9 of the Farm Bokfontein 385 JQ
Rearing Site 2 (R2)	Remainder of Portion 9 of the Farm Bokfontein 385 JQ
Rearing Site 3 (R3)	Portion 35 of the Farm Bokfontein 385 JQ
Rearing Site 4 (R4)	Remainder of Portion 9 of the Farm Bokfontein 385 JQ
Rearing Site 5 (R5)	Portion 35 of the Farm Bokfontein 385 JQ
Laying Site 1 (L1)	Remainder of Portion 9 of the Farm Bokfontein 385 JQ; and Portion 34 of the Farm Bokfontein 385 JQ
Laying Site 2 (L2)	Portion 35 of the Farm Bokfontein 385 JQ

Rearing Sites

The three existing rearing sites (R1, R2 and R3), which currently consists of seven houses, will each receive an additional rearing house. This will round up to a total of eight (8) houses per rearing site R1, R2 and R3 and each rearing site will be able to house 56 000 birds at any given time (each rearing site currently houses 49 000 birds at any given time). There will be a total of 49 000 female birds and 7000 male birds per rearing site. The house dimension will be 16,5m x 58m (957m²). The additional rearing house to rearing sites R1, R2 and R3 will house 7 000 birds per house and a total of 21 000 birds will therefore be added to current operations.

Two new rearing sites (R4 and R5) will be established and operated onsite. Each new rearing site will consist of eight (8) rearing houses, each house with a capacity to house 7 000 chickens. This will add up to a total of 56 000 birds for rearing site 4(R4) and a total of 56 000 birds for rearing site 5 (R5) at any given time. At each rearing site (R4 and R5) there will 7 female houses and 1 male house. There will be a total of 49 000 female birds and 7000 male birds per rearing site. The house dimensions will be 16,5m x 58m (957m²). Through the establishment and operation of the two new rearing sites (R4 and R5), a total of 112 000 birds will be added to current operations.

In summary (Rearing Sites):

Rearing Sites	Existing Number of Rearing Houses	Existing Number of Birds	Total Number of Rearing Houses to be added to Current Operations (@ 7 000 birds per house)	Total Number of Birds to be added to Current Operations
	Before Expansion		After Expansion	
Rearing Site 1 (R1)	7	49 000	1	7 000
Rearing Site 2 (R2)	7	49 000	1	7 000
Rearing Site 3 (R3)	7	49 000	1	7 000
Rearing Site 4 (R4)	None	None	8	56 000
Rearing Site 5 (R5)	None	None	8	56 000
	Total (Existing Birds)	147 000	Total (Additional Birds)	133 000

Process Description:

At the rearing sites, day old chicks are raised up until 22 weeks to become laying hens. Sexes are split and the males and females are raised separately, with males in male houses and females in female houses. The rearing sites are used twice per year, with 2x22 week cycles. Rearing houses are also environmentally designed in order for the farmer to control all conditions within the houses such as temperature, airflow, humidity, light intensity, water and feeding. Four weeks prior to placement of the chicks and at the end of the previous cycle, the rearing houses are prepared. Manure is removed from the houses by pushing it to the front of the house with a Bobcat front-end loader and loading it onto a truck. The truck then removes the manure from the farm. Approximately 60m³ of manure are produced per house per cycle (two cycles per year). After manure has been removed, houses are then dry-cleaned, soaked and wet scrubbed, followed by a steam wash of up to 140°C. This process can take up to six hours per house. One rearing site with 8 houses will produce around 10,4m³ of wash water per cycle. As there are 5 rearing sites (current and new sites included) and two cycles per year, a total of 104m³ of wash water will be generated at the rearing farms per year (10,4m³ x 5 sites x 2 cycles per year). A sterilisation process is also applied to the houses.

Rearing houses are heated in order to receive chicks. Heater systems are used to achieve temperatures of up to 32°C and circulation fans will circulate air until the correct temperatures are achieved within the houses. During summer months, the houses will need less heat compared to winter months and will the heater systems be used less in summer than winter. As the chicks mature they grow feathers and as a result will begin to release heat. The heat that is released from the flock will eventually necessitate that the houses are cooled. A comprehensive ventilation system is installed in the houses consisting of fans and air inlets. As heat temperatures rise within the houses, air inlets are opened and the extraction fan will extract the warm air through the inlets.

Rearing houses are equipped with Light Emitting Diode (LED) lighting systems. The lights are also controlled to stimulate light intensity and day length. No natural daylight will be able to enter the houses and all air and ventilation entries will be equipped with light excluders to eliminate natural light.

Each site is equipped with eight 20ton bulk feed tanks and feed are delivered into these tanks using trucks. The feed will then be measured and transferred to each rearing house with an auger system. The auger will deliver the feed to the in-house feeding system that will in turn distribute the feed through the houses so that the birds are all fed at the same time. The houses have a 2 500kpa water supply to a header tank in order to guarantee water supply to the birds. From this tank the water will flow to the in-house drinking system. The drinker systems are installed throughout the houses to ensure that all the birds have access to water all times.

Laying Sites

Two new laying sites (L1 and L2) will be established and operated onsite. Each new laying site will consist of six (6) laying houses, each house with a capacity to house 6 500 chickens. This will add up to a total of 39 000 birds for laying site 1(L1) and a total of 39 000 birds for laying site 2 (L2) at any given time. The house dimensions will be 92m x 12,5m (1150m²). Through the establishment and operation of the two new laying sites (L1 and L2), a total of 78 000 birds will be added to current operations.

In summary (Laying Sites):

Laying Sites	Existing Number of Laying Houses	Existing Number of Birds	Total Number of Laying Houses to be added to Current Operations (@ 6 500 birds per house)	Total Number of Birds to be added to Current Operations
	Before Expansion		After Expansion	
Laying Site 1 (L1)	None	None	6	39 000
Laying Site 2 (L2)	None	None	6	39 000
	Total (Existing Birds)	None	Total (Additional Birds)	78 000

Process Description:

Laying sites are where eggs are produced. After chicks have been raised to 22 weeks, they are moved to the laying houses. The males birds are moved from the rearing houses to the laying houses followed by the females one week later. With addition of light stimulation, mating will commence and the first eggs will be produced at around 24-25 weeks. The layer houses are equipped with nesting boxes in order to ensure space for females to lay their eggs. Layers farms are used once per year (once cycle per year), when birds are 22-62 weeks of age. Laying houses are also environmentally designed in order for the farmer to control all conditions within the houses such as temperature, airflow, humidity, light intensity, water, feeding and egg collection. Four weeks prior to placement of the layer birds and at the end of the previous cycle, the laying houses are prepared using a similar process as with the rearing houses. Manure is removed from the houses by pushing it to the front of the house with a Bobcat front-end loader and loading it onto a truck. The truck then removes the manure from the farm. Approximately 50m³ of manure are produced per house per cycle per year. After manure has been removed, houses are then dry-cleaned, soaked and wet scrubbed, followed by a steam wash of up to 140°C. This process can take up to six hours per house. One laying site with 6 houses will produce around 7,8m³ of wash water per cycle. As there are 2 new laying sites at one cycle per year, a total of 15,6m³ of wash water will be generated at the laying farms per year (7,8m³ x 2 sites x 1 cycle per year). A sterilisation process is also applied to the houses.

Once the laying houses have been cleaned and sterilised, new wood shavings are placed on the floors and feeding, drinking, heating and nesting equipment are put in place. There are no heaters in the laying houses as the birds are matured and fully feathered. The mature birds will release heat that will necessitate the cooling down of houses. A comprehensive ventilation system is installed in the houses consisting of fans and air inlets. As heat temperatures rise within the houses, air inlets are opened and the extraction fan will extract the warm air through the inlets.

Lighting within the layer houses are very important as the birds need to be light stimulated in order to continue mating. Laying houses are equipped with Light Emitting Diode (LED) lighting systems. The lights are also controlled to stimulate light intensity and day length. There is no restriction to natural daylight.

Each site is equipped with eight 20ton bulk feed tanks and feed are delivered into these tanks using trucks. Male and female birds are fed separately in the layer houses and is two different feeding systems installed. Both systems are hoist into the roof after feeding. When systems are in the roof, they are refilled with feed. Feed is measured and transferred to each laying house with an augur system. The augur will deliver the feed to the system in the roof whereafter feeders will be lowered to ensure access of the birds to the feed at the same time. All birds are fed at the same time. The houses have a 2 500kpa water supply to a header tank in order to guarantee water supply to the birds. From this tank the water will flow

to the in-house drinking system. The drinker systems are installed throughout the houses to ensure that all the birds have access to water all times.

Eggs are collected on a daily basis. After eggs are collected from the laying houses, eggs are stored onsite for a few hours in controlled rooms while waiting for environment controlled trucks to pick-up the eggs and transport it off site.

Alternative Sites

Alternatively, one (1) additional rearing site (R6 with a total of 8 houses) have been identified for the proposed project and will be outlined as an alternative site within the required reports. For the alternative rearing site (R6) a total of 56 000 birds will be added to operations.

Applicable Farm Portions (Alternative Sites):

Proposed Project	Applicable Farm Portion
Rearing Site 6 (R6)	Portion 32 of the Farm Hartbeesfontein 38 IQ;

Biosecurity

Since the Vlakfontein Breeder Farm deals with a high density of birds on the farm, it is crucial that efficient biosecurity measures are in place. For biosecurity reasons the rearing and laying sites will be split. The laying sites will be located on the north-western side of the farm and the rearing sites will be located on the north-eastern and south-eastern side of the farm. Rearing and laying sites will be managed differently and there will be restrictions in terms of movement between the sites. No person will be allowed to visit any site without the necessary authorisation from the responsible person. All personnel will shower prior to entering the rearing and laying houses as well upon existing. All vehicles and equipment will be fumigated.

5.1.1 Roads and Storm Water

Access

Access to the farm is currently from the R509 main road (on the northern side of the farm). Access will remain the same with the proposed expansion of the breeder farm.

Roads

Internal road infrastructure will be constructed in order to move between rearing and laying sites. Due to the new road infrastructure size, no listed activities are triggered under the NEMA Act, 1998 (Act No. 107 of 1998).

