Draft Basic Assessment Report

for

EAGLES PRIDE HATCHERY

WAGENBOOMSKOP

REF NO:

Prepared by:

Bucandi Environmental Solutions

BUCANDI
ENVIRONMENTAL SOLUTIONS
Environmental concerns? Consider it solved!

Project Manager: Dr. Hélen Prinsloo (P.h.D.)
(*Pr.Sci.Nat.*) Reg. No. 400108/11 (SACNASP)

July 2022

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1. INTRODUCTION AND BACKGROUND

1.1 Background

Eagles Pride Hatchery is proposing the construction of 30 breeder houses, 6 sites with 5 houses on each site with the capacity to hold up to 7 200 birds per house on Portion 10, 18, 21, 23, 32 & Remaining Extent of Portion 28 of Farm Wagenboomskop 415 JP, situated in Swartruggens District within Kgetlengrivier Local Municipality area. The proposed project triggers a Basic Assessment for certain listed activities under Listing 1 of NEMA (National Environmental Management Act, 1998). Bucandi Environmental Solutions (Bucandi) was requested by Eagles Pride Hatchery to conduct a Basic Assessment as part of the application for environmental authorisation.

1.2 Details of the project proponent

Company name: Eagles Pride Hatchery

Physical address: Portion 38 of the farm Roodeplaat 293 JR

Postal address: Private Bag X5, Montana Park, 0159

Contact person: Mr. Rudie Briel

Telephone number: 012 808-9930/1/2

Email address: rudie@kuipersgroup.co.za

1.3 Details of Environmental Assessment Practitioner (EAP)

Company name: Bucandi Environmental Solutions

Reg. No: 2009/087537/23

Physical address: 23 Burger Street
Viljoenskroon
9520

Postal address: P. O. Box 317
Viljoenskroon
9520

Project coordinator: Dr. Hélen Prinsloo

Telephone number: 076 682 4369

Email address: helen@bucandi.co.za

Qualification: Ph.D. (Conservation Management)

Experience: 15 years

Affiliation: SACNASP *Pri.Sci.Nat* 400108/11

Assistant: Anton Louw

Telephone number: 076 422 3484

Email address: info@bucandi.co.za

Please see Appendix G for a copy of the Curriculum Vitae for the EAP.

1.4 Details of specialists

No specialists have been used for this project at this time.

2. LOCATION OF PROPOSED ACTIVITY

The study area is located 5.6km south west of Swartruggens in the Northwest Province within the Bojanala Platinum District Municipality and Kgetlengrivier Local Municipality area.

(Appendix A). More specifically it is located on Portion 10, 18, 21, 23, 32 & Remaining Extent of Portion 28 of Farm Wagenboomskop 415 JP, at 25º4211.9" S; 26º40'03.9" E (Appendix A). A secondary road between Slurry (south) and Bewley (north) runs directly next to the site with a dirt road providing access to the site. See Appendix A for the locality map and layout plans.

21-digit Surveyor General code	T0IP00000000041500010 T0IP00000000041500018 T0IP00000000041500021 T0IP00000000041500023 T0IP00000000041500032 T0IP00000000041500028
Physical address and farm name	Portion 10, 18, 21, 23, 32 & Remaining Extent of Portion 28 of Farm Wagenboomskop 415 JP
GPS coordinates	25º42'14.0." S; 26º39'53.1" E **1 A** 25º42'10.2." S; 26º39'31.1" E **1 B** 25º42'15.6." S; 26º39'12.9" E **1 C** 25º41'24.7." S; 26º39'14.9" E **1 D** 25º41'35.3." S; 26º39'38.9" E **1 E** 25º41'47.8." S; 26º39'53.9" E **1 F**

3. SCOPE OF ACTIVITY

3.1 Listed activities triggered

The proposed activity triggers the following Listed Activities in terms of **Listing Notice 1 of Government Notice No. R327** published in Government Gazette No. 40772 of **7 April 2017** under the National Environmental Management Act, Act 107 of 1998:

Listing 1: (ACTIVITY NO. 5) The development and related operation of facilities or infrastructure for the concentration of (ii) more than 5 000 poultry per facility situated outside an urban area, excluding chicks younger than 20 days and (iv) more than 25 000 chicks younger than 20 days per facility situated outside an urban area.
(ACTIVITY NO. 27) The clearance of an area of 1 hectare or more, but less than 20 hectares of indigenous vegetation.
(ACTIVITY NO. 28) Residential, mixed, retail, commercial, industrial or institutional development where such land was used for agriculture, game farming, equestrian purposes or afforestation on or after 01 April 1998 and where such development (ii) will occur outside an urban area, where the total land to be developed is bigger than 1 hectare.
Listing 3: (ACTIVITY NO. 12) The clearance of an area of 300 square meters 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 (f) (ii) Within Critical biodiversity identified in bioregional plans.

3.2 Description of activity

The activity will entail the construction of 30 environmentally controlled poultry houses (108m x 15m each). Each house will have the capacity for 7 200 chickens. The new houses on site will be able to house up to 216 000 birds.
The project will entail the following:

- The clearance of 11.94 ha of indigenous vegetation, which is classified as Aquatic Ecological Support Area (ESA) 1 (all overlapping with Terrestrial ESA 1). This is assessed as Activity 1 in Section 8 below.
- The clearance of 2.97 ha of agricultural land (Aquatic Ecological Support Area (ESA) 2). This is assessed as Activity 2 in Section 8 below.
- Earthworks on 14.91 ha to prepare for 30 poultry houses (Assessed as Activity 3 in Section 8 below.)
- Construction of 30 semi - environmentally controlled poultry houses (108m x 15m) with capacity for 7 200 birds per house, totalling 216 000 birds (Assessed as Activity 4 in Section 8 below).
- A silo and water tank will be erected next to each house.
- Powerlines will be connected to each house from a new Eskom point.
- Pipelines will be connected to each house from a new borehole.
- The site will be fenced off with a 2.4m high electric fence.

3.3 Relevant legislation

Title of legislation, policy or guideline:	Administering authority:	Date:
National Environmental Management Act, Act No. 107 of 1998.	Department of Economic Development, Environment, Conservation and Tourism	1998
Listing 1 of regulation 327 promulgated under Chapter 5 of the National Environmental Management Act (NEMA, Act 107 of 1998) in Government Gazette 40772. Listed activity 5 (ii), (iv),27 & 28 (ii).		1998
Listing 3: 12 (h) (iv)		
National Water Act, Act No. 36 of 1998.	Department of Water Affairs	1998
Conservation of Agricultural Resources Act, Act No. 43 of 1983	North West Department: Agriculture and Rural Development	1983
Air Quality Act, Act No. 39 of 2004.	Ngaka Modiri Molema District Municipality	2004
Reg. 983 published on 22 November 2013 in GN 37054		2013
Heritage Act, Act No 25 of 1999.	South African Heritage Resources Act	1999
Meat Safety Act, Act 40 of 2000	Department of Agriculture, Forestry and Fisheries	2000
National Environmental Management: Waste Act, Act No. 59 of 2008	Department of Economic Development, Environment, Conservation and Tourism	2008
Listed Activities Reg. 921 published on 29 November 2013 in GN 37083		
Occupational Health and Safety Act, Act 85 of 1993	Department of Labour	1993
Noise regulation, 2003	Department of Health and Safety	2003
Environmental regulations for workplaces, 1987	Department of Labour	1987
		1990

Facility regulations,1990	Department of Labour	1986
General Health and Safety Regulations, 1986	Department of Labour	2009
Electrical Installation Regulations, 2009.	Department of Labour	1988
Electrical Machinery Regulations, 1988.	Department of Labour	2014
Construction Regulations, 2014	Department of Labour	

4. NEED AND DESIRABILITY OF THE PROJECT

4.1 Need for operation of the facility

The facility will provide increased food availability; in particular poultry products. Poultry is highly desirable as a food item across all income groups in South Africa. Internationally production of poultry has increased significantly over the past few years in line with increased consumer demands for production of poultry and expectations are that consumer demand will continue to increase. Due to overcrowding of present facilities, lack of additional facilities and therefore the potential for increased biological risk, suppliers have embarked on a process of establishing new facilities in order to overcome these problems and ensure the long-term sustainability and viability of the industry. The socio-economic value of the project will indirectly have a positive impact on the immediate area as well as cater for the increasing demand for poultry in the Northwest Province and nationally. At least 50 temporary employment opportunities will be created during the development and construction phase. At least 80 additional people will be permanently employed during the operational phase of the activity. Contractors are employed during the construction phase and additional employment opportunities are therefore created.

