Draft Basic Assessment Report

for

CHICKWORX

REF NO.

Prepared by:

Bucandi Environmental Solutions

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

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1. INTRODUCTION AND BACKGROUND

1.1 Background

ChickWorx is proposing the construction of 16 poultry houses, 2 sites with 8 houses on each site with the capacity to hold up to 50 000 birds per house on the Remaining Extent of Portion 12 & Portion 109 of the Farm Rhenosterfontein 336 JQ, situated in Rustenburg District within the Rustenburg 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 ChickWorx to conduct a Basic Assessment as part of the application for environmental authorisation.

1.2 Details of the project proponent

Company name: ChickWorx

Physical address: Remaining Extent of Portion 12 & Portion 109 of the Farm Rhenosterfontein 336 JQ,, North West

Postal address: P. O. Box 849, Waterfall Mall, Rustenburg, 0323

Contact person: Mr. Eugene Visagie

Telephone number: 083 444 5022

Email address: mwweeds@mweb.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 16.3km southeast of Rustenburg in the Northwest Province within the Rustenburg Local Municipality area and Bojanala Platinum District Municipality area on Remaining Extent of Portion 12 & Portion 109 of the Farm Rhenosterfontein 336 JQ, at 25º47'18.4." S; 27º20'46.8" E (Appendix A). A road between R 24 (west) and R104 (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	T0JQ00000000033600012 T0JQ00000000033600109
Physical address and farm name	Remaining Extent of Portion 12 & Portion 109 of the Farm Rhenosterfontein 336 JQ,
GPS coordinates	25º47'18.4." S; 27º20'46.8" E

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. 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.

3.2 Description of activity

The activity will entail the construction of 16 environmentally controlled chicken houses (135m x 17m each). Each house will have the capacity for 50 000 chickens. The entire site will be able to house up to 800 000 broiler chicks. The farm boundary is 37.97ha and the development site boundary for site A is 33 538.69m^2 & Site B is 32 112.02m^2.
The project will entail the following:

- Earthworks and clearing of vegetation on the site for 16 poultry houses.
- Construction of 16 environmentally controlled chicken houses (135m x 17m) with capacity for 50 000 birds per house, totalling 800 000 birds.
- A silo and water tank will be erected next to each house.
- Powerlines will be connected to each house from the existing Eskom point.
- Pipelines will be connected to each house from an existing borehole.
- The site will be fenced off with a 2.4m high electric fence.

3.3 National Environmental Management Act

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) & 28.		1998
National Water Act, Act No. 36 of 1998.	Department of Water Affairs	1998
Conservation of Agricultural Resources Act, Act No. 43 of 1983	Department of Economic Development, Environment, Conservation and Tourism	1983
Air Quality Act, Act No. 39 of 2004.	Bojanala Platinum 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 Health and Safety	2000
National Environmental Management: Waste Act, Act No. 59 of 2008	Department of Economic Development, Environment,	2008

Listed Activities Reg. 921 published on 29 November 2013 in GN 37083	Conservation and Tourism Department of Economic Development, Environment, Conservation and Tourism	1993
Occupational Health and Safety Act, Act 85 of 1993	Department of Labour	
Noise regulation, 2003	Department of Labour	2003
Environmental regulations for workplaces, 1987	Department of Labour	1987
Facility regulations,1990	Department of Labour	1990
General Health and Safety Regulations, 1986	Department of Labour	1986
Electrical Installation Regulations, 2009.	Department of Labour	2009
Electrical Machinery Regulations, 1988.	Department of Labour	1988
Construction Regulations, 2014	Department of Labour	2014

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 80 temporary employment opportunities will be created during the development and construction phase. At least 44 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 location of poultry farms in relation to other poultry is important for the maintenance of biosecurity. The Code of Practise for Broiler Production issued by the South African Poultry Association states that “facilities should be well separated and isolated from other poultry”.

Site alternative 1 A (preferred site)

A road between R 24 (west) and R104 (north runs directly next to the site with a dirt road providing access to the site. Site 1A is located within and area that is classified as Terrestrial ESA Area 2. Site 1A is located on cultivated land. The slope on the site is roughly 1:24 (see complete site description in Section 5.1).

Site alternative 1 B (preferred site)

A road between R 24 (west) and R104 (north runs directly next to the site with a dirt road providing access to the site. Site 1B is located within and area that is classified as Terrestrial ESA Area 2. Site 1B is located on cultivated land. The slope on the site is roughly 1:24 (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 cultivated land. A road between R 24 (west) and R104 (north runs directly next to the site with a dirt road providing access to the site. S1 A is flat and the costs and impacts of earthworks before construction will be minimal. An Eskom point and borehole are located on the site. The site is located relatively high and stays dry year-round.