Surface Drainage/ Stormwater Routing

Efficient storm water management infrastructure will ensure that storm water runoff is effectively transported into areas where there are existing storm water conveyance infrastructure. New storm water conveyance infrastructure will also be installed in areas where there are no existing storm water conveyance infrastructure. Care will be taken through civil design to ensure effective clean and dirty water separation.

5.1.2 Water Services

Water Use

The farm is dependent on three (3) boreholes onsite for the provision of water for both domestic use and breeder farming activities.

Extraction capacity of the 3 boreholes are as follows:

Borehole 1: 95m³ per day

Borehole 2: 86.4m³ per day

Borehole 3: 17.3m³ per day

This is equivalent to a total abstraction of 198.7m³ of groundwater per day. Water within the rearing and laying houses are mainly used for drinking water for birds and washing of houses. A Water Use License application will be submitted to the Department of Water and Sanitation in due course for all water uses onsite, including the abstraction of groundwater from the 3 boreholes onsite.

The rearing and laying houses each have a 2 500kpa water supply to a header tank in order to guarantee water supply to the birds. From this tank the water will flow to the in-house drinking system. The drinker systems are installed throughout the houses to ensure that all the birds have access to water all times.

Water Storage

Water abstracted from the boreholes is stored in a reservoir on site. The reservoir has a storage capacity of 400kl (400m³). Water storage capacity will remain the same although the expansion of the breeder farm.

5.1.3 Waste

Domestic Waste

Domestic waste generated on the premises are contained in skips whereafter it is collected by a waste contractor.

Hazardous Waste

Manure

Rearing Sites: Approximately 60m³ of manure are produced per rearing house per cycle. This is equivalent to 480m³ of manure per rearing site (60m³ of manure per house x 8 rearing houses). As there are 5 rearing sites a total of 2400m³ of manure are produced per cycle per year (480m³ of manure per site x 5 sites). As there are 2 cycles per year, a total of 4800m³ of manure are produced per year on the farm for the rearing sites (2400m³ manure per cycle x 2 cycles).

Laying Sites: Approximately 50m³ of manure are produced per laying house per cycle. This is equivalent to 300m³ of manure per laying site (50m³ of manure per house x 6 laying houses). As there are 2 laying sites a total of 600m³ of manure are produced per cycle per year (300m³ of manure per site x 2 sites). As there is only one production cycle per year, a total of 600m³ of manure are produced per year on the farm for the laying sites.

Manure is removed from the rearing and laying houses by pushing it to the front of the house with a Bobcat front-end loader and loading it onto a truck. The truck then removes the manure from the farm.

Mortalities

Although much care is given to the well-being of birds throughout each production cycle, there will always be a number of birds who will not survive. Mortalities at Vlakfontein Breeder Farm are removed by external contractors on multiple cycles per week and will remain as such in future.

5.1.4 Sewerage and Waste Water

Wash Water

Rearing Sites: One rearing site with 8 houses will produce around 10,4m³ of wash water per cycle. As there are 5 rearing sites (current and new sites included) and two cycles per year, a total of 104m³ of wash water will be generated at the rearing farms per year (10,4m³ x 5 sites x 2 cycles per year).

Laying Sites: One laying site with 6 houses will produce around 7,8m³ of wash water per cycle. As there are 2 new laying sites at one cycle per year, a total of 15,6m³ of wash water will be generated at the laying farms per year (7,8m³ x 2 sites x 1 cycle per year).

Sewage

Sewage and shower water are treated at each site by means of soak away pits.

5.1.5 Electricity

Existing infrastructure will continue to be utilised for the construction and operation of the new rearing and laying sites. Electricity supply is via Eskom with transformer and metering points.

5.1.6 Traffic

Traffic linked to Vlakfontein Breeder Farm will experience an increase after expansion of new rearing and laying sites. However, the increase in traffic is not expected to impact negatively on the environment as the already existent main roads will be used to travel to and from the farm.



Figure 2: Proposed Site Layout Plan

5.2 Listed Activities triggered by the proposed development

The following listed activities are triggered by the proposed development and therefore require Environmental Authorisation, in terms of the Environmental Impact Assessment Regulations of 4 December 2014, as amended:

Table 1: Listed activity/activities triggered by the proposed development

Government Notice and Activity Number	Wording as per the Listing Notice	Description as per the project description relating to each listed activity
Government Notice R983 (Listing Notice 1)		
Government Notice R983 (Listing Notice 1), as amended Activity No. 5	<i>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.</i>	The construction and operation of rearing and laying houses for the concentration of 190 000 birds.
Government Notice R983 (Listing Notice 1), as amended Activity No. 27	<i>The clearance of an area of 1 hectares or more, but less than 20 hectares of indigenous vegetation, except where such clearance of indigenous vegetation is required for (i) the undertaking of a linear activity; or (ii) maintenance purposes undertaken in accordance with a maintenance management plan.</i>	The clearance of an area of 12 hectares of indigenous vegetation for the construction and operation of rearing and laying houses.
Government Notice R983 (Listing Notice 1), as amended Activity No. 40	<i>The expansion and related operation of facilities for the concentration of poultry, excluding chicks younger than 20 days, where the capacity of the facility will be increased by- (i) more than 1 000 poultry where the facility is situated within an urban area; or (ii) more than 5 000 poultry per facility situated outside an urban area.</i>	The expansion and operation of rearing houses for the concentration of 21 000 birds.
Government Notice R984 (Listing Notice 2)		
No activities triggered in Government Notice R984, as amended (Listing Notice 2)		
Government Notice R985 (Listing Notice 3)		
Government Notice R985 (Listing Notice 3), as amended Activity No. 12	<i>The clearance of an area of 300 square metres or more of indigenous vegetation except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan.</i> <i>North West Province:</i>	The clearance of more than 300 square metres of indigenous vegetation within critical biodiversity areas for the construction and operation of rearing and laying houses.

Government Notice and Activity Number	Wording as per the Listing Notice	Description as per the project description relating to each listed activity
	<i>(iv) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority.</i>	

5.3 Potential Environmental Licensing Required

5.3.1 Water Use Licence Activities

According to the GN 538 General Authorisations, dated September 2016, in terms of Section 39 of the NWA, 1998 (Act No. 36 of 1998), Section (7), a person who takes more than 50m³ of water from a surface water resource or 10m³ of water from a groundwater resource per day on average over a year on a property or piece of land or who stores more than 10 000m³ of water, must register the water use with the responsible authority.

- Groundwater Use

The project site lies within the Limpopo River Catchment (Limpopo Water Management Area or WMA 1). The property falls within the A21F quaternary drainage region. Table 2 (groundwater abstraction rates) in GN 288 of 4 April 2012, general authorisations in terms of Section 39 of the National Water Act, 1998 (Act No. 36 of 1998), states that 45m³ water may be abstracted per hectare per year in the A21F quaternary drainage region.

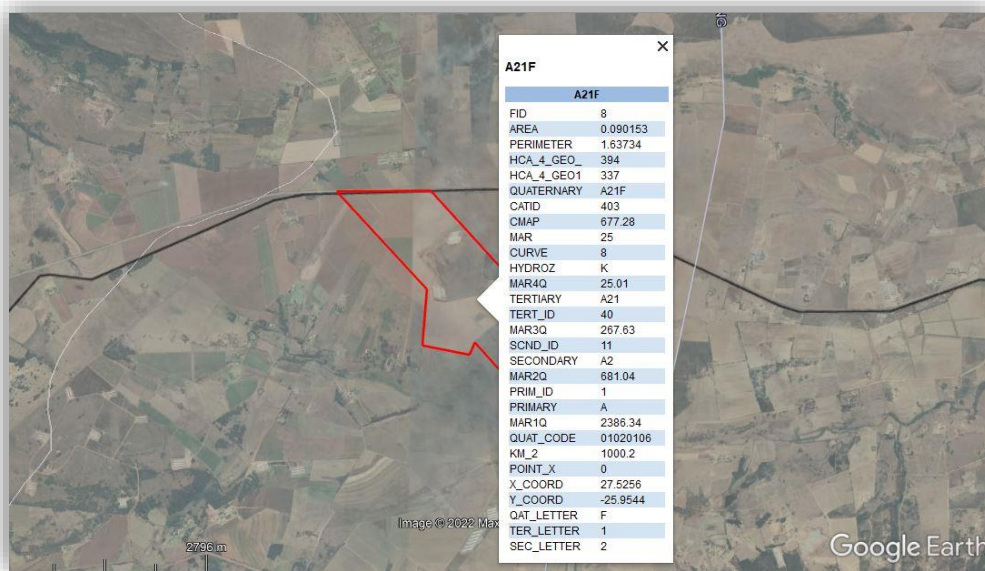


Figure 3: Quaternary Drainage Region

The water use for Vlakfontein Breeder Farm will exceed the 45m³ of water abstraction per hectare per year (for quaternary drainage A21F, as per GN 288 of 4 April 2012) and will a Water Use License Application (WULA) be lodged with the Department of Water and Sanitation (DWS) for the use of groundwater resources in due course.

- Water storage

Water storage at the facility will not exceed the 10 000m³ limit as outlined in GN 538 of 2016 (water storage at the proposed site will be 400m³). Thus, a Water Use License is not required for the storage of water.

5.3.2 Waste

As per GN 921 of 29 November 2013, and as amended on 11 October 2017, the Department of Environmental Affairs published a list of waste management activities that have, or are likely to have, a detrimental effect on the environment and in respect of which a waste management license may then be required in accordance with Section 20(b) of the National Environmental Management: Waste Act, 2008 (Act no. 59 of 2008).

Manure and Mortalities

Manure and mortalities generated on the Vlakfontein Breeder Farm is removed via external contractors. A Waste Management License is therefore not required for the Vlakfontein Breeder Farm.

5.4 Environmental sensitivity overlay map – Map at an appropriate scale that superimposes the proposed activity, its associated structures, and infrastructure on the environmental sensitivities of the preferred site, indicating any areas that should be avoided, including buffers.