4.2 Preferred location

The R53 runs directly next to the site (450m west of the property boundary) that provides access to the property with existing farm roads providing access to the preferred site location. The preferred site located on indigenous vegetation that is currently used for game grazing. The slope on the site is varies between 1:121 and 1:39 meaning that the site is largely flat (see complete site description in Section 5.1).

5. PROJECT ALTERNATIVES

5.1 Property or location alternatives

See Appendix B for site photographs and Appendix C for the site plans.

Site alternative 1 A (preferred site)

This site is located on 29 789.60 m^2 of indigenous vegetation that is classified as Terrestrial ESA 1 and Aquatic ESA 1. The R53 runs directly next to the site (450m west of the property boundary) that provides access to the property with existing farm roads providing access to the preferred site location. S1 A is flat (slope = 1:25) and the costs and impacts of earthworks before construction will be minimal. A new Eskom point and boreholes will be connected to the proposed poultry houses. The site is located relatively high and stays dry year-round.

Site alternative 1 B (preferred site)

This site is located on 29 789.68 m^2 of agricultural land that is classified as Aquatic ESA 2. The R53 runs directly next to the site (450m west of the property boundary) that provides access to the property with existing farm roads providing access to the preferred site location. S1 A is flat (slope = 1:21) and the costs and impacts of earthworks before construction will be minimal. A new Eskom point and boreholes will be connected to the proposed poultry houses. The site is located relatively high and stays dry year-round.

Site alternative 1 C (preferred site)

This site is located on 29 789.68 m^2 of indigenous vegetation that is classified as Terrestrial ESA 1 and Aquatic ESA 1. The R53 runs directly next to the site (450m west of the property boundary) that provides access to the property with existing farm roads providing access to the preferred site location. S1 A is flat (slope = 1:25) and the costs and impacts of earthworks before construction will be minimal. A new Eskom point and boreholes will be connected to the proposed poultry houses. The site is located relatively high and stays dry year-round.

Site alternative 1 D (preferred site)

This site is located on 29 860.96 m^2 of indigenous vegetation that is classified as Terrestrial ESA 1 and Aquatic ESA 1. The R53 runs directly next to the site (450m west of the property boundary) that provides access to the property with existing farm roads providing access to the preferred site location. S1 A is flat (slope = 1:25) and the costs and impacts of earthworks before construction will be minimal. A new Eskom point and boreholes will be connected to the proposed poultry houses. The site is located relatively high and stays dry year-round.

Site alternative 1 E (preferred site)

This site is located on 29 860.93 m2 of indigenous vegetation that is classified as Terrestrial ESA 1 and Aquatic ESA 1. The R53 runs directly next to the site (450m west of the property boundary) that provides access to the property with existing farm roads providing access to

the preferred site location. S1 A is flat (slope = 1:25) and the costs and impacts of earthworks before construction will be minimal. A new Eskom point and boreholes will be connected to the proposed poultry houses. The site is located relatively high and stays dry year-round.

Site alternative 1 F (preferred site)

This site is located on 29 860.92 m2 of indigenous vegetation that is classified as Terrestrial ESA 1 and Aquatic ESA 1. The R53 runs directly next to the site (450m west of the property boundary) that provides access to the property with existing farm roads providing access to the preferred site location. S1 A is flat (slope = 1:25) and the costs and impacts of earthworks before construction will be minimal. A new Eskom point and boreholes will be connected to the proposed poultry houses. The site is located relatively high and stays dry year-round.

5.2 Activity alternatives

Preferred activity

Semi - Environmentally controlled poultry houses (approximately 108m X 15m) will be constructed with a capacity for 7 300 birds per house. A water tank and a silo for food will be constructed next to each house with underground pipelines connecting the water tanks with the new boreholes. A 2.4m electric fence with an entry gate (with biosecurity control measures) will be constructed around the site. A biosecurity house will be erected containing an office as well as a bathroom and showers. Electricity lines will be connected to the water tanks and all the houses.

Activity alternative 2

The site lay-out will be exactly as for A1, but the chicken houses will be open and not environmentally controlled. The differences between closed houses (A1) and open houses (A2) are as follows:

	A1 – Environmentally controlled	A2 – Open
Isolation value (R)	12	1.5
Heat capacity	1 100kW	1 500kW
Chickens/m^2	14	13
Energy saving	20%	0%

No-go alternative

The site is currently used as grazing for game and will continue to be used as such if the proposed development does not go ahead.

5.3 Design or layout alternatives

Apart from the site alternatives, no design or layout alternatives are being considered.

5.4 Technology alternatives

No technology alternatives were considered for the proposed project.

5.5 Operational alternatives

No operational alternatives were considered for the proposed project.

5.6 The "no-go" activity alternative

The "no-go" alternative will entail using the land for grazing of cattle and game.

6. PUBLIC PARTICIPATION PROCESS

Please see Appendix D1 for a copy of the newspaper notice that was placed in "Beeld" on 7 April 2022.
Please see Appendix D2 for a photo of the notices placed at the site.
Please see Appendix D3 for the notifications that were sent to all the neighbours as well as the Local and District Municipalities and Department of Water and Sanitation on 7 April 2022.
Please see Appendix D4 for the Comments and Responses Report.
A copy of the draft BAR will be sent to all I&APs.

7. ENVIRONMENTAL ATTRIBUTES

7.1 Geographical attributes

7.1.1 Gradient of the site

The proposed site is located on a plateau with a gentle slope towards the north and northeast. The gradients for the six respective subsites are as follows:
Site 1A = 1:25; Site 1B = 1:21; Site 1C = 1:39; Site 1D = 1:88; Site 1E = 1:36; Site 1F = 1:23

7.1.2 Soils

The property is located on landtype Ae59. Soils for this landtype include the following:
Rock – 5%

Soil type	Depth (mm)	% Occurrence	% Clay in A horizon	% Clay in B horizon
Williamson Gs16, Mispah Ms10	50 – 300	24.4	15 - 35	
Msinga Hu26, Shorrocks Hu36	100 – 400	23.3	15 - 25	20 - 35
Msinga Hu26, Shorrocks Hu36	500 – 1 200+	16.9	15 - 25	20 - 35
Swartland Sw31, Nyoka Sw41	150 - 250	5.8	15 - 25	35 - 55
Glendale Sd21, Bokuil Sd10,	500 – 1 200+	5.1	12 - 35	18 - 45

Kinross Sd20				
Clansthal Hu24	600 – 1 200+	5.0	8 - 13	10 - 15
Longlands Lo21, Albany Lo22, Waldene Lo12	500 - 900	4.4	12 - 30	25 - 45
Arniston Va31, Waterval Va11, Stanger Bo11	250 - 900	3.1	15 - 45	35 - 55
Sibasa We13	300 - 450	2.9	15 - 25	35 - 55
Glendale Sd21, Bokuil Sd10, Kinross Sd20	200 - 400	2.2	12 - 35	18 - 45
Dunbar Gc24, Southwold Cv26	300 - 900	2.2	8 - 20	10 - 25

The landtype is dominated by soils with low clay content in the A horizon. Soils with a high clay content (above 40%) in the A horizon (typically associated with proximity to water bodies and / or a shallow water table) occur only at very low percentages.

7.1.3 Geology

Geology for this landtype consist predominantly of shale, slate, siltstone and hornfels of the Strubenkop, Silverton and Timeball Hill Formations, as well as quartzite of the Timeball Hill and Daspoort Formations with diabase sills present. Rocks possess a regional dip of 7 degrees to the north and north-east.

7.2 Biological attributes

7.2.1 Ground cover and vegetation

The majority of the proposed site is located on indigenous vegetation in a relatively good condition, with only Site 1B occurring on an old agricultural land. The vegetation type that historically occurred and mostly still occur is Moot Plains Bushveld. This vegetation forms part of the Central Bushveld Bioregion in the Savanna Biome. It covers an area of 2 900.82 km^2 mainly in the North-West and Gauteng Provinces. The main belt occurs immediately south of the Magaliesberg from the Selons River Valley in the west through Maanhaarrand, filling the valley bottom of the Magalies River, proceeding east of the Hartebeestpoort Dam between the Magaliesberg and Daspoort mountain ranges to Pretoria. It also occurs as a narrow belt immediately north of the Magaliesberg from Rustenburg in the west to just east of the Crocodile River in the east, and also south of the Swartruggens–Zeerust line. It occurs at an altitude of 1 050 – 1 450 mamsl. It is rated Vulnerable with 72.5% remaining and a conservation target of 19%. It is currently poorly protected with 13% statutorily conserved mainly in the Magaliesberg Nature Area. About 28% has beentransformed mainly by cultivation and urban and built-up areas. It has very scattered occurrences to sometimes dense patches in places of various alien plants including *Cereus jamacaru*, *Eucalyptus* species, *Jacaranda mimosifolia*, *Lantana camara*, *Melia azedarach* and *Schinus* species. Erosion is mainly very low to low and moderate in some areas.