Site alternative 1 B (preferred site)

This site is located on cultivated land. A road between R 24 (west) and R104 (north runs directly next to the site with a dirt road providing access to the site. S1 B is flat and the costs and impacts of earthworks before construction will be minimal. An Eskom point and borehole are located on the site. The site is located relatively high and stays dry year-round.

Site alternative 1 C (preferred site)

5.2 Activity alternatives

Preferred activity
Sixteen environmentally controlled, closed chicken poultry houses (approximately 135m X 17m) will be constructed with a capacity for 50 000 birds per house. Each house will have a Heatco oven controlling the temperature inside the 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%

5.3 Design of 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 three preferred site consists of currently unused natural veld, old citrus plantation & cultivated land.

6. PUBLIC PARTICIPATION PROCESS

Please see Appendix D1 for a copy of the newspaper notice that was placed in "Rustenburg Herald" on 4 June 2021.
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 4 June 2021.
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 ISSUES AND POSSIBLE IMPACTS

7.1 Geographical and Bio-physical environment

7.1.1 Gradient of the site

Alternative S1 A:

Flat	1:50 – 1:20 √	1:20 – 1:15	1:15 – 1:10	1:10 – 1:7,5	1:7,5 – 1:5	Steeper than 1:5

Alternative S1 B:

Flat	1:50 – 1:20 √	1:20 – 1:15	1:15 – 1:10	1:10 – 1:7,5	1:7,5 – 1:5	Steeper than 1:5

Alternative S1 C:

7.1.2 Location in landscape

Alternative S1 A:

Ridgeline	Plateau √	Side slope of hill/mountain	Closed valley	Open valley	Plain	Undulating plain/low hills	Dune	Sea-front

Alternative S1 B:

Ridgeline	Plateau √	Side slope of hill/mountain	Closed valley	Open valley	Plain	Undulating plain/low hills	Dune	Sea-front

7.1.3 Groundwater, soil and geological stability

	Alternative S1:		**Alternative S2:**	
Shallow water table (less than 1.5m deep)	YES	NO √	YES	NO √
Dolomite, sinkhole or doline areas	YES	NO √	YES	NO √
Seasonally wet soils (often close to water bodies)	YES	NO √	YES	NO √

Unstable rocky slopes or steep slopes with loose soil	YES	NO √	YES	NO √
Dispersive soils (soils that dissolve in water)	YES	NO √	YES	NO √
Soils with high clay content (clay fraction more than 40%)	YES	NO √	YES	NO √
Any other unstable soil or geological feature	YES	NO √	YES	NO √
An area sensitive to erosion	YES	NO √	YES	NO √

7.1.4 Groundcover

Alternative S 1 A (preferred site):

Natural veld - good condition	Natural veld with scattered aliens	Natural veld with heavy alien infestation	Veld dominated by alien species	Gardens
Sport field	Cultivated land √	Paved surface	Building or other structure	Bare soil

Alternative S 1 B (preferred site):

Natural veld - good condition	Natural veld with scattered aliens	Natural veld with heavy alien infestation	Veld dominated by alien species	Gardens
Sport field	Cultivated land √	Paved surface	Building or other structure	Bare soil

7.2 Human environment

7.2.1 Cultural heritage

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.

7.2.2 Socio-economic environment

Activity alternative 1 (preferred activity)

What is the expected capital value of the activity on completion?	R 67 200 000	
What is the expected yearly income that will be generated by or as a result of the activity?	R 40 800 000	
Will the activity contribute to service infrastructure?	YES X	NO
Is the activity a public amenity?	YES	NO X

How many new employment opportunities will be created in the development phase of the activity?	50
What is the expected value of the employment opportunities during the development phase?	R 138 000 000
What percentage of this will accrue to previously disadvantaged individuals?	95%
How many permanent new employment opportunities will be created during the operational phase of the activity?	40
What is the expected current value of the employment opportunities during the first 10 years?	R 30 000 000
What percentage of this will accrue to previously disadvantaged individuals?	90%

Activity alternative 2

What is the expected capital value of the activity on completion?	R 25 000 000	
What is the expected yearly income that will be generated by or as a result of the activity?	R 3 000 000	
Will the activity contribute to service infrastructure?	YES X	NO
Is the activity a public amenity?	YES	NO X
How many new employment opportunities will be created in the development phase of the activity?	50	
What is the expected value of the employment opportunities during the development phase?	R 32 000 000	
What percentage of this will accrue to previously disadvantaged individuals?	95%	
How many permanent new employment opportunities will be created during the operational phase of the activity?	10	
What is the expected current value of the employment opportunities during the first 10 years?	R 30 000 000	
What percentage of this will accrue to previously disadvantaged individuals?	90%	