Please refer to *Figure 4* below. According to the North West Biodiversity Sector Plan, the proposed sites falls within Critical Biodiversity Areas 1 and 2 (CBA 1&2) and Ecological Support Area 2 (ESA 2). However, specialist input was obtained to confirm the site's sensitivity and recommendations.

To take into consideration any threatened ecosystems that may be present on the project site, the following specialist studies were commissioned as part of the Environmental Impact Assessment process:

- Agriculture Sensitivity Verification;
- Aquatic Biodiversity Compliance Statement; and
- Terrestrial Biodiversity Site Verification Report.

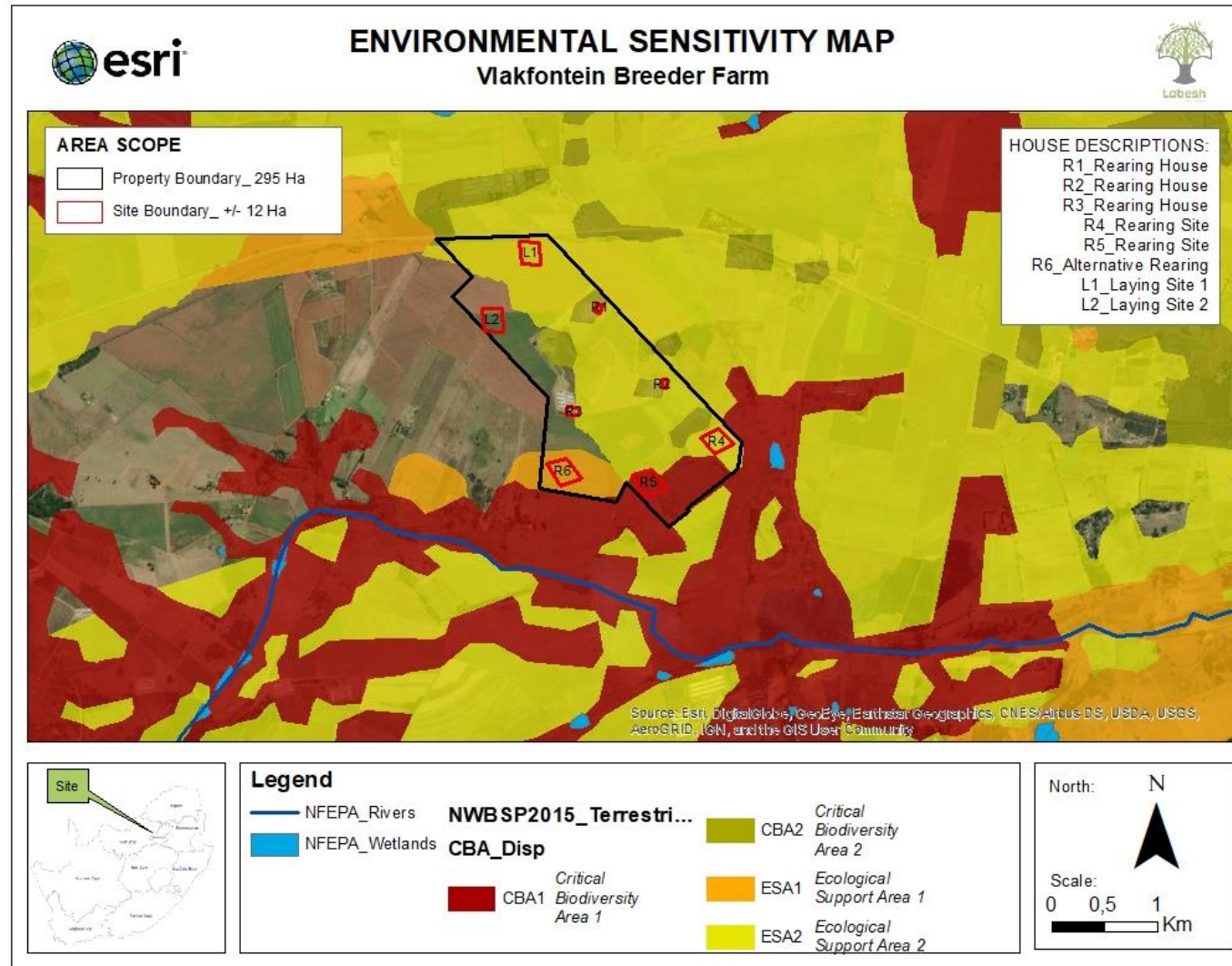


Figure 4: Sensitivity Map of the Project Site

6. POLICY AND LEGISLATIVE CONTEXT OF THE APPLICATION

The following legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks and instruments are applicable to the proposed development and have been considered in this Basic Environmental Impact Assessment process. The mitigation measures proposed in this Environmental Management Programme are also aligned with the provisions of the relevant sections of legislation.

Legislation

<p>The Constitution of South Africa, 1996 (Act No. 108 of 1996), as amended</p> <ul style="list-style-type: none"> To establish a Constitution with a Bill of Rights for the RSA.
<p>The National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended</p> <ul style="list-style-type: none"> To provide for the integrated management of the environment, and to regulate the 'Duty of Care' Principle.
<p>The Environmental Impact Assessment Regulations of 4 December 2014, as amended</p> <ul style="list-style-type: none"> To regulate and control the authorisation of certain listed activities.
<p>The National Heritage Resources Act, 1999 (Act No. 25 of 1999), as amended</p> <ul style="list-style-type: none"> To introduce an integrated and interactive system for the management of the national heritage resources.
<p>The National Appeal Regulations – Government Notice No. R.993 of 8 December 2014</p>
<p>Promotion of Access to Information Act, 2000 (Act No 2 of 2000 as amended)</p> <ul style="list-style-type: none"> To give effect to the constitutional right of access to any information held by the State and any information that is held by another person and that is required for the exercise or protection of any rights.
<p>The National Water Act, 1998 (Act No. 36 of 1998), as amended</p> <ul style="list-style-type: none"> To provide for fundamental reform of the law relating to water resources
<p>The National Environmental Management: Waste Act (Act No. 59 of 2008)</p> <ul style="list-style-type: none"> To reform the law regulating waste management in order to protect health and the environment by providing reasonable measures for the prevention of pollution and ecological degradation.
<p>The National Environmental Management: Air Quality (Act No. 39 of 2004)</p> <ul style="list-style-type: none"> To reform the law regulating air quality to protect the environment by providing reasonable measures for the prevention of pollution. To provide for national norms and standards regulating air quality monitoring, management and control.
<p>The Environment Conservation Act, 1989 (Act No. 73 of 1989)</p> <ul style="list-style-type: none"> To control environmental conservation.

Plans

North West Biodiversity Sector Plan, 2015

Guidelines

Guideline on Need and Desirability in terms of the Environmental Impact Assessment (EIA) Regulations, 2010

Guideline on Public Participation in the Environmental Impact Assessment Process, 2012

Spatial Tools

SANBI Biodiversity GIS Database

National Web Based Environmental Screening Tool

Provincial Development Planning Frameworks

North West Spatial Development Framework, 2016

Municipal Development Planning Frameworks

Rustenburg Local Municipality Integrated Development Plan (IDP), 2021/22

7. DESCRIPTION OF IMPACT MANAGEMENT OUTCOMES, MANAGEMENT STATEMENTS AND IMPACTS AND RISKS THAT NEED TO BE AVOIDED, MANAGED AND/OR MITIGATED

7.1 Impact Management Outcomes

Please refer to *Table 3* under Section 8 below.

7.2 Impact Management Statements

The applicant, ASTRAL Foods Ltd. commits to implementing the mitigation actions contained in this Environmental Management Programme in order to ensure that the environmental impacts from their activities are minimised.

7.3 Impacts and risks that need to be avoided, managed and/or mitigated

The following impacts and risks have been identified for the preferred alternative and need to be avoided, managed and/or mitigated:

Table 2: Impacts and Risks Identified for the Preferred Alternative

Impact	Phase	Risks
Pre-construction Phase	Pre-construction phase	<ul style="list-style-type: none"> • Unauthorised access to the construction site that can pose a risk to the public in terms of their safety. • Unsafe working conditions. • Workers being unaware of the dangers of working at the construction site, resulting in a risk to their safety.
	Construction Phase	<ul style="list-style-type: none"> • Changing the quantity and fluctuation properties of the watercourse by, for example, stormwater input, or restricting water flow. • Changing the amount of sediment entering the watercourse and associated change in turbidity (construction activities can result in earthworks and soil disturbance as well as the removal of natural vegetation). • Introduction and spread of alien vegetation (the moving of soil and vegetation resulting in invasions after disturbance and the introduction of seed in building materials and on construction vehicles). • Change in water quality due to foreign materials and increased nutrient impact ratings. Construction activities can result in the discharge of solvent and other chemicals, leakage of fuel/oil from vehicles and disposal of sewage which can result in the loss of sensitive biota in wetlands/rivers.
Wetlands	Operational Phase	<ul style="list-style-type: none"> • Changing the quantity and fluctuation properties of the watercourse by, for example, stormwater input, or restricting water flow. • Changing the amount of sediment entering the watercourse and associated change in turbidity (operational activities can result in earthworks and soil disturbance as well as the removal of natural vegetation).