7.2.2 Biodiversity classification

The majority of the proposed site is located Terrestrial and Aquatic Ecological Support Area (ESA) 1 and 2.

7.2.3 Sensitive areas

There are no specifically sensitive areas and the majority of the proposed is expected to have medium sensitivity rating. An ecological assessment needs to be conducted in order to ensure that no area of high sensitivity is impacted on by the proposed development..

7.3 Physical attributes

7.3.1 Waste generation

Activity alternative 1 (Preferred alternative)

Construction Phase

An estimated 12.8m^3 of solid waste will be produced per month during the Construction Phase. Waste is expected to be limited to packaging materials (shrink wrap, cardboard) and litter generated by the construction staff. It will also contain leftover building materials such as cement or concrete, and PVC panelling. All the leftover building materials will be removed by the building contractor. Waste will be recycled as far as possible. Non-recyclable waste will be sorted into different types and disposed of at a suitably licensed waste disposal facility.

Construction phase solid waste will be disposed of at the nearest licensed waste disposal site. Waste considered unsuitable for municipal waste disposal sites will be disposed of at a suitably licensed hazardous waste disposal facility (e.g. WasteTech).

Operational Phase

An estimated 242.85m^3 of solid waste will be produced per month during the Operational Phase. Solid waste will be disposed of at the nearest licensed waste disposal. Waste considered unsuitable for municipal waste disposal sites will be disposed of at a suitably licensed hazardous waste disposal facility (e.g. WasteTech). Any general waste such as litter generated by staff will be disposed of at the nearest licensed waste disposal site.

Manure Removal

Approximately 3.5 tons of chicken manure will be produced monthly. Chickens are kept for a 55-week cycle. Manure will be removed on a regular basis and removed by a contractor

Disposal of Mortalities

Approximately 1 860 dead chickens will be produced monthly. The carcasses are removed on a daily basis and collected by a contractor.

Activity alternative 2

Construction Phase

An estimated 12.8m^3 of solid waste will be produced per month during the Construction Phase. Waste is expected to be limited to packaging materials (shrink wrap, cardboard) and litter generated by the construction staff. It will also contain leftover building materials such as cement or concrete, and PVC panelling. All the leftover building materials will be removed by the building contractor. Waste will be recycled as far as possible. Non-

recyclable waste will be sorted into different types and disposed of at a suitably licensed waste disposal facility.
Construction phase solid waste will be disposed of at the nearest licensed waste disposal site. Waste considered unsuitable for municipal waste disposal sites will be disposed of at a suitably licensed hazardous waste disposal facility (e.g. WasteTech).

Operational Phase
An estimated 242.85m^3 of solid waste will be produced per month during the Operational Phase. Solid waste will be disposed of at the nearest licensed waste disposal. Waste considered unsuitable for municipal waste disposal sites will be disposed of at a suitably licensed hazardous waste disposal facility (e.g. WasteTech). Any general waste such as litter generated by staff will be disposed of at the nearest licensed waste disposal site.

Manure Removal
Approximately 3.5 tons of chicken manure will be produced monthly. Chickens are kept for a 55-week cycle. Manure will be removed on a regular basis and removed by a contractor
Disposal of Mortalities
Approximately 1 860 dead chickens will be produced monthly. The carcasses are removed on a daily basis and collected by a contractor

No-go alternative
No solid waste will be produced.

7.3.2 Liquid effluent

Activity alternative 1 (Preferred alternative)

After the completion of each cycle, the chickens and all manure are removed. After removal, all surfaces are sprayed with foam-based detergent that is left to evaporate. Upon completion of this process, the floors of the houses are washed with water only that will be allowed to soak into the soil surrounding the facility.

Activity alternative 2

After the completion of each cycle, the chickens and all manure are removed. After removal, all surfaces are sprayed with foam-based detergent that is left to evaporate. Upon completion of this process, the floors of the houses are washed with water only that will be allowed to soak into the soil surrounding the facility.

No-go alternative
No liquid effluent will be produced.

7.3.3 Atmospheric emissions

Activity alternative 1 (Preferred alternative)
Since the houses will be semi - environmentally controlled poultry houses, the amounts of dust, ammonia and odours released into the atmosphere will be minimal.

Activity alternative 2
If this activity alternative is chosen, open houses will be used and relatively high amounts of dust, ammonia and odours will be released into the atmosphere, being of some discomfort to neighbours.

No-go alternative
No liquid effluent will be produced.

7.3.4 Noise

Activity alternative 1 (Preferred alternative)
Low levels of noise will be produced by the chickens in the houses.

Activity alternative 2
Low levels of noise will be produced by the chickens in the houses.

No-go alternative
Low levels of noise will be produced during cultivation of the fields.

7.3.5 Water use

Activity alternative 1 (Preferred alternative)
The activity will use approximately 1 296 000 litres of water per month. This will be sourced from groundwater through a new borehole.

Activity alternative 2
The activity will use approximately 1 296 000 litres of water per month. This will be sourced from groundwater through a new borehole.

No-go alternative
The activity will not use water.

7.3.6 Energy efficiency

Activity alternative 1 (Preferred alternative)
Because of a higher isolation (R) value (12 for semi - environmentally controlled poultry houses 1.5 for open houses) the use of fans for cooling in summer are much lower in closed houses than in open houses. During winter, closed houses also retain heat much longer and need substantially less heating than open houses. Energy efficient fans are also used. All the houses are fitted with a day light switch in order for outside lights only to be on when absolutely necessary. All lights inside the house make use of energy saving light bulbs.

Activity alternative 2
Open houses have a much lower isolation (R) value (12 for semi - closed houses versus 1.5 for open houses), but canvas “walls” are opened or closed to regulated the temperature inside the houses to a degree. During winter, open houses have a poor heat retention rate and more energy is needed for heating. All the houses are fitted with a day light switch in

order for outside lights only to be on when absolutely necessary. All lights inside the house make use of energy saving light bulbs.

No-go alternative
The activity will not use electricity.

7.4 Human environment

7.4.1 Heritage and cultural attributes

There are no artefacts of cultural or heritage importance at the site. If any artefacts are discovered construction will seize and a Heritage Specialist will be contacted.

7.4.2 Socio-economic attributes

The Kgetlengrivier Local Municipality is a Category B municipality located in the south-eastern part of the North West Province and forms part of the Bojanala Platinum District. It borders Moses Kotane in the north and Rustenberg in the west. The municipality is situated on the N4 toll road from Pretoria to Botswana and acts as a gateway from Johannesburg to Botswana. It is one of five municipalities in the district.
The area's rich environment and natural resource base provides opportunities for agriculture and slate quarry development. The area's mining activities are those related to diamonds, slate and aggregate sand. It has a strong competitive advantage in terms of its climate, biodiversity and numerous dams.
Area: 3 973km²
Cities/Towns: Derby, Koster, Swartruggens
Main Economic Sectors: Agriculture, mining

Education (aged 20 +):
No schooling: 8.5%
Higher education: 27.3%
Matric: 7%

The proposed development will contribute to social and economic uplifted through the addition of capital value and income generation to the region, as well as job creation. The table below summarises the expected relevant contributions.

Aspect	Activity alternative 1 (preferred activity)	Activity alternative 2	No-go alternative
Capital value	R 100 000 000.00	R 50 000 000	R 0
Annual income generation	R 200 000 000	R 200 000 000	R 0
Employment opportunities during construction	50	50	0
Value of employment opportunities during construction	R 985 600.00	R 985 600.00	R 0
Percentage to previously disadvantaged	95%	95%	0
Permanent employment opportunities	80	80	0
Value of permanent employment for 10 years	R 6 988 800	R 6 988 800	R 0
Percentage to disadvantaged	90%	90%	0

8. POTENTIAL IMPACTS

The impact assessment in this section considered the following activities and the impact of each of the activities:
Activity 1: The clearance of 11.94 ha of indigenous vegetation.
Activity 2: The clearance of 2.97 ha of agricultural land.
Activity 3: Earthworks on a total of 6.48 to prepare for the construction of 21 poultry houses.
Activity 4: Construction of the poultry facility.
Activity 5: Operation of the poultry facility.