Impact	Phase	Risks
		<ul style="list-style-type: none"> • Introduction and spread of alien vegetation (the moving of soil and vegetation resulting in invasions after disturbance and the introduction of seed through vehicles). • Change in water quality due to foreign materials and increased nutrient impact ratings. Operational activities can result in the discharge of solvent and other chemicals, leakage of fuel/oil from vehicles and disposal of sewage which can result in the loss of sensitive biota in wetlands/ivers.
	Post-construction and Rehabilitation Phase	<ul style="list-style-type: none"> • Same as under construction phase.
	Decommissioning Phase	<ul style="list-style-type: none"> • No decommissioning activities are anticipated or planned for the proposed project. Therefore, no impacts have been identified or assessed as part of this Environmental Impact Assessment process.
Surface and Groundwater	Planning and Design Phase	<ul style="list-style-type: none"> • Inadequate planning or faulty designs may lead to surface and groundwater pollution.
	Construction Phase	<ul style="list-style-type: none"> • Pollution of surface and/or groundwater resources due to the potential release of pollutants, such as chemicals. • Pollution of surface and/or groundwater resources due to the incorrect management of chemical substances and dangerous goods. • Pollution of surface and/or groundwater resources due to hydrocarbon spillages or leakages from construction vehicles. • Pollution of surface and/or groundwater resources due to spillages from chemical toilets. • Pollution of surface and/or groundwater resources due to the incorrect management, storage and disposal of construction waste. • Pollution of surface and/or groundwater resources due to the runoff of contaminated stormwater. • Pollution of surface and/or groundwater resources from the mixing of concrete. • The wastage of water resources due to the irresponsible use of water.
	Operational Phase	<ul style="list-style-type: none"> • Pollution of surface and/or groundwater resources due to the incorrect management of chemical substances and dangerous goods. • Pollution of surface and/or groundwater resources due to hydrocarbon spillages or leakages from vehicles. • Pollution of surface and/or groundwater resources due to the incorrect management, storage and disposal of waste. • Pollution of surface and/or groundwater resources due to the runoff of contaminated stormwater. • Pollution of surface and/or groundwater resources due to leakages from the sewerage network (pipelines) onsite. • The wastage of resources due to the irresponsible use of water and electricity.

Impact	Phase	Risks
	Post-construction and Rehabilitation Phase	<ul style="list-style-type: none"> • Pollution of surface and/or groundwater resources due to hydrocarbon spillages or leakages from construction vehicles.
	Decommissioning Phase	No decommissioning activities are anticipated or planned for the proposed project. Therefore, no impacts have been identified or assessed as part of this Environmental Impact Assessment process.
Fauna	Construction Phase	<ul style="list-style-type: none"> • Loss of habitat. • Habitat fragmentation. • Disturbance of any fauna species that may be resident onsite. • Environmental contamination, including disease transmission from chickens to wild birds: the chicken facilities will create a risk of contamination of natural habitats in the surrounding areas if spillages such as manure occur.
	Operational Phase	<ul style="list-style-type: none"> • Disturbance of any fauna species that may be resident onsite. • Habitat fragmentation. • Provision of artificial habitat for fauna species. • Environmental contamination, including disease transmission from chickens to wild birds: the chicken facilities will create a risk of contamination of natural habitats in the surrounding areas if spillages such as manure occur.
	Post-construction and Rehabilitation Phase	<ul style="list-style-type: none"> • Disturbance of any fauna species that may be present onsite. • Environmental contamination, including disease transmission from chickens to wild birds: the chicken facilities will create a risk of contamination of natural habitats in the surrounding areas if spillages such as manure occur.
	Decommissioning Phase	No decommissioning activities are anticipated or planned for the proposed project. Therefore, no impacts have been identified or assessed as part of this Environmental Impact Assessment process.
Flora	Construction Phase	<ul style="list-style-type: none"> • Loss of degraded/disturbed vegetation (Moot Plains bushveld) during site clearance. • Deterioration of watercourse and riparian vegetation. • Establishment and spread of alien invasive vegetation.
	Operational Phase	<ul style="list-style-type: none"> • Establishment and spread of alien invasive vegetation (onsite and surrounding areas). • Deterioration of watercourse and riparian vegetation.
	Post-construction and rehabilitation phase	<ul style="list-style-type: none"> • Establishment and spread of alien invasive vegetation (onsite and further than the site).
	Decommissioning Phase	No decommissioning activities are anticipated or planned for the proposed project. Therefore, no impacts have been identified or assessed as part of this Environmental Impact Assessment process.

Impact	Phase	Risks
Heritage Resources	Construction Phase	<ul style="list-style-type: none"> The site is located in an area with "Low" archaeological and cultural heritage sensitivity. The possibility exists that significant fossil assemblages may be present beneath the site. Possible disturbance or destruction of cultural and heritage resources.
	Operational Phase	
	Post-construction and Rehabilitation Phase	
	Decommissioning Phase	No decommissioning activities are anticipated or planned for the proposed project. Therefore, no impacts have been identified or assessed as part of this Environmental Impact Assessment process.
Palaeontological Resources	Construction Phase	<ul style="list-style-type: none"> The site is located in an area with "High" palaeontological sensitivity. The possibility exists that significant fossil assemblages may be present beneath the site. The disturbance and/or destruction of the fossil assemblages.
	Operational Phase	
	Post-construction and Rehabilitation Phase	
	Decommissioning Phase	No decommissioning activities are anticipated or planned for the proposed project. Therefore, no impacts have been identified or assessed as part of this Environmental Impact Assessment process.
Air Quality and Noise	Construction Phase	<ul style="list-style-type: none"> Generation of dust by construction vehicles. Release of emissions from construction vehicles. Generation of nuisance and noise from construction vehicles and equipment/machinery.
	Operational Phase	<ul style="list-style-type: none"> Generation of dust by excavation and vehicles onsite. Release of emissions from vehicles. Generation of nuisance and noise from vehicles, excavation and maintenance activities.
	Post-construction and Rehabilitation Phase	<ul style="list-style-type: none"> Generation of dust by construction vehicles. Release of emissions from construction vehicles. Generation of nuisance and noise from construction vehicles and equipment/machinery.
	Decommissioning Phase	No decommissioning activities are anticipated or planned for the proposed project. Therefore, no impacts have been identified or assessed as part of this Environmental Impact Assessment process.
Soil	Planning and Design Phase	<ul style="list-style-type: none"> Inadequate planning or faulty designs may lead to soil pollution and may cause soil instability and disturbances.
	Construction Phase	<ul style="list-style-type: none"> Soil pollution due to hydrocarbon spillages or leakages from construction vehicles.

Impact	Phase	Risks
		<ul style="list-style-type: none"> • Soil pollution due to spillages from chemical toilets. • Soil pollution due to the incorrect management, storage and disposal of waste (general and hazardous waste). • Soil pollution of surface and/or groundwater resources from the mixing of concrete. • Soil erosion due to the clearance of vegetation and the removal of topsoil and subsoil. • Soil compaction to create foundations for buildings and other associated infrastructure. • Degradation of topsoil due to incorrect storage practices.
	Operational Phase	<ul style="list-style-type: none"> • Soil pollution due to hydrocarbon spillages or leakages from vehicles. • Soil pollution due to the incorrect management, storage and disposal of waste (general and hazardous waste). • Soil pollution due to leakages from the sewerage network (pipelines) onsite. • Soil instability.
	Post-construction and Rehabilitation Phase	<ul style="list-style-type: none"> • Soil pollution due to hydrocarbon spillages or leakages from vehicles. • Soil erosion due to inefficient rehabilitation of construction areas.
	Decommissioning Phase	No decommissioning activities are anticipated or planned for the proposed project. Therefore, no impacts have been identified or assessed as part of this Environmental Impact Assessment process.

Socio-economic	Construction Phase	<ul style="list-style-type: none"> • Generation of a number of employment opportunities. • Potential increase in crime due to the influx of workers. • Stimulation of the local economy.
	Operational Phase	<ul style="list-style-type: none"> • Generation of a number of employment opportunities. • Stimulation of the local economy. • Contribution to food security.
	Post-construction and Rehabilitation Phase	<ul style="list-style-type: none"> • Generation of a number of employment opportunities. • Stimulation of the local economy.
	Decommissioning Phase	No decommissioning activities are anticipated or planned for the proposed project. Therefore, no impacts have been identified or assessed as part of this Environmental Impact Assessment process.

Traffic	Construction Phase	<ul style="list-style-type: none"> • Increase in traffic volumes to the site.
	Operational Phase	
	Post-construction and Rehabilitation	

Impact	Phase	Risks
	Decommissioning Phase	No decommissioning activities are anticipated or planned for the proposed project. Therefore, no impacts have been identified or assessed as part of this Environmental Impact Assessment process.
Fire Risk	Construction Phase	<ul style="list-style-type: none"> Increased risk of fire due to construction/operational activities and increased human activity.
	Operational Phase	
	Post-construction and Rehabilitation	None anticipated
	Decommissioning Phase	No decommissioning activities are anticipated or planned for the proposed project. Therefore, no impacts have been identified or assessed as part of this Environmental Impact Assessment process.
Diseases	Construction Phase	<ul style="list-style-type: none"> The outbreak of diseases among birds, other avian species and humans.
	Operational Phase	
	Post-construction and Rehabilitation Phase	
	Decommissioning Phase	No decommissioning activities are anticipated or planned for the proposed project. Therefore, no impacts have been identified or assessed as part of this Environmental Impact Assessment process.

8. DESCRIPTION OF PROPOSED IMPACT MANAGEMENT ACTIONS (ENVIRONMENTAL MANAGEMENT PROGRAMME ACTIONS)

8.1 Impact Management Outcome and Action Table

Please refer to *Table 3* below.