8.1 Full description of impacts and risks identified

Impacts and risks identified including the nature, significance, consequence, extent, duration and probability of the impacts and the degree to which these impacts can be mitigated

8.1.1 Activity alternative 1 – Construction of Thirty semi - environmentally controlled poultry houses (preferred activity)

*Activity	Specific Impact & Risk	Extent	Duration	Severity	Degree of Certainty	Probability	Significance prior to mitigation	Status of Impact	Reversibility/Mitigation Measures to be Implemented
1-4	Air pollution on a local level.	2	1	2	1	3	Low	Negative	This impact is not reversible, but can be completely avoided by the following measures: Dust control by means of watering if necessary. Vehicles to be regularly serviced and well-tuned. Operations to be undertaken during working hours only.
1-4	Contamination of soils, surface water and groundwater due to leakages	1	1	2	3	3	Low	Negative	This impact is not reversible, but can be completely avoided by the following measures: Machinery must be properly

*Activity	Specific Impact & Risk	Extent	Duration	Severity	Degree of Certainty	Probability	Significance prior to mitigation	Status of Impact	Reversibility/Mitigation Measures to be Implemented
	from vehicles entering and exiting the site.								maintained at all times. Servicing of machinery must take place only in specific demarcated and protected areas. Measures must be taken for the proper disposal of oils, grease, oil filters, rags, etc.
4,5	Pollution of soil, surface water and groundwater due to ineffective management of sewage and general waste management.	3	3	3	2	3	Medium	Negative	This impact is not reversible, but can be completely avoided by the following measures: Proper ablution facilities must be provided i.e. chemical toilets at appropriate locations on site if necessary or existing facilities must be used. Workers must be made aware of the risk of soil water contamination. Domestic waste must be disposed of in appropriate containers, and removed to the nearest municipal waste-disposal site as part of existing waste management system.
5	Pollution of soil, surface water and groundwater due to ineffective manure disposal.	3	3	3	2	3	Medium	Negative	This impact is not reversible, but can be completely avoided by the following measures: The manure is removed on a regular basis and sold to a

*Activity	Specific Impact & Risk	Extent	Duration	Severity	Degree of Certainty	Probability	Significance prior to mitigation	Status of Impact	Reversibility/Mitigation Measures to be Implemented
									contractor. Manure should be handled according to Odour Management Plan (Appendix F2), Waste Management Plan (Appendix F3) and Biosecurity Plan (Appendix F4).
5	Pollution of soil, surface water and groundwater due to ineffective disposal carcasses.	3	3	3	2	3	Medium	Negative	This impact is not reversible, but can be completely avoided by the following measures: The carcasses are removed on a daily basis and collected by a contractor.
1-5	Soil compaction and loss of fertility.	1	1	2	3	3	Low	Negative	This impact is not reversible, but can be completely avoided by the following measures: Appropriate measures must be taken to reduce the risk of erosion from unprotected slopes i.e. diversion berms, ponding pools, and not exceeding angles of repose of stockpiled material. All unprotected slopes must be rehabilitated concurrent with construction.
3-5	Increased fire risk	1	1	2	3	3	Low	Negative	This impact is not reversible, but can be completely avoided by the following measures:

*Activity	Specific Impact & Risk	Extent	Duration	Severity	Degree of Certainty	Probability	Significance prior to mitigation	Status of Impact	Reversibility/Mitigation Measures to be Implemented
									Cooking and heating fires permitted only in designated areas with appropriate safety measures. Adequate firefighting equipment must be available, as prescribed by the relevant safety standards and legislation.
1-5	Disturbance of fauna	3	3	3	2	3	Medium	Negative	This impact is not reversible, but can be completely avoided by the following measures: Only small animals occur in this area e.g. small rodents and reptiles. The area is surrounded by similar habitat and fauna is expected to move voluntarily to surrounding areas. No fauna found on the site will be killed.
1-4	Disturbance of flora	1	5	5	1	5	High	Negative	This impact is not reversible and cannot be avoided. Clearance of vegetation should be kept at a minimum and restricted to the proposed site boundary.

*Activity	Specific Impact & Risk	Extent	Duration	Severity	Degree of Certainty	Probability	Significance prior to mitigation	Status of Impact	Reversibility/Mitigation Measures to be Implemented
1	Removal of indigenous vegetation	1	5	5	1	5	High	Negative	In the event of any Protected or Declining species being recorded within the approved development site, permission for the removal of such species should be obtained from the Permitting Office of DEDECT, and the appropriate in situ and / or ex situ conservation measures should be developed and implemented with the approval of the DEDECT conservation authorities. Where feasible, protected or Declining species can be translocated to degraded or untransformed parts of the study area which provide potentially suitable habitat, but such translocations will have to be carried out in a way that ensures no ecological degradation of the host habitat occurs, and will have to be evaluated by an ecologist for each species and each potential translocation area. Alternatively, protected or Declining species can be rescued and donated to appropriate conservation and

*Activity	Specific Impact & Risk	Extent	Duration	Severity	Degree of Certainty	Probability	Significance prior to mitigation	Status of Impact	Reversibility/Mitigation Measures to be Implemented
									research institutions such as the Walter Sisulu National Botanical Garden (Roodepoort) or the Pretoria National Botanical Garden of SANBI Where possible, development should avoid habitat identified with high ecological sensitivity. According to the AIS regulations all declared alien weeds must be effectively controlled or eradicated.
1-4	Safety on the construction site	4	5	5	3	3	High	Negative	This impact is not reversible, but can be completely avoided by the following measures: Access to the construction site to be controlled at all times.
1-5	Degradation of aesthetics	3	5	3	2	4	High	Negative	This impact is not reversible, but can be mitigated and minimised. If needed, an additional line of trees will be planted to minimise visual impact.
1-5	The construction and operation of the breeder facility will provide employment opportunities to the	4	4	3	1	5	High	Positive	No mitigation suggested.

*Activity	Specific Impact & Risk	Extent	Duration	Severity	Degree of Certainty	Probability	Significance prior to mitigation	Status of Impact	Reversibility/Mitigation Measures to be Implemented
	local communities.								

8.1.2 Activity alternative 2 – Construction of open poultry houses

*Activity	Specific Impact & Risk	Extent	Duration	Severity	Degree of Certainty	Probability	Significance prior to mitigation	Status of Impact	Reversibility/Mitigation Measures to be Implemented
1-4	Air pollution on a local level.	2	1	2	1	3	Low	Negative	This impact is not reversible, but can be completely avoided by the following measures: Dust control by means of watering if necessary. Vehicles to be regularly serviced and well-tuned. Operations to be undertaken during working hours only.
1-4	Contamination of soils, surface water and groundwater due to leakages from vehicles entering and exiting the site.	1	1	2	3	3	Low	Negative	This impact is not reversible, but can be completely avoided by the following measures: Machinery must be properly maintained at all times. Servicing of machinery must take place only in specific demarcated and protected areas. Measures must be taken for the proper disposal of oils, grease, oil filters, rags, etc.
4,5	Pollution of soil, surface water and	3	3	3	2	3	Medium	Negative	This impact is not reversible, but can be completely avoided by the

*Activity	Specific Impact & Risk	Extent	Duration	Severity	Degree of Certainty	Probability	Significance prior to mitigation	Status of Impact	Reversibility/Mitigation Measures to be Implemented
	groundwater due to ineffective management of sewage and general waste management.								following measures: Proper ablution facilities must be provided i.e. chemical toilets at appropriate locations on site if necessary or existing facilities must be used. Workers must be made aware of the risk of soil water contamination. Domestic waste must be disposed of in appropriate containers, and removed to the Nearest municipal waste-disposal site as part of existing waste management system.
5	Pollution of soil, surface water and groundwater due to ineffective manure disposal.	3	3	3	2	3	Medium	Negative	This impact is not reversible, but can be completely avoided by the following measures: The manure is removed on a regular basis and sold to a contractor. Manure should be handled according to Odour Management Plan (Appendix F2), Waste Management Plan (Appendix F3) and Biosecurity Plan (Appendix F4).