Table 3: Environmental Management Programme – Impact Management Outcome and Action Table

Aspect	Impact and Nature	Impact Outcomes	Management	Impact Management Actions and Statements in order to avoid, modify, remedy, control or stop pollution or environmental degradation	Responsible party/ person(s)
Planning and Design Phase					
Planning and Design Phase					
Planning and design of the facilities.	Inadequate planning and design of the facilities that could result in environmental impacts that could have been avoided.	To effectively plan for and design the facilities to avoid or minimise environmental impacts.		<p>Site selection</p> <ul style="list-style-type: none"> The infrastructure should preferably be constructed on an already disturbed site. The infrastructure may not be constructed on a wetland or within a drainage line. The infrastructure must preferably be constructed on a level/flat site. The site must have the correct land use zoning to enable the infrastructure to be constructed and operated. <p>Design of Facilities</p> <ul style="list-style-type: none"> Impermeable foundations (such as concrete foundations) must be designed for the weaning and growth houses. An adequate number of fire extinguishers must be provided for. 	<ul style="list-style-type: none"> Applicant Engineer
Pre-Construction Phase					
Pre-Construction Phase					
Construction site establishment.	<p>Unauthorised access to the construction site that can pose a risk to the public in terms of their safety.</p> <p>Unsafe working conditions.</p>	To secure the construction site and ensure that it is operated in a responsible manner for the duration of the construction phase.		<ul style="list-style-type: none"> The construction site must be demarcated (fenced or delineated with danger tape). Permanent demarcation is preferable to prevent the public from gaining access to the site. A site plan must be drawn up by the construction contractor and kept on file. The site plan must show proposed stockpile areas, waste storage areas and ablution facilities. Signage indicating that the site is a “Construction Site” and indicating the risks associated with the site must be displayed. Emergency numbers, “No-smoking” signs and “No Open Flame” signs must also be displayed at the construction site. Fire-fighting equipment must be placed at the construction site and must be easily accessible. The fire-fighting equipment must be maintained on an annual basis. 	<ul style="list-style-type: none"> Applicant Construction contractor
Appointment of workers (employees and contractors) to commence construction activities onsite.	Workers being unaware of the dangers of working at the construction site, resulting in a risk to their safety.	To adequately educate workers (employees and contractors) regarding environmental awareness.		<ul style="list-style-type: none"> Before any employees or contractors commence work at the construction site, each individual must undergo an Induction Training session that will cover the aspects as detailed in the Environmental Awareness Plan (contained in this EMP). Attendance registers must be completed and kept on file. Employees and contract workers must be issued with suitable Personal Protective Equipment (PPE), as applicable to each persons’ job onsite. 	<ul style="list-style-type: none"> Applicant Construction contractor
Wetlands					
Construction Phase					
Wetland Deterioration/Loss	Changing the quantity and fluctuation properties of the watercourse by, for example, stormwater input, or restricting water flow.	To prevent wetland deterioration and/or loss.		<ul style="list-style-type: none"> No activities should take place in the watercourses and associated buffer zones. Where the above is unavoidable, only the construction footprint and no access roads can be considered. This is subject to authorisation by means of a Water Use License. Construction must be restricted to dryer winter months where possible. A temporary fence or demarcation must be erected around No-Go areas outside the proposed work areas prior to construction taking place. Effective stormwater management should be a priority during the construction phase. 	<ul style="list-style-type: none"> Applicant Construction contractor
Wetland Deterioration/Loss	Changing the amount of sediment entering the watercourse and associated change in turbidity (construction activities can result in earthworks and soil	To prevent wetland deterioration and/or loss.		<ul style="list-style-type: none"> Water may seep into earthworks. It is likely that water can be contaminated within these earthworks. Effective sediment traps should therefore be installed. Construction in an around watercourses must be restricted to the dryer winter months where possible. Retain vegetation and soil in position for as long as possible, removing it immediately ahead of construction/earth works (DWAf, 2005). Remove vegetation only where essential for construction and do not allow any disturbance to the adjoining natural vegetation cover. 	<ul style="list-style-type: none"> Applicant Construction contractor

Aspect	Impact and Nature	Impact Outcomes	Management	Impact Management Actions and Statements in order to avoid, modify, remedy, control or stop pollution or environmental degradation	Responsible party/ person(s)
	disturbance as well as the removal of natural vegetation).			<ul style="list-style-type: none"> Rehabilitation plans must be submitted and approved for rehabilitation of damage during construction. The plan must be implemented immediately upon completion of construction. Cordon off areas that are under rehabilitation as no-go areas using danger tape and steel droppers. If required, these areas should be fenced off to prevent vehicular and pedestrian access. During the construction phase, measures must be put in place to control the flow of excess water so that it does not impact on the surface vegetation. Protect all areas susceptible to erosion. Ensure that there is no undue soil erosion resultant from activities within and adjacent to the construction camp and work areas. Runoff from the construction area must be managed to prevent erosion and pollution problems. Ensure source-direct controls. 	
Wetland Deterioration/Loss	Introduction and spread of alien vegetation (the moving of soil and vegetation resulting in invasions after disturbance and the introduction of seed in building materials and on construction vehicles).	To prevent wetland deterioration and/or loss.		<ul style="list-style-type: none"> Effective weed control practices to be implemented. Retain vegetation and soil in position for as long as possible, removing it immediately ahead of construction/earthworks. Monitor the establishment of alien invasive species within the areas affected by construction activities. Immediate corrective action to take place where invasive species are observed to establish. Rehabilitate or re-vegetate disturbed areas. 	<ul style="list-style-type: none"> Applicant Construction contractor
Wetland Deterioration/Loss	Change in water quality due to foreign materials and increased nutrient impact ratings. Construction activities can result in the discharge of solvent and other chemicals, leakage of fuel/oil from vehicles and disposal of sewage which can result in the loss of sensitive biota in wetlands/rivers.	To prevent wetland deterioration and/or loss.		<ul style="list-style-type: none"> Provide sufficient ablution facilities onsite and outside of the watercourse and buffer zone areas. Implement appropriate stormwater management around excavations to prevent runoff into excavation areas and to prevent contaminated runoff into watercourses. After construction land must be cleared of rubbish, surplus materials and equipment. All parts of the land shall be left in a condition as close as possible to prior use. Maintenance of construction vehicles and/or equipment should not take place within watercourses or associated buffer zones. Control waste discharges. Treatment of any pollution identified should be prioritised accordingly. 	<ul style="list-style-type: none"> Applicant Construction contractor
Operational Phase					
Wetland Deterioration/Loss	Changing the quantity and fluctuation properties of the watercourse by, for example, stormwater input, or restricting water flow.	To prevent wetland deterioration and/or loss.		<ul style="list-style-type: none"> No activities should take place in the watercourses and associated buffer zones. Effective stormwater management should be a priority during the operational phase. 	<ul style="list-style-type: none"> Applicant Site manager
Wetland Deterioration/Loss	Changing the amount of sediment entering the watercourse and associated change in turbidity (operational activities can result in earthworks and soil disturbance as well as the removal of natural vegetation).	To prevent wetland deterioration and/or loss.		<ul style="list-style-type: none"> Effective sediment traps should be installed. Protect all areas susceptible to erosion. Ensure that there is no undue soil erosion resultant from activities. Runoff must be managed to prevent erosion and pollution problems. Ensure source-direct controls. 	<ul style="list-style-type: none"> Applicant Site manager
Wetland Deterioration/Loss	Introduction and spread of alien vegetation (the moving of soil and vegetation resulting in invasions after disturbance and	To prevent wetland deterioration and/or loss.		<ul style="list-style-type: none"> Effective weed control practices to be implemented. Monitor the establishment of alien invasive species within the areas affected by operational activities. Immediate corrective action to take place where invasive species are observed to establish. Rehabilitate or re-vegetate disturbed areas. 	<ul style="list-style-type: none"> Applicant Site manager

Aspect	Impact and Nature	Impact Outcomes	Management	Impact Management Actions and Statements in order to avoid, modify, remedy, control or stop pollution or environmental degradation	Responsible party/ person(s)
Wetland Deterioration/Loss	the introduction of seed through vehicles). Change in water quality due to foreign materials and increased nutrient impact ratings. Operational activities can result in the discharge of solvent and other chemicals, leakage of fuel/oil from vehicles and disposal of sewage which can result in the loss of sensitive biota in wetlands/rivers.	To prevent wetland deterioration and/or loss.		<ul style="list-style-type: none"> • Vehicles should regularly be inspected to ensure that any fuel or oil leaks are repaired. • Maintenance of vehicles and/or equipment should not take place within watercourses or associated buffer zones. • Control waste discharges. • Treatment of any pollution identified should be prioritised accordingly. • Ablution facilities must regularly be cleaned. 	<ul style="list-style-type: none"> • Applicant • Site manager
Surface and Groundwater					
Pre-Construction Phase					
Inadequate planning or faulty designs.	Surface and groundwater pollution due to inadequate planning or faulty designs.	To avoid preventable surface and groundwater pollution by effective planning and design.		<ul style="list-style-type: none"> • All environmental features and sensitive receptors should be taken into account during the design and planning phase. All reasonable measures should be taken to minimise preventable impacts on the environment. 	<ul style="list-style-type: none"> • Applicant • Construction contractor
Construction Phase					
Release of pollutants, such as chemicals.	Pollution of surface and/or groundwater resources.	To prevent the release of pollutants such as chemicals.		<ul style="list-style-type: none"> • No wastewater of wash water may be released into the environment from construction activities. • Vehicles should regularly be inspected to ensure that any fuel or oil leaks are repaired. • Spill kits must be onsite to clean up any spillages. 	<ul style="list-style-type: none"> • Applicant • Construction contractor
Incorrect management of chemical substances and dangerous goods.	Pollution of surface and/or groundwater resources.	To prevent the incorrect management of chemical substance and dangerous goods.		<ul style="list-style-type: none"> • A register must be compiled of all chemical substances and dangerous goods used onsite. • MSDS's (Material Safety Data Sheets) must be maintained for all chemical substances and dangerous goods. The MSDS's must also be displayed onsite. • Chemical substances and dangerous goods must be stored safely and as per the requirements of the MSDS for each chemical substances and dangerous goods. Locked storage areas are preferred. • Drip trays must be readily available onsite and used for any repair work, maintenance work or refuelling undertaken onsite. • Spill kits must be readily available onsite and personnel must be trained on the appropriate procedures to clean up spillages. 	<ul style="list-style-type: none"> • Applicant • Construction contractor
Hydrocarbon spillages or leakages from vehicles, including construction vehicles.	Pollution of surface and/or groundwater resources.	To prevent hydrocarbon spillages and/or leakages from construction vehicles and ensure that any spillages are cleaned effectively.		<ul style="list-style-type: none"> • Spill kits must be onsite to clean up any hydrocarbon spillages. • Vehicles should regularly be inspected to ensure that any fuel or oil leaks are repaired. • Vehicles must be serviced in designated areas and on impermeable surfaces. • Drip trays should be used for any minor repairs or maintenance work done onsite. • Any soil that has been contaminated by oil, diesel or petrol must be regarded as hazardous and disposed of at an appropriately licensed facility. Safe Disposal Certificates must be obtained and kept on record. 	<ul style="list-style-type: none"> • Applicant • Construction contractor
Spillages from chemical toilets.	Pollution of surface and/or groundwater resources.	To prevent spillages from chemical toilets and ensure that any spillages are cleaned effectively.		<ul style="list-style-type: none"> • Sufficient ablution facilities must be provided (at least 1 toilet per 8 persons). • Chemical toilets must be serviced regularly and must be provided with toilet paper at all times. • Proof of safe disposal of contents of chemical toilets should be kept on record. • Any spillages from the chemical toilets must immediately be cleaned and the contaminated soil disposed of as hazardous waste. 	<ul style="list-style-type: none"> • Applicant • Construction contractor
Incorrect management, storage and disposal of waste, including construction waste.	Pollution of surface and/or groundwater resources.	To ensure that construction waste is managed in an environmentally responsible manner.		<ul style="list-style-type: none"> • Construction waste must be stored in a designated area. • Building rubble must be stored separately from domestic waste. • Refuse bins must be provided for domestic waste. • Large volumes of waste may not accumulate onsite. • Waste must be taken to appropriately licensed facilities for reuse, recycling, recovery or disposal. Safe Disposal Certificates must be obtained and kept on record. 	<ul style="list-style-type: none"> • Applicant • Construction contractor