*Activity	Specific Impact & Risk	Extent	Duration	Severity	Degree of Certainty	Probability	Significance prior to mitigation	Status of Impact	Reversibility/Mitigation Measures to be Implemented
5	Pollution of soil, surface water and groundwater due to ineffective disposal carcasses.	3	3	3	2	3	Medium	Negative	This impact is not reversible, but can be completely avoided by the following measures: The carcasses are removed on a daily basis and collected by a contractor.
1-5	Soil compaction and loss of fertility.	1	1	2	3	3	Low	Negative	This impact is not reversible, but can be completely avoided by the following measures: Appropriate measures must be taken to reduce the risk of erosion from unprotected slopes i.e. diversion berms, ponding pools, and not exceeding angles of repose of stockpiled material. All unprotected slopes must be rehabilitated concurrent with construction.
3-5	Increased fire risk	1	1	2	3	3	Low	Negative	This impact is not reversible, but can be completely avoided by the following measures: Cooking and heating fires permitted only in designated areas with appropriate safety measures. Adequate firefighting equipment must be available, as prescribed by the relevant safety standards and

*Activity	Specific Impact & Risk	Extent	Duration	Severity	Degree of Certainty	Probability	Significance prior to mitigation	Status of Impact	Reversibility/Mitigation Measures to be Implemented
									legislation.
1-5	Disturbance of fauna	3	3	3	2	3	Medium	Negative	This impact is not reversible, but can be completely avoided by the following measures: Only small animals occur in this area e.g. small rodents and reptiles. The area is surrounded by similar habitat and fauna is expected to move voluntarily to surrounding areas. No fauna found on the site will be killed.
1-4	Disturbance of flora	1	5	5	1	5	High	Negative	This impact is not reversible and cannot be avoided. Clearance of vegetation should be kept at a minimum and restricted to the proposed site boundary.
1	Removal of indigenous vegetation	1	5	5	1	5	High	Negative	In the event of any Protected or Declining species being recorded within the approved development site, permission for the removal of such species should be obtained from the Permitting Office of DEDECT, and the appropriate in situ and / or ex situ conservation measures should be developed and implemented with the approval of the DEDECT conservation authorities. Where feasible, protected or Declining species can

*Activity	Specific Impact & Risk	Extent	Duration	Severity	Degree of Certainty	Probability	Significance prior to mitigation	Status of Impact	Reversibility/Mitigation Measures to be Implemented
									be translocated to degraded or untransformed parts of the study area which provide potentially suitable habitat, but such translocations will have to be carried out in a way that ensures no ecological degradation of the host habitat occurs, and will have to be evaluated by an ecologist for each species and each potential translocation area. Alternatively, protected or Declining species can be rescued and donated to appropriate conservation and research institutions such as the Walter Sisulu National Botanical Garden (Roodepoort) or the Pretoria National Botanical Garden of SANBI Where possible, development should avoid habitat identified with high ecological sensitivity. According to the AIS regulations all declared alien weeds must be effectively controlled or eradicated.
1-4	Safety on the construction site	4	5	5	3	3	High	Negative	This impact is not reversible, but can be completely avoided by the

*Activity	Specific Impact & Risk	Extent	Duration	Severity	Degree of Certainty	Probability	Significance prior to mitigation	Status of Impact	Reversibility/Mitigation Measures to be Implemented
									following measures: Access to the construction site to be controlled at all times.
1-4	Degradation of aesthetics	3	5	3	2	4	High	Negative	This impact is not reversible, but can be mitigated and minimised. If needed, an additional line of trees will be planted to minimise visual impact.
1-4	The construction and operation of the breeder facility will provide employment opportunities to the local communities.	3	4	3	1	5	High	Positive	No mitigation suggested.

8.1.3 “No-go” alternative – Grazing

*Activity	Specific Impact & Risk	Extent	Duration	Severity	Degree of Certainty	Probability	Significance prior to mitigation	Status of Impact	Reversibility/Mitigation Measures to be Implemented
N/A	Air pollution on a local level.	2	1	2	1	3	Low	Negative	No additional activity will take place, only agriculture that already exists on the site. No mitigation recommended.

*Activity	Specific Impact & Risk	Extent	Duration	Severity	Degree of Certainty	Probability	Significance prior to mitigation	Status of Impact	Reversibility/Mitigation Measures to be Implemented
N/A	Contamination of soils, surface water and groundwater due to leakages from vehicles entering and exiting the site.	2	1	2	1	3	Low	Negative	No additional activity will take place, only agriculture that already exists on the site. No mitigation recommended.
N/A	Pollution of soil, surface water and groundwater due to ineffective management of sewage and general waste management.	2	1	2	1	3	Low	Negative	No additional activity will take place, only agriculture that already exists on the site. No mitigation recommended.
N/A	Pollution of soil, surface water and groundwater due to ineffective manure disposal.	2	1	2	1	3	Low	Negative	No additional activity will take place, only agriculture that already exists on the site. No mitigation recommended.

*Activity	Specific Impact & Risk	Extent	Duration	Severity	Degree of Certainty	Probability	Significance prior to mitigation	Status of Impact	Reversibility/Mitigation Measures to be Implemented
N/A	Pollution of soil, surface water and groundwater due to ineffective disposal carcasses.	2	1	2	1	3	Low	Negative	No additional activity will take place, only agriculture that already exists on the site. No mitigation recommended.
N/A	Soil compaction and loss of fertility.	2	1	2	1	3	Low	Negative	No additional activity will take place, only agriculture that already exists on the site. No mitigation recommended.
N/A	Increased fire risk	2	1	2	1	3	Low	Negative	No additional activity will take place, only agriculture that already exists on the site. No mitigation recommended.

*Activity	Specific Impact & Risk	Extent	Duration	Severity	Degree of Certainty	Probability	Significance prior to mitigation	Status of Impact	Reversibility/Mitigation Measures to be Implemented
N/A	Disturbance of fauna	2	1	2	1	3	Low	Negative	No additional activity will take place, only agriculture that already exists on the site. No mitigation recommended.
N/A	Safety on the construction site	2	1	2	1	3	Low	Negative	No additional activity will take place, only agriculture that already exists on the site. No mitigation recommended.
N/A	Degradation of aesthetics	2	1	2	1	3	Low	Negative	No additional activity will take place, only agriculture that already exists on the site. No mitigation recommended.

8.2 Methodology of determining impacts

- Various site visits were conducted by the EAP and information was gathered regarding the nature of the process and the baseline environment.
- Comments were gathered from Marico River Conservation Association in order to identify additional possible impacts that may have been overlooked.
- The significance of identified impacts was determined as follows:

- **Extent**

The extent of the impact refers to the spatial dimension to which an impact will be felt (i.e. site, study area, local, regional, or national scale). The criteria for rating the impact extent are described in more detail in Table 1**.**

Table 1: Extent of Impact

Extent					
Rating	1	2	3	4	5
Description	On site or the impact will be restricted to its immediate area	Study area Or the impact will be restricted to the site or route	Local Or the impact will affect an area up to 5 km from the site and route	Regional/Provincial Or the impact will be felt on a Local, district municipal or Provincial level	National/International Or the maximum extent of any impact

- **Duration**

In order to accurately describe the impact it is necessary to understand the duration and persistence of an impact in the environment. The criteria for rating the duration of the impact is described in more detail in Table 2.

Table 2: Duration of Impact

Duration					
Rating	1	2	3	4	5
Description	Temporary Or the impact will occur very sporadically or less than 1 year from commencement of activity	Short-term Or the impact will continue to occur for a period between 1 to 5 years from commencement of activity	Medium term Or the impact will continue to occur for a period between 5 to 10 years from commencement of activity	Long term Or the impact will continue to occur for a period longer than 10 years from commencement of activity	Permanent Or the impact will be continue until the conclusion of activity

- **Severity**

A description must be given as to whether an impact is destructive, or benign. It determines whether the intensity of the impact on the natural environment or society is permanently, significantly changes its functionality, or slightly alters it. The mitigation potential must be determined for each impact. If limited information or expertise exists, estimates based on experience will be made. The criteria for rating the severity of the impact are described in more detail in Table 3.

Table 3: Severity of Impact

Severity					
Rating	1	2	3	4	5
Description	Temporary impact easily reversible.	Short-term impact. Low cost to mitigate	Medium term impact, which require	Long term impact High cost to mitigate	Permanent impact Prohibitive cost to

Severity					
	Insignificant change or deterioration or disturbance Or improvement of natural and social environments	Small Moderate change or deterioration or disturbance Or improvement of natural and social environments	substantial cost to mitigate. Potential to mitigate and potential to reverse impact Significant change or deterioration or disturbance Or improvement of natural and social environments	Possible to mitigate Very significant change or deterioration or disturbance Or improvement of natural and social environments	mitigate Little or no mechanism to mitigate Irreversible Disastrous change or deterioration or disturbance or improvement of natural and social environments

- **Degree of certainty**

As with all studies it is not possible to be 100% certain of all facts and for this reason a standard “Degree of certainty” scale is used as discussed in Table 4.

Table 4: Degree of Certainty of Impact Occurrence

Degree of Certainty					
Rating	1	2	3	4	5
Description	Definite Or more than 90% sure of the fact or the likelihood of the impact occurring	Probable Or between 70% and 90% sure of the fact or the likelihood of the impact occurring	Possible Or between 40% and 70% sure of the fact or the likelihood of the impact occurring	Unsure Or less than 40% sure of a the fact or the likelihood of the impact occurring.	Unknown or the consultant or specialist believes an assessment is not possible even with additional research.

- **Probability**

The criteria used for rating the likelihood of impact occurrence are described in more detail in Table 5.

Table 5: Probability of Impact Occurrence

Probability					
Rating	1	2	3	4	5
Description	Impossible Or the impact will not occur	Improbable Or the possibility of the impact occurring is very low	Probable Or there is a possibility that the impact will occur, provision must be provided	Highly probable Or It is most likely that the impact will occur at some stage, provision must be provided	Definite Or the impact will take place regardless of any prevention plans and there can only be relied on mitigation measures to contain the impact

- **Significance**

Evaluating the significance of environmental impacts is a critical component of impact analysis. The matrix uses the consequence and the probability of the different activities and associated impacts to determine the significance of the impacts. Consequence is determined by the sum total of criteria like extent, duration and severity, degree of certainty of impact as well as compliance to applicable legislation. Values of 1-5 are assigned to each of the different criteria to determine the overall consequence, which is divided by 3 to give a criterion rating.

The overall consequence and probability rating are multiplied to give a final significance rating. The values as shown in the following table are then used to rank the significance. It must be said however that in the end, a subjective judging of an impact can still be done, but the reasons for doing so must be qualified. The matrix used to determine the significance of each of the identified impact in this study is shown in Table 6.

Table 6: Impact Significance Matrix

Impact Significance Matrix					
Rating	Very Low	Low	Medium	High	Very High
	1-4	5-10	11-15	16-20	21-25+
Description	There is little or no impact at all	Impact is of a low order and therefore likely to have little real effect In the case of adverse impacts: mitigation and or remedial activity is either easily achieved or little will be required, or both In the case of beneficial impacts, alternative means for achieving this benefit are likely to be easier, cheaper, more effective, less time consuming, or some combination of these.	Impact is real but not substantial in relation to other impacts, which might take effect within the bounds of those which could occur In the case of adverse impacts: mitigation and or remedial activity are both feasible and fairly easily possible In the case of beneficial impacts: other means of achieving this benefit are about equal in time, cost, effort, etc.	Impact is of substantial order within the bounds of impacts which could occur In the case of adverse impacts: mitigation and or remedial activity are feasible but difficult, expensive, time- consuming or some combination In the case of beneficial impacts, other means of achieving this benefit are feasible but they are more difficult, expensive, time-consuming or some combination of these.	Of the highest order possible within the bounds of impacts which could occur In the case of adverse impacts: there is no possible mitigation and or remedial activity which could offset the impact In the case of beneficial impacts, there is no real alternative to achieving this benefit.

Table 7: How to Apply the Rating Scale

Consequence
Impact Significance = (Extent + Duration + Severity + Degree of Certainty)/3] X Probability

8.3 Summary of positive and negative impacts

Specific impact or risk	Preferred activity (Activity alternative 1)	Activity alternative 2	"No-go" alternative
Air pollution on a local level.	Negative	Negative	No impact
Contamination of soils, surface water and groundwater due to leakages from vehicles entering and exiting the site.	Negative	Negative	Negative
Pollution of soil, surface water and groundwater due to ineffective management of sewage and general waste management.	Negative	Negative	Negative
Pollution of soil, surface water and groundwater due to ineffective manure disposal.	Negative	Negative	No impact
Pollution of soil, surface water and groundwater due to ineffective disposal carcasses.	Negative	Negative	No impact
Soil compaction and loss of fertility.	Negative	Negative	No impact
Increased fire risk	Negative	Negative	No impact
Disturbance of fauna	Negative	Negative	No impact
Disturbance of flora	Negative	Negative	No impact
Removal of indigenous vegetation	Negative	Negative	No impact
Safety on the construction site	Negative	Negative	No impact
Degradation of aesthetics	Negative	Negative	Negative
The construction and operation of the breeder facility will provide employment opportunities to the local communities.	Positive	Positive	No impact

8.4 Mitigation measures

Specific impact or risk	Mitigation measures
Air pollution on a local level.	Dust control by means of watering if necessary. Vehicles to be regularly serviced and well-tuned. Operations to be undertaken during working hours only.
Contamination of soils, surface water and groundwater due to leakages from vehicles entering and exiting the site.	Machinery must be properly maintained at all times. Servicing of machinery must take place only in specific demarcated and protected areas. Measures must be taken for the proper disposal of oils, grease, oil filters, rags, etc.
Pollution of soil, surface water and groundwater due to ineffective management of sewage and general waste management.	Proper ablution facilities must be provided i.e. chemical toilets at appropriate locations on site if necessary or existing facilities must be used. Workers must be made aware of the risk of soil water contamination. Domestic waste must be disposed of in appropriate containers, and removed to the nearest municipal waste-disposal site as part of existing waste management system.
Pollution of soil, surface water and groundwater due to ineffective manure disposal.	The manure is removed on a regular basis and sold to a contractor. Manure should be handled according to Odour Management Plan (Appendix F2), Waste Management Plan (Appendix F3) and Biosecurity Plan (Appendix F4).
Pollution of soil, surface water and groundwater due to ineffective disposal carcasses.	The carcasses are removed on a daily basis and collected by a contractor.
Soil compaction and loss of fertility.	Appropriate measures must be taken to reduce the risk of erosion from unprotected slopes i.e. diversion berms, ponding pools, and not exceeding angles of repose of stockpiled material. All unprotected slopes must be rehabilitated concurrent with construction.
Increased fire risk	Cooking and heating fires permitted only in designated areas with appropriate safety measures. Adequate firefighting equipment must be available, as prescribed by the relevant safety standards and legislation.

Disturbance of fauna	Only small animals occur in this area e.g. small rodents and reptiles. The area is surrounded by similar habitat and fauna is expected to move voluntarily to surrounding areas. No fauna found on the site will be killed.
Disturbance of flora	Removal of indigenous vegetation will be limited to the site boundaries shown on the layout plan.
Removal of indigenous vegetation	In the event of any Protected or Declining species being recorded within the approved development site, permission for the removal of such species should be obtained from the Permitting Office of DEDECT, and the appropriate in situ and / or ex situ conservation measures should be developed and implemented with the approval of the DEDECT conservation authorities. Where feasible, protected or Declining species can be translocated to degraded or untransformed parts of the study area which provide potentially suitable habitat, but such translocations will have to be carried out in a way that ensures no ecological degradation of the host habitat occurs, and will have to be evaluated by an ecologist for each species and each potential translocation area. Alternatively, protected or Declining species can be rescued and donated to appropriate conservation and research institutions such as the Walter Sisulu National Botanical Garden (Roodepoort) or the Pretoria National Botanical Garden of SANBI Where possible, development should avoid habitat identified with high ecological sensitivity. According to the AIS regulations all declared alien weeds must be effectively controlled or eradicated.
Safety on the construction site	Access to the construction site to be controlled at all times.
Degradation of aesthetics	If needed, an additional line of trees will be planted to minimise visual impact.
The construction and operation of the breeder facility will provide employment opportunities to the local communities.	No mitigation suggested.

8.5 Motivation for alternative selection

The proposed activity alternative was selected as it will have minimal impact on the environment after mitigation measures have been implemented.

8.6 Impact of activity on preferred location

The table below provides a description of the significance of each identified activity on the preferred site location throughout the life of the proposed project.

Specific risk or activity	Significance before mitigation	Significance after mitigation
Air pollution on a local level.	Low	Low
Contamination of soils, surface water and groundwater due to leakages from vehicles entering and exiting the site.	Low	Low
Pollution of soil, surface water and groundwater due to ineffective management of sewage and general waste management.	Medium	Low
Pollution of soil, surface water and groundwater due to ineffective manure disposal.	Medium	Low
Pollution of soil, surface water and groundwater due to ineffective disposal carcasses.	Medium	Low
Soil compaction and loss of fertility.	Low	Low
Increased fire risk	Low	Low
Disturbance of fauna	Medium	Low
Disturbance of flora	High	Medium
Removal of indigenous vegetation	High	Medium
Safety on the construction site	High	Low
Degradation of aesthetics	High	Low
The construction and operation of the breeder facility will provide employment opportunities to the local communities.	High	High

8.7 Description and assessment of each impact

1. **Impact:** Air pollution on a local level. Possibly caused by Activities 1-4.
This is not a cumulative impact.
Nature, significance and consequences:
Noise, dust and emissions due to excavation, stockpiling and transport of building material and removal of rubble may cause air pollution.