Aspect	Impact and Nature	Impact Outcomes	Management	Impact Management Actions and Statements in order to avoid, modify, remedy, control or stop pollution or environmental degradation	Responsible party/ person(s)
				<ul style="list-style-type: none"> No waste may be burnt or buried onsite. Building rubble must be kept clean of plastic and brick ties. All waste must be stored in accordance with the Norms and Standards for the storage of waste (GN 926 of 29 November 2013). 	
Runoff of contaminated storm water.	Pollution of surface and/or groundwater resources.	To prevent the contamination of storm water.		<ul style="list-style-type: none"> A storm water management plan must be developed and implemented at the project site. Storm water must be diverted around areas where there are pollution sources. Storm water drainage infrastructure must be regularly inspected for obstructions. No contaminated storm water may be released into the environment from the construction activities. Washing or cleaning of equipment or machinery must occur in a designated area and the contaminated wash water must be contained. Such an area could be a plastic drum, a container or a plastic lined pit. 	<ul style="list-style-type: none"> Applicant Construction contractor
The mixing of concrete.	Pollution of surface and/or groundwater resources.	To prevent the contamination of water during concrete mixing.		<ul style="list-style-type: none"> Concrete should ideally be mixed on an impermeable surface such as a concrete slab. Cement bags (new and used) must be stored under roof or in closed containers where they will not be exposed to the weather. Dry concrete must be removed and disposed of together with other building rubble. Ready-mix concrete trucks may clean chutes into foundations, but not elsewhere onsite. 	<ul style="list-style-type: none"> Applicant Construction contractor
The wastage of water resources.	Wastage of water resources due to the irresponsible use of water.	To prevent wastage of water.		<ul style="list-style-type: none"> Water pipes and hoses should be inspected on a regular basis and any leakages should immediately be repaired. Running water taps or hoses may not be left unattended. 	<ul style="list-style-type: none"> Applicant Construction contractor
Operational Phase					
Incorrect management of chemical substances and dangerous goods.	Pollution of surface and/or groundwater resources.	To prevent the incorrect management of chemical substance and dangerous goods.		<ul style="list-style-type: none"> A register must be compiled of all chemical substances and dangerous goods used onsite. MSDS's (Material Safety Data Sheets) must be maintained for all chemical substances and dangerous goods. The MSDS's must also be displayed onsite. Chemical substances and dangerous goods must be stored safely and as per the requirements of the MSDS for each chemical substances and dangerous goods. Locked storage areas are preferred. Drip trays must be readily available onsite and used for any repair work, maintenance work or refuelling undertaken onsite. Spill kits must be readily available onsite and personnel must be trained on the appropriate procedures to clean up spillages. 	<ul style="list-style-type: none"> Applicant Site manager
Hydrocarbon spillages or leakages from vehicles.	Pollution of surface and/or groundwater resources.	To prevent hydrocarbon spillages and/or leakages from vehicles and ensure that any spillages are cleaned effectively.		<ul style="list-style-type: none"> Spill kits must be onsite to clean up any hydrocarbon spillages. Vehicles should regularly be inspected to ensure that any fuel or oil leaks are repaired. Vehicles must be serviced in designated areas and on impermeable surfaces. Any soil that has been contaminated by oil, diesel or petrol must be regarded as hazardous and disposed of at an appropriately licensed facility. Safe Disposal Certificates must be obtained and kept on record. 	<ul style="list-style-type: none"> Applicant Site manager
Incorrect management, storage and disposal of waste.	Pollution of surface and/or groundwater resources.	To ensure that construction waste is managed in an environmentally responsible manner.		<ul style="list-style-type: none"> Waste must be managed according to its hazard classification (i.e. general vs. hazardous waste). General and hazardous waste streams must not be mixed. Waste stored onsite must be kept in appropriate containers with closable lids. Large volumes of waste may not accumulate onsite. Waste must be taken to appropriately licensed facilities for reuse, recycling, recovery or disposal (last resort). Safe Disposal Certificates must be obtained and kept on record. No waste may be burnt or buried onsite. All waste must be stored in accordance with the Norms and Standards for the storage of waste (GN 926 of 29 November 2013). 	<ul style="list-style-type: none"> Applicant Site manager
Runoff of contaminated storm water.	Pollution of surface and/or groundwater resources.	To prevent the contamination of storm water.		<ul style="list-style-type: none"> A storm water management plan must be developed and implemented at the project site. Storm water must be diverted around areas where there are pollution sources. Storm water drainage infrastructure must be regularly inspected for obstructions. No contaminated storm water may be released into the environment from the construction activities. Washing or cleaning of equipment or machinery must occur in a designated area and the contaminated wash water must be contained. Wash water from the wash bay must be contained and not released into the environment. 	<ul style="list-style-type: none"> Applicant Site manager

Aspect	Impact and Nature	Impact Outcomes	Management	Impact Management Actions and Statements in order to avoid, modify, remedy, control or stop pollution or environmental degradation	Responsible party/ person(s)
Spillages from the sewerage network (pipelines) onsite.	Pollution of surface and/or groundwater resources.	To ensure that the sewerage network is kept in a good state of repair.		<ul style="list-style-type: none"> Ablution facilities must regularly be cleaned. Should toilets run slowly or become blocked, this should be investigated to ensure that this is not due to a broken or blocked pipe underground. Any broken or blocked pipes must be repaired. 	<ul style="list-style-type: none"> Applicant Site manager
The wastage of water (borehole water supply) and electricity.	Wastage of resources due to the irresponsible use.	To prevent wastage of resources.		<ul style="list-style-type: none"> Consumption of water and electricity must be monitored. Use energy efficient lighting, where possible. Switch off lights and appliances when not in use. Water pipes and hoses should be inspected on a regular basis and any leakages should immediately be repaired. Running water taps or hoses may not be left unattended. High pressure hoses should be used, where possible. 	<ul style="list-style-type: none"> Applicant Site manager
Fauna					
Construction Phase					
Construction activities.	Displacement of resident (common) species and any natural biota.	To prevent the resident species and natural biota.		<ul style="list-style-type: none"> Fauna species may not be disturbed, captured or killed and must be avoided. Trenches must be inspected regularly to ensure that no animals are trapped. Should animals be encountered during the development, these should be relocated (by a suitably qualified specialist) to natural vegetation areas in the vicinity of the site. 	<ul style="list-style-type: none"> Applicant Construction contractor
Construction activities.	Environmental contamination, including disease transmission from chickens to wild birds: the chicken facilities will create a risk of contamination of natural habitats in the surrounding areas if spillages such as manure occur.	To prevent environmental contamination.		<ul style="list-style-type: none"> Standard biosecurity measures must be implemented in order to ensure that no contact between chickens and wild birds, mammals or humans takes place. 	<ul style="list-style-type: none"> Applicant Construction contractor
Operational Phase					
Operational activities.	Displacement of resident (common) species and any natural biota.	To prevent the resident species and natural biota.		Same mitigation measures as under construction phase.	<ul style="list-style-type: none"> Applicant Site manager
Operational activities.	Environmental contamination, including disease transmission from chickens to wild birds: the chicken facilities will create a risk of contamination of natural habitats in the surrounding areas if spillages such as manure occur.	To prevent environmental contamination.		Same mitigation measures as under construction phase.	<ul style="list-style-type: none"> Applicant Site manager
Operational activities.	Provision of artificial habitat for fauna species.	This is a positive impact and no mitigation measures are therefore required.			Not applicable.
Flora					
Construction Phase					
Site clearance.	Loss of degraded / disturbed vegetation (Moot Plains Bushveld).	To minimise the loss of vegetation.		<ul style="list-style-type: none"> Remove only the vegetation where essential for construction and don't allow any disturbance to adjoining natural vegetation cover. Make use of predetermined roads and tracks. Once construction is complete, obsolete roads should be obliterated by breaking the surface crust and erecting earth embankments to prevent erosion, while the natural species composition should be re-established. 	<ul style="list-style-type: none"> Applicant Construction contractor