Extent	Duration	Probability	Reversibility	Irreplaceable loss	Degree of avoidance, management or mitigation
Study area	Short-term	Probable	Not reversible	No	This impact is not reversible, but can be completely avoided by implementing mitigation measures.

2. **Impact:** Contamination of soils, surface water and groundwater due to leakages from vehicles entering and exiting the site. Possibly caused by Activities 1-4.
This is not a cumulative impact
Nature, significance and consequences:
Contamination of surface and ground water can be caused by operation and servicing of light earthmoving and transport machinery, particularly oil spills and leakage.

Extent	Duration	Probability	Reversibility	Irreplaceable loss	Degree of avoidance, management or mitigation
Site specific	Temporary	Probable	Not reversible	No	This impact is not reversible, but can be completely avoided by implementing mitigation measures.

3. **Impact:** Pollution of soil, surface water and groundwater due to ineffective management of sewage and general waste management. Possibly caused by Activities 4 and 5.
This is not a cumulative impact
Nature, significance and consequences:
Uncontrolled sewage and domestic waste disposal by workers may cause surface and ground water pollution as well as unpleasant odours and possible health risks.

Extent	Duration	Probability	Reversibility	Irreplaceable loss	Degree of avoidance, management or mitigation
Local	Medium term	Probable	Not reversible	No	This impact is not reversible, but can be completely avoided by implementing mitigation measures.

4. **Impact:** Pollution of soil, surface water and groundwater due to ineffective manure disposal. Possibly caused by Activity 5.

This is not a cumulative impact
Nature, significance and consequences:
The chicken manure is an impact of only low adverse significance since it is a natural product of farming practice. As a resource it exerts a positive impact.

Extent	Duration	Probability	Reversibility	Irreplaceable loss	Degree of avoidance, management or mitigation
Local	Medium term	Probable	Not reversible	No	This impact is not reversible, but can be completely avoided by implementing mitigation measures.

5. **Impact:** Pollution of soil, surface water and groundwater due to ineffective disposal carcasses. Possibly caused by Activity 5.
This is not a cumulative impact
Nature, significance and consequences:
Disposal of chicken carcasses pose serious health, and soil and water pollution risks.

Extent	Duration	Probability	Reversibility	Irreplaceable loss	Degree of avoidance, management or mitigation
Local	Medium term	Probable	Not reversible	No	This impact is not reversible, but can be completely avoided by implementing mitigation measures.

6. **Impact:** Soil compaction and loss of fertility. Possibly caused by Activities 1-5.
This is not a cumulative impact
Nature, significance and consequences:
Soil compaction, loss of fertility and increased erosion from unprotected slopes associated with trenches and foundations, as a result of excavation and earthmoving. This will be aggravated in the event of heavy rain.

Extent	Duration	Probability	Reversibility	Irreplaceable loss	Degree of avoidance, management or mitigation
Site specific	Temporary	Probable	Not reversible	No	This impact is not reversible, but can be completely avoided by implementing mitigation measures.

7. **Impact:** Increased fire risk. Possibly caused by Activities 3-5.
This is not a cumulative impact
Nature, significance and consequences:

Uncontrolled cooking fires could cause veld fires. This would harm fauna and flora and pose a safety risk, particularly concerning vehicles and the adjacent land users.

Extent	Duration	Probability	Reversibility	Irreplaceable loss	Degree of avoidance, management or mitigation
Site specific	Temporary	Probable	Not reversible	No	This impact is not reversible, but can be completely avoided by implementing mitigation measures.

8. **Impact:** Disturbance of fauna. Possibly caused by Activities 1-5.
This is not a cumulative impact
Nature, significance and consequences:
Temporary disturbance of fauna, becoming permanent as operational phase commences. This impact is unavoidable, but of low significance since there are no endangered species present.

Extent	Duration	Probability	Reversibility	Irreplaceable loss	Degree of avoidance, management or mitigation
Local	Medium term	Probable	Not reversible	No	This impact is not reversible, but can be completely avoided by implementing mitigation measures.

9 **Impact:** Disturbance of flora. Possibly caused by Activities 1-4.
This is not a cumulative impact
Nature, significance and consequences:
Indigenous vegetation will be cleared within the proposed site boundary. This impact is unavoidable, but of low significance since there are no endangered species present.

Extent	Duration	Probability	Reversibility	Irreplaceable loss	Degree of avoidance, management or mitigation
Site	Long term	Definite	Not reversible	No	This impact is not reversible, but can be kept to a minimum by implementing mitigation measures.

10. **Impact:** Removal of indigenous vegetation. Possibly caused by Activity 1.
This is not a cumulative impact
Nature, significance and consequences:
Indigenous vegetation will be cleared within the proposed site boundary. This impact is unavoidable, but of low significance since there are no endangered species present.

Extent	Duration	Probability	Reversibility	Irreplaceable loss	Degree of avoidance, management or mitigation
Site	Long term	Definite	Not reversible	No	This impact is not reversible, but can be kept to a minimum by implementing mitigation measures.

11. **Impact:** Safety on the construction site. Possibly caused by Activities 1-4.
This is not a cumulative impact
Nature, significance and consequences:
Injuries to residents and construction workers can be cause as a result of construction activities.

Extent	Duration	Probability	Reversibility	Irreplaceable loss	Degree of avoidance, management or mitigation
Regional	Permanent	Probable	Not reversible	Yes	This impact is not reversible, but can be completely avoided by implementing mitigation measures.

12. **Impact:** Degradation of aesthetics. Possibly caused by Activities 1-5.
This is not a cumulative impact
Nature, significance and consequences:
Visual impacts may occur during the construction and operational phase as a result of vehicle exhausts, dust, bare unprotected areas, the possibility of littering and the presence of breeder houses.

Extent	Duration	Probability	Reversibility	Irreplaceable loss	Degree of avoidance, management or mitigation
Local	Permanent	Probable	Not reversible	Yes	This impact is not reversible, but can be completely avoided by implementing mitigation measures.

13. **Impact:** Economic benefit to the local communities. Possibly caused by Activities 1-5.
This is not a cumulative impact
Nature, significance and consequences:
The construction and operation of the breeder facility will provide employment opportunities to the local communities.

Extent	Duration	Probability	Reversibility	Irreplaceable loss	Degree of avoidance, management or mitigation

Extent	Duration	Probability	Reversibility	Irreplaceable loss	Degree of avoidance, management or mitigation
Regional	Long term	Probable	Not reversible	No	No avoidance or mitigation required.

8.8 Summary of specialist reports

No specialist study was conduct for the draft report.

9. ENVIRONMENTAL IMPACT STATEMENT

9.1 Key findings of the environmental impact assessment

It is important that all the mitigation measures identified in Section 8 and the EMPr are implemented in order to prevent environmental impacts. If the mitigation measures are implemented and monitored, the impact of the proposed activity on the environment will be minimal. See Appendix A for a layout plan containing all the proposed activities and indicating any areas that has to be avoided.

9.2 Summary of the positive and negative impacts

Specific impact or risk	Preferred activity (Activity alternative 1)	Activity alternative 2	"No-go" alternative
Air pollution on a local level.	Negative	Negative	No impact
Contamination of soils, surface water and groundwater due to leakages from vehicles entering and exiting the site.	Negative	Negative	Negative
Pollution of soil, surface water and groundwater due to ineffective management of sewage and general waste management.	Negative	Negative	No impact
Pollution of soil, surface water and groundwater due to ineffective manure disposal.	Negative	Negative	No impact

Pollution of soil, surface water and groundwater due to ineffective disposal carcasses.	Negative	Negative	No impact
Soil compaction and loss of fertility.	Negative	Negative	No impact
Increased fire risk	Negative	Negative	No impact
Disturbance of fauna	Negative	Negative	No impact
Disturbance of flora	Negative	Negative	No impact
Removal of indigenous vegetation	Negative	Negative	No impact
Safety on the construction site	Negative	Negative	No impact
Degradation of aesthetics	Negative	Negative	Negative
The construction and operation of the breeder facility will provide employment opportunities to the local communities.	Positive	Positive	No impact

10. IMPACT MANAGEMENT OBJECTIVES AND OUTCOMES

10.1 Ecological environment

- Injudicious and unnecessary destruction of natural vegetation should be avoided at all costs.
- Plant species of conservation significance should be conserved as far as possible by means of:
    - Avoidance of unnecessary disturbance or destruction of their habitat.
    - If possible, developments that jeopardize any specimens or large populations of red data or protected species should be planned in such a way as to avoid the specimens or populations.
- The eradication of declared weed and invader plant populations in the study area is strongly advised. A management plan and proper follow-up strategy for the prevention of the spread or establishment of new populations of such species should be developed and enforced.
- Where necessary, temporary water control structures should be put in place to minimize erosion and to create a favourable habitat for the establishment of vegetation during and after rehabilitation/landscaping.
- In the event of any protected or Declining species being recorded within the approved development site, permission for the removal of such species should be obtained from the Permitting Office of DEDECT, and the appropriate in situ and / or ex situ conservation measures should be developed and implemented with the approval of the DEDECT conservation authorities. Where feasible, protected or Declining species can be translocated to degraded or untransformed parts of the study area which provide potentially suitable habitat, but such translocations will have

to be carried out in a way that ensures no ecological degradation of the host habitat occurs, and will have to be evaluated by an ecologist for each species and each potential translocation area. Alternatively, protected or Declining species can be rescued and donated to appropriate conservation and research institutions such as the Walter Sisulu National Botanical Garden (Roodepoort) or the Pretoria National Botanical Garden of SANBI.