Aspect	Impact and Nature	Impact Outcomes	Management	Impact Management Actions and Statements in order to avoid, modify, remedy, control or stop pollution or environmental degradation	Responsible party/ person(s)
				<ul style="list-style-type: none"> Colonisation of the disturbed areas by plants species from the surrounding natural vegetation must be monitored to ensure that vegetation cover is sufficient. 	
Construction activities.	Deterioration of watercourse and riparian vegetation.	To prevent deterioration of watercourse and riparian vegetation.		<ul style="list-style-type: none"> A minimum buffer around the watercourses are recommended in which no development should take place. No stormwater from the construction sites are allowed to be channelled directly into any watercourse. An effective stormwater management plan must be implemented onsite. 	<ul style="list-style-type: none"> Applicant Construction contractor
Construction activities.	Establishment and spread of alien invasive vegetation (onsite and further than the site).	To prevent the establishment and spread of alien invasive vegetation.		<ul style="list-style-type: none"> Development and implement an alien invasive eradication plan. Use only indigenous plant species for gardens and rehabilitation. Eradicate any alien invasive vegetation observed onsite. 	<ul style="list-style-type: none"> Applicant Construction contractor
Operational Phase					
Operational activities.	Establishment and spread of alien invasive vegetation (onsite and further than the site).	To prevent the establishment and spread of alien invasive vegetation.		Same mitigation measures as under construction phase.	<ul style="list-style-type: none"> Applicant Site manager
Operational activities.	Deterioration of watercourse and riparian vegetation.	To prevent deterioration of watercourse and riparian vegetation.		Same mitigation measures as under construction phase.	<ul style="list-style-type: none"> Applicant Site manager
Heritage Resources					
Construction Phase					
Construction activities.	Disturbance or destruction of cultural and heritage resources.	To prevent the disturbance or destruction of cultural and heritage resources.		<ul style="list-style-type: none"> If any cultural or heritage resources, sites, features or objects are exposed during the construction activities, all construction activities in the area must be stopped and a heritage specialist must be contacted to investigate the site and recommend the way forward. 	<ul style="list-style-type: none"> Applicant Construction contractor
Operational Phase					
Operational activities.	None anticipated.			Not Applicable.	Not Applicable.
Palaeontological Resources					
Construction Phase					
Construction activities.	The disturbance and/or destruction of the fossil assemblages.	To prevent the unregulated/uncontrolled destruction of fossil assemblages.		<ul style="list-style-type: none"> A field assessment by a qualified palaeontologist must be conducted. A Protocol of Fossil Finds must be compiled and submitted to the South African Heritage Resources Agency. The protocol must be implemented during the construction phase. 	<ul style="list-style-type: none"> Applicant Construction contractor
Operational Phase					
Operational activities.	None anticipated.			Not Applicable.	Not Applicable.
Air Quality and Noise					
Construction Phase					
Construction activities.	Generation of dust by construction vehicles.	To prevent the generation of dust.		<ul style="list-style-type: none"> Implement dust suppression techniques. Limit vegetation clearance until it is necessary for soil stripping. Retain vegetation and soil in position for as long as possible before stripping. A complaints register must be kept onsite and be easily accessible to any party who wishes to lodge a complaint. The complaints register must include the following fields: <ul style="list-style-type: none"> The date of the complaint; The name and surname of the person lodging the complaint; Details of the complaint; and How and when the complaint was addressed. 	<ul style="list-style-type: none"> Applicant Construction contractor
Construction activities.	Release of emissions from construction vehicles.	To minimise emissions from construction vehicles.		<ul style="list-style-type: none"> Regular maintenance of vehicles to minimise the release of emissions. Speed bumps and traffic signs should be erected to prevent speeding onsite. Vehicles must not be left idling unnecessarily. 	<ul style="list-style-type: none"> Applicant Construction contractor

Aspect	Impact and Nature	Impact Outcomes	Management	Impact Management Actions and Statements in order to avoid, modify, remedy, control or stop pollution or environmental degradation	Responsible party/ person(s)
Construction activities.	Generation of nuisance and noise from construction vehicles and equipment / machinery.	To prevent the generation of excessive noise.		<ul style="list-style-type: none"> All vehicles must be regularly maintained. Noisy activities must be scheduled during times of the day that will result in the least disturbance to adjacent sensitive receptors. Noisy work must also be avoided over weekends and public holidays. No amplified music is allowed onsite. Sirens and/or hooters may only be used during emergencies and drills. Noisy work must be avoided on weekends and public holidays. Vehicles must not be left idling unnecessarily. All vehicles must be regularly maintained. A complaints register must be kept onsite and be easily accessible to any party who wishes to lodge a complaint. The complaints register must include the following fields: <ul style="list-style-type: none"> The date of the complaint; The name and surname of the person lodging the complaint; Details of the complaint; and How and when the complaint was addressed. 	<ul style="list-style-type: none"> Applicant Construction contractor
Operational Phase					
Operational activities.	Generation of dust by vehicles onsite.	To prevent the generation of dust.		<ul style="list-style-type: none"> Implement dust suppression techniques, if required (for example, if there are any unpaved areas). A complaints register must be kept onsite and be easily accessible to any party who wishes to lodge a complaint. The complaints register must include the following fields: <ul style="list-style-type: none"> The date of the complaint; The name and surname of the person lodging the complaint; Details of the complaint; and How and when the complaint was addressed. 	<ul style="list-style-type: none"> Applicant Site manager
Operational activities.	Release of emissions from vehicles.	To minimise emissions from vehicles.		<ul style="list-style-type: none"> Regular maintenance of vehicles to minimise the release of emissions. Speed bumps and traffic signs should be erected to prevent speeding onsite. Vehicles must not be left idling unnecessarily. 	<ul style="list-style-type: none"> Applicant Site manager
Operational activities.	Generation of nuisance and noise from vehicles. This also includes nuisance and noise from operational and maintenance activities.	To prevent the generation of excessive noise.		<ul style="list-style-type: none"> No amplified music is allowed onsite. Sirens and/or hooters may only be used during emergencies and drills. Noisy work must be avoided on weekends and public holidays. Trucks must not be left idling unnecessarily. Drivers should be instructed to also not hoot or rev trucks unnecessarily. All vehicles and equipment must be regularly maintained. Loose or rattling parts should be repaired. A complaints register must be kept onsite and be easily accessible to any party who wishes to lodge a complaint. The complaints register must include the following fields: <ul style="list-style-type: none"> The date of the complaint; The name and surname of the person lodging the complaint; Details of the complaint; and How and when the complaint was addressed. Silencers must be fitted to equipment and machinery, where possible. 	<ul style="list-style-type: none"> Applicant Site manager
Soil					
Construction Phase					
Hydrocarbon spillages or leakages from vehicles, including construction vehicles.	Soil pollution.	To prevent hydrocarbon spillages and/or leakages from construction vehicles and ensure that any spillages are cleaned effectively.		<ul style="list-style-type: none"> Use drip trays for any machinery and/or vehicle repair work. Immediately repair any leaking machinery or vehicles. Place oil drums on impermeable surfaces or plastic liners. Immediately clean any hydrocarbon spillages and dispose of as hazardous waste. Safe Disposal Certificates must be obtained and kept on record. Vehicles must be serviced in designated areas and on impermeable surfaces. 	<ul style="list-style-type: none"> Applicant Construction contractor

Aspect	Impact and Nature	Impact Outcomes	Management	Impact Management Actions and Statements in order to avoid, modify, remedy, control or stop pollution or environmental degradation	Responsible party/ person(s)
Spillages from chemical toilets.	Soil pollution.	To prevent spillages from chemical toilets and ensure that any spillages are cleaned effectively.		<ul style="list-style-type: none"> Sufficient ablution facilities must be provided (at least 1 toilet per 8 persons). Chemical toilets must be serviced regularly. Proof of safe disposal of contents of chemical toilets should be kept on record. Any spillages from the chemical toilets must immediately be cleaned and the contaminated soil disposed of as hazardous waste. Safe Disposal Certificates must be obtained and kept on record. 	<ul style="list-style-type: none"> Applicant Construction contractor
The incorrect management, storage and disposal of waste (general and hazardous waste), including construction waste.	Soil pollution.	To ensure that construction waste is managed in an environmentally responsible manner.		<ul style="list-style-type: none"> Waste must be managed according to its hazard classification (i.e. general vs. hazardous waste) and general and hazardous waste streams should not be mixed. Waste stored onsite must be kept in appropriate containers with lids that can be closed. Large volumes of waste may not accumulate onsite. Waste must be taken to appropriately licensed facilities for reuse, recycling, recovery or disposal. Safe Disposal Certificates must be obtained and kept on record. No waste may be burnt or buried onsite. All waste must be stored in accordance with the Norms and Standards for the storage of waste (GN 926 of 29 November 2013). 	<ul style="list-style-type: none"> Applicant Construction contractor
The mixing of concrete.	Soil pollution.	To prevent the contamination of soil during to concrete mixing.		<ul style="list-style-type: none"> Concrete should ideally be mixed on an impermeable surface such as a concrete slab. Cement bags (new and used) must be stored under roof or in closed containers where they will not be exposed to rain. Dry concrete must be removed and disposed of together with other building rubble. Ready-mix concrete trucks may clean chutes into foundations, but not elsewhere onsite. 	<ul style="list-style-type: none"> Applicant Construction contractor
The clearance of vegetation and the removal of topsoil and subsoil.	Soil erosion.	To prevent soil erosion.		<ul style="list-style-type: none"> Limiting vegetation clearance until it is necessary for soil stripping. A temporary storm water management plan must be developed and implemented. Implement adequate erosion prevention measures, such as measures to dissipate runoff water velocities. Implement adequate storm water management measures. 	<ul style="list-style-type: none"> Applicant Construction contractor
Construction activities to create foundations for buildings and other associated infrastructure.	Soil compaction.	To prevent soil compaction.		<ul style="list-style-type: none"> Soils should be moved when dry, as far as possible. Excessively heavy vehicles should not be used for earthmoving activities. This will minimise compaction of the soil. 	<ul style="list-style-type: none"> Applicant Construction contractor
Incorrect storage practices.	Degradation of topsoil.	To conserve/ protect topsoil.		<ul style="list-style-type: none"> Topsoil and subsoil must be stored on separate stockpiles. Cover topsoil stockpiles to prevent the soil being washed away during rainfall events. Topsoil must be replaced during rehabilitation and landscaping. 	<ul style="list-style-type: none"> Applicant Construction contractor
Operational Phase					
Hydrocarbon spillages or leakages from vehicles.	Soil pollution.	To prevent hydrocarbon spillages and/or leakages from vehicles and ensure that any spillages are cleaned effectively.		Same mitigation measures as under construction phase.	<ul style="list-style-type: none"> Applicant Site manager
The incorrect management, storage and disposal of waste (general and hazardous waste).	Soil pollution.	To ensure that waste is managed in an environmentally responsible manner.		Same mitigation measures as under construction phase.	<ul style="list-style-type: none"> Applicant Site manager
Spillages from the sewerage network (pipelines) onsite.	Soil pollution.	To ensure that the sewerage network is kept in a good state of repair.		<ul style="list-style-type: none"> Ablution facilities must regularly be cleaned. Should toilets run slowly or become blocked, this should be investigated to ensure that this is not due to a broken or blocked pipe underground. Any broken or blocked pipes must be repaired. 	<ul style="list-style-type: none"> Applicant Site manager
Socio-economic					
Construction Phase					

Aspect	Impact and Nature	Impact Outcomes	Management	Impact Management Actions and Statements in order to avoid, modify, remedy, control or stop pollution or environmental degradation	Responsible party/ person(s)
Construction activities.	Generation of a number of job opportunities.			This is a positive impact and no mitigation measures are therefore required.	Not applicable.
Construction activities.	Potential increase in crime due to the influx of workers.	To prevent an increase in incidents of crime in die area.		<ul style="list-style-type: none"> Reference checks should be conducted on all workers before they are appointed. Workers should not be allowed to leave the construction site during the day and should be transported to and from the site on a daily basis. 	<ul style="list-style-type: none"> Applicant Construction contractor
Construction activities.	Stimulation of the local economy.			This is a positive impact and no mitigation measures are therefore required.	Not applicable.
Operational Phase					
Operational activities.	Generation of a number of job opportunities.			This is a positive impact and no mitigation measures are therefore required.	Not applicable.
Operational activities.	Stimulation of the local economy.			This is a positive impact and no mitigation measures are therefore required.	Not applicable.
Operational activities.	Contribution to food security.			This is a positive impact and no mitigation measures are therefore required.	Not applicable.
Traffic					
Construction Phase					
Construction activities.	Increase in traffic volumes to the site.	To minimise the effect of an increase in traffic volumes.		<ul style="list-style-type: none"> Ensure that construction vehicles are roadworthy and that drivers comply with road rules. Loads must be securely fastened and may not exceed the tonnage limitations for each vehicle. Provide separate entry and exit gateways for pedestrians and vehicles. Plan storage areas so that delivery vehicles do not need to cross the site. Construction vehicles to make use of roads with less vehicle movement. 	<ul style="list-style-type: none"> Applicant Construction contractor
Operational Phase					
Operational activities.	Increase in traffic volumes to the site.	To minimise the effect of an increase in traffic volumes.		<ul style="list-style-type: none"> Ensure optimal operation of the project site to ensure minimal impact on traffic flow. 	<ul style="list-style-type: none"> Applicant Site manager
Fire Risk					
Construction Phase					
Construction activities.	The potential for fire establishment at the construction area and its subsequent risk to human life and infrastructure.	To prevent the occurrence of fires.		<ul style="list-style-type: none"> Access to fire-fighting equipment must at all times be unobstructed. Emergency numbers must be clearly displayed at the construction site. 	<ul style="list-style-type: none"> Applicant Construction contractor
Operational Phase					
Operational activities.	The potential for fire establishment at the project site and its subsequent risk to human life and infrastructure.	To prevent the occurrence of fires and/or explosions.		<ul style="list-style-type: none"> An Emergency Response Plan must be compiled for the project site; The fire-fighting system and all fire-fighting equipment must be inspected on an annual basis by a suitably qualified person and records kept on file. The fire-fighting system and all fire-fighting equipment must be to the satisfaction of the municipal fire authority. Access to fire-fighting equipment must at all times be unobstructed. 	<ul style="list-style-type: none"> Applicant Site manager
Diseases					
Construction Phase					
Construction activities.	The outbreak of diseases among birds, other avian species and humans.	To prevent the outbreak of diseases.		<ul style="list-style-type: none"> All birds (chicks) should be obtained from disease free sources. Use a sound vaccination programme. Never permit contaminated equipment use within rearing and laying houses. Keep wild birds, rodents and predators away from rearing and laying sites. Installation of rodent and flytraps. Clean and sanitize rearing and laying houses before and after each cycle with biodegradable soaps and disinfectants. Monitoring and auditing of process by qualified person. Obtain a reliable prognosis before starting treatment for a disease problem. Proper handling, storage and disposal of litter and mortalities , in demarcated areas away from foot traffic or vehicles entering and leaving the premises. 	<ul style="list-style-type: none"> Applicant Construction contractor
Operational Phase					

Aspect	Impact and Nature	Impact Management Outcomes	Impact Management Actions and Statements in order to avoid, modify, remedy, control or stop pollution or environmental degradation	Responsible party/ person(s)
Operational activities.	The outbreak of diseases among birds, other avian species and humans.	To prevent the outbreak of diseases.	Same mitigation measures as under construction phase.	<ul style="list-style-type: none"> • Applicant • Site manager

8.2 Applicable Environmental Management Standards and Practices

- Norms and Standards for the Storage of Waste (GN 926 of 29 November 2013).

8.3 Applicable provisions of the NEMA, 1998, as amended, regarding closure

The provisions of NEMA, 1998, pertaining to closure are not applicable to this proposed development as the development does not include the prospecting, exploration or extraction of a mineral or petroleum resource.

8.4 Applicable provisions of the NEMA, 1998, as amended, regarding financial provision for rehabilitation

The provisions of NEMA, 1998, pertaining to financial provision for rehabilitation are not applicable to this proposed development as the development does not include the prospecting, exploration or extraction of a mineral or petroleum resource.

8.5 Method of monitoring the implementation of the impact management actions

Construction Phase

An independent Environmental Control Officer (ECO) must be appointed to conduct monthly compliance audits during the construction phase of the proposed development. The audits must verify compliance with the Environmental Authorisation and this Environmental Management Programme and a formal report must be compiled after each audit. The reports must be submitted to the Competent Authority. Once the construction phase has been completed, a post-construction audit must be conducted by the independent ECO and the report also submitted to the Competent Authority.

Operational Phase

An internal ECO must be appointed to conduct monthly compliance audits during the operational phase of the proposed development and to ensure that corrective actions are implemented where required. Reports resulting from these audits do not need to be submitted to the Competent Authority.

An independent ECO must be appointed to conduct annual compliance audits during the operational phase of the proposed development. The audits must verify compliance with the Environmental Authorisation and this Environmental Management Programme and must comply with the requirements of Appendix 7 of the Environmental Impact Assessment Regulations of 2014, as amended. A formal report must be compiled after each audit and the reports must be submitted to the Competent Authority.

8.6 The frequency of monitoring the implementation of the impact management actions

Construction Phase

Monthly independent ECO compliance audits.

Operational Phase

Monthly internal ECO compliance audits and annual external ECO compliance audits.

8.7 Persons who will be responsible for the implementation of the impact management actions

The applicant is ultimately responsible for the implementation of the impact management actions, during all phases of the development, even where the implementation of the actions may be contracted out to a third party. During the construction phase, sub-contractors will for the most part be carrying out the required impact management actions and these actions

should therefore be adequately communicated to the contractors. During the operational phase, the applicant will be mostly responsible for carrying out the required impact management actions along with the site manager.

The applicant must appoint a designated person for the function of internal/in-house ECO and an external, suitably qualified Environmental Assessment Practitioner for the function of external, independent ECO.

8.8 Time periods within which the impact management actions must be implemented

Planning and Design Phase

The management actions for the Planning and Design Phase must be completed before the Pre-construction Phase is commenced with.

Pre-construction Phase

The management actions for the Pre-construction Phase must be completed before the Construction Phase is commenced with.

Construction Phase

The management actions for the Construction Phase must be completed prior to the completion of the Construction Phase (i.e. before the Operational Phase is commenced with). Rehabilitation should be conducted concurrent with construction as far as possible. Any additional rehabilitation should be conducted within one year from the completion of construction.

Operational Phase

The management actions for the Operational Phase must be implemented during the Operational Phase, on a continual basis.

8.9 Mechanism for monitoring compliance with the impact management actions

Please refer to Sections 8.5 and 8.6 of this EMP.

8.10 Program for reporting on compliance, taking into account the requirements as prescribed by the EIA Regulations, 2014, as amended

Table 4: Reporting program

Type of reporting	Reporting Frequency	Authority to report to
Construction Phase		
Monthly independent ECO compliance audits	Monthly, for the duration of the construction phase	Competent Authority (DEDECT)
Post-construction phase independent ECO compliance audit	Once-off, upon completion of the construction phase	Competent Authority (DEDECT)
Operational Phase		
Monthly independent ECO compliance audits	N/A – Internal	N/A – Internal
Annual external ECO compliance audits	Annually	Competent Authority (DEDECT)

9. ENVIRONMENTAL AWARENESS PLAN

The applicant will ensure that its employees are adequately informed of the environmental risks that may result from work that they conduct onsite and how these risks must be dealt with in order to avoid pollution or the degradation of the environment, through the implementation of this Environmental Awareness Plan.

The Environmental Awareness Plan for the Vlakkfontein Breeder Farm Expansion consists of two parts, namely, initial Induction Training and ongoing job-specific, Toolbox-talk Training. The same training material will be utilised during both the Induction Training and Toolbox-talk Training.

Induction Training

Before any employees or contactors commence work at the project site, each individual must undergo an Induction Training session. This is required during the following phases of the proposed project:

- Pre-Construction phase;
- Construction phase (including rehabilitation); and
- Operational phase.

An attendance register must be kept by the Applicant and each individual who has completed the Induction Training must complete the attendance register. This will also function as an acknowledgement that each individual has understood the training received.

Toolbox-talk Training

Toolbox-talk Training must be conducted biannually during the operational phase of the proposed development and all operational employees must attend these sessions.

An attendance register must be kept by the Applicant and each individual who has completed the Toolbox-talk Training must complete the attendance register. This will also function as an acknowledgement that each individual has understood the training received.

Training Material

The same material will be used for both the Induction Training and Toolbox-talk Training sessions and will cover the following topics:

- What is meant by the term “environment”;
- Why the environment requires protection;
- The environmental risks that may result from work that is performed at the project site, during the above mentioned phases of the project;
- How the identified risks may impact upon the environment;
- How the identified risks can be mitigated;
- The protection of workers who refuse to do environmentally hazardous work, as provided for in the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended;
- Environmental Management Programme conditions that are specifically applicable to employee’s work onsite;
- Fire-fighting procedures; and
- Hydrocarbon spill response procedure, including spill kit usage training.

The training can be presented in a verbal format if required.

10. SPECIFIC INFORMATION REQUIRED BY THE COMPETENT AUTHORITY

No specific information has been required by the Competent Authority at this stage of the application process.