- Where possible, development should avoid habitat identified with high ecological sensitivity.
- According to the AIS regulations all declared alien weeds must be effectively controlled or eradicated.

10.2 Landforms and soils

- Drip trays must be used when refuelling and servicing construction vehicles or equipment. A spill "sock" should permanently be placed within the drip tray and replaced as and when required. Drip trays must be placed underneath stationary construction vehicles and the hazardous waste (e.g. fuel, oils etc.) taken to the nearest approved oil refiner or fuel recycling point for recycling.
- The existing road infrastructure as indicated in the land use map should be used, where possible.
- Care must be taken that unnecessary clearance of vegetation does not take place. The footprint of disturbance outside the construction area must be kept as small as possible, and must be rehabilitated as soon as possible.
- Regular clean-up programs must be applied at and around the site to prevent litter and to ensure proper housekeeping practices.

10.3 Surface water

- Regular clean-up programs must be applied at and around the site to prevent litter and to ensure proper housekeeping practices.
- In order to contain oil and fuel spills, drip pans or PVC lining shall be provided for drip pans. Spill kits be readily available on site and in every vehicle.
- Existing roads / tracks should be used wherever possible.
- Any new tracks must be pre-approved by the ECO and landowner. It should be ensured that steep slopes and sensitive environments (e.g. watercourses) are avoided during the planning of the new routes.
- To prevent storm water damage, the increase in storm water run-off resulting from construction activities must be estimated and the drainage system assessed accordingly, to prevent downstream impacts on water resources (including but not limited to: scouring, sedimentation, erosion and undercutting).
- Water should be used sparingly and it should be ensured that no water is wasted e.g. regular inspection of pipes to ensure that no leaks occur.
- Water tanks should be regularly inspected to ensure that no leaks occur.
- Please see Appendix F1 for recommendations regarding stormwater management.

10.4 Groundwater

- Drip trays must be used when refuelling and servicing construction vehicles or equipment. A spill “sock” should permanently be placed within the drip tray and replaced as and when required. Drip trays must be placed underneath stationary construction vehicles and the hazardous waste (e.g. fuel, oils etc.) taken to the nearest approved oil refiner or fuel recycling point for recycling.

10.5 Aesthetic environment:

- Care must be taken that unnecessary clearance of vegetation does not take place. The footprint of disturbance outside the construction area must be kept as small as possible, and must be rehabilitated as soon as possible.
- The rehabilitation and soil management must be done in accordance with the guidelines provided in the EMPr.
- Regular clean-up programs must be applied at and around the site to prevent litter and to ensure proper housekeeping practices.
- Access to the site should be pre-arranged with the landowner. Only authorised personnel may be permitted on site.
- The construction site must be positioned and managed in an ecologically sound manner, minimising the potential negative impacts on the surrounding environment.
- It should be ensured that the personnel comply with speed restriction of 20 km per hour within the site boundaries to reduce the generation of dust.
- Disturbance should be limited to the minimum and agreed upon footprint, and no vehicle turning, parking or access, or other form of disturbance e.g. vegetation clearance, soil compaction or excavation should be allowed outside these areas.
- Any damage to public or private property, including roads, storm water systems, fences, gates, buildings and other structures, pipes, lines and other utilities or infrastructure and movable properties, should be repaired, replaced or otherwise compensated for as agreed with the affected person.
- The applicant must arrange for a discussion session with the surrounding access route users with regard to the maintenance of the access road.
- A complaints register should be maintained to log complaints by landowners, occupants and other Interested and Affected Parties, and response to such complaints.
- The complaints register should be provided to DEDECT on an annual basis and at any point in time if requested by the DEDECT.
- Care must be taken that unnecessary clearance of vegetation does not take place. The footprint of disturbance outside the construction area must be kept as small as possible, and must be rehabilitated as soon as possible.
- Alien invasive plants should be removed from all disturbed and subsequently rehabilitated areas.

10.6 Noise

- Vehicles and construction equipment must be well serviced so that they do not produce excessive noise.
- Construction should only take place between 08h00 and 17h00 from Monday to Friday.

- It should be ensured that the personnel comply with speed restrictions of 20 km per hour within the site boundaries to reduce the generation of noise.
- Contractors must comply with provincial noise regulations. The construction machinery must be fitted with noise mufflers and be maintained properly.
- Construction should only take place between 08h00 and 17h00 from Monday to Friday.

10.7 Air quality

- It should be ensured that the personnel comply with speed restriction of 20 km per hour within the site boundaries to reduce the generation of dust.
- Dust suppression through the spraying of water should be practiced.

10.8 Health, safety and security hazards

- The site must be properly demarcated and the proposed access routes approved by the ECO and landowner prior to the commencing of the construction activities.
- No open fires are allowed outside designated cooking areas.
- Site supervisors must ensure that the staff remains within the demarcated construction areas and access routes at all times.
- No smoking is to be allowed in the vicinity of fuel dispensing areas (smoking is only to be allowed in designated “safe” areas).
- Adequate firefighting equipment must be available onsite at all times and at least one person present on the site must be trained in the use thereof.
- Labourers and contract workers (if any) should be accompanied by a responsible supervisor at all times.
- Strict access control must be exercised to ensure that no unauthorised persons enter the property.
- All construction vehicles should be fitted with standard reverse alarms.
- The workers must wear Personal Protective Equipment (PPE) to ensure their safety during construction.
- Workers may not receive any visitors while they are within the property.
- Workers should not be allowed to keep or use alcohol, recreational drugs, traditional or modern weapons, snares or otherwise dangerous objects on-site, or to enter the construction area while on the influence of alcohol or drugs.
- Disturbance should be limited to the minimum and agreed upon footprint, and no vehicle turning, parking or access, or other form of disturbance e.g. vegetation clearance, soil compaction or excavation should be allowed outside these areas.
- It must be ensured by the relevant contractor that a list of all the relevant emergency telephone numbers and contact persons are kept up to date and posted at relevant locations at the site.
- A complaints register should be maintained to log complaints by landowners, occupants and other Interested and Affected Parties, and response to such complaints. The complaints register should be provided to DEDECT on an annual basis and at any point in time if requested by the DEDECT.

11. ASPECTS FOR INCLUSION IN AUTHORISATION

11.1 Reasoned opinion

The final site plans (Appendix C) were created taking into account all the concerns raised by the public, specialist reports and impact assessment. If this map is followed, and if proper management and mitigation is implemented and rehabilitation is done and monitored, the impact can be kept relatively low.
It is recommended that the activity should be authorised.

11.2 Conditions that must be included in the authorisation

Mitigation and management measures as stipulated in Sections 9 and 11 should be implemented.
The rehabilitation and soil management must be done in accordance with the guidelines provided in the EMPr.
Environmental audits should be conducted every two months during the Construction Phase and every six months during the Operational Phase.
Rehabilitation monitoring should be conducted according to the EMPr.
Rehabilitation should be ongoing while operation is taking place.

12. APPENDICES

Appendix A: Maps
Appendix B: Site photographs
Appendix C: Site plans
Appendix D: Public participation
Appendix E: EMPr
Appendix F: Additional information
Appendix G: CV of EAP

13. UNDERTAKING

The EAP herewith confirms

a) the correctness of the information provided in the reports ☒
b) the inclusion of comments and inputs from stakeholders and I&APS ; ☒
c) the inclusion of inputs and recommendations from the specialist reports where relevant; ☒and
d) that the information provided by the EAP to interested and affected parties and any responses by the EAP to comments or inputs made by interested and affected parties are correctly reflected herein. ☒

_____

Signature
Environmental Assessment Practitioner
Bucandi Environmental Solutions

Signed at Viljoenskroon on this 28th day of July 2022.