No-go alternative

What is the expected capital value of the activity on completion?	R0	
What is the expected yearly income that will be generated by or as a result of the activity?	R0	
Will the activity contribute to service infrastructure?	YES	NO X
Is the activity a public amenity?	YES	NO X
How many new employment opportunities will be created in the development phase of the activity?	0	
What is the expected value of the employment opportunities during the development phase?	R0	
What percentage of this will accrue to previously disadvantaged individuals?	0%	
How many permanent new employment opportunities will be created during the operational phase of the activity?	0	

What is the expected current value of the employment opportunities during the first 10 years?	R0
What percentage of this will accrue to previously disadvantaged individuals?	0%

7.2.3. Waste

Activity alternative 1 (Preferred alternative)

Construction Phase

An estimated 6m^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 113.0m^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 400 tons of chicken manure will be produced monthly. Chickens are kept for a 35-40-day cycle. Manure will be removed on a regular basis and removed by a contractor

Disposal of Mortalities

Approximately 40 000 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 6m^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 113.0m^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 400 tons of chicken manure will be produced monthly. Chickens are kept for a 35-40-day cycle. Manure will be removed on a regular basis and removed by a contractor
Disposal of Mortalities
Approximately 40 000 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.

7.2.4 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.

7.2.5 Atmospheric emissions

Activity alternative 1 (Preferred alternative)
Since the houses will be closed and environmentally controlled, 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.

7.2.6. Noise

Activity alternative 1 (Preferred alternative)
The fans used inside the chicken houses will generate low levels of noise. Noise levels (at existing chicken broiler houses) were measured directly outside the boiler room and 100m away from the fans. In both cases the levels read 58db. Low levels of noise will be produced by the chickens in the houses as well.

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.

7.2.7 Water use

Activity alternative 1 (Preferred alternative)
Water use is calculated on an average requirement of 6 litres per broiler per cycle. It is standard practice to go through 7 cycles per house per year. The total water requirement for the facility will be 33 600m^3 per year (6 litres x 50 000 broilers per house x 16 houses x 7 cycles). This constitutes a monthly average of 2 800 m^3. Please see Appendix F7 for the current Water Use Registration Certificate. A copy of this report has been forwarded to the Department of Water and Sanitation and they will provide guidance in terms of the application process for the additional allocation of water.

Activity alternative 2
Water use is calculated on an average requirement of 6 litres per broiler per cycle. It is standard practice to go through 7 cycles per house per year. The total water requirement for the facility will be 33 600m^3 per year (6 litres x 50 000 broilers per house x 16 houses x 7 cycles). This constitutes a monthly average of 2 800 m^3. Please see Appendix F7 for the current Water Use Registration Certificate. A copy of this report has been forwarded to the Department of Water and Sanitation and they will provide guidance in terms of the application process for the additional allocation of water.

No-go alternative
The activity will not use water.

7.2.8 Energy efficiency

Activity alternative 1 (Preferred alternative)
Because of a higher isolation (R) value (12 for closed houses versus 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 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.

8. POTENTIAL IMPACTS

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 Sixteen environmentally controlled poultry houses (preferred activity)

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

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

Specific Impact & Risk	Extent	Duration	Severity	Degree of Certainty	Probability	Significance prior to mitigation	Status of Impact	Reversibility/Mitigation Measures to be Implemented
								management system.
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).
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.
Soil compaction and	1	1	2	3	3	Low	Negative	This impact is not

Specific Impact & Risk	Extent	Duration	Severity	Degree of Certainty	Probability	Significance prior to mitigation	Status of Impact	Reversibility/Mitigation Measures to be Implemented
loss of fertility.								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.
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

Specific Impact & Risk	Extent	Duration	Severity	Degree of Certainty	Probability	Significance prior to mitigation	Status of Impact	Reversibility/Mitigation Measures to be Implemented
								must be available, as prescribed by the relevant safety standards and legislation.
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.
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.
Degradation of aesthetics	3	5	3	2	4	High	Negative	This impact is not reversible, but can be mitigated and minimised.

Specific Impact & Risk	Extent	Duration	Severity	Degree of Certainty	Probability	Significance prior to mitigation	Status of Impact	Reversibility/Mitigation Measures to be Implemented
								If needed, an additional line of trees will be planted to minimise visual impact.
The construction and operation of the poultry facility will provide employment opportunities to the local communities.	3	4	3	1	5	High	Positive	No mitigation suggested.

8.1.2 Activity alternative 2 – Construction of open poultry houses

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

Specific Impact & Risk	Extent	Duration	Severity	Degree of Certainty	Probability	Significance prior to mitigation	Status of Impact	Reversibility/Mitigation Measures to be Implemented
								rags, etc.
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.
Pollution of soil, surface water and groundwater due to ineffective manure	3	3	3	2	3	Medium	Negative	This impact is not reversible, but can be completely avoided by the following measures:

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

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

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

Specific Impact & Risk	Extent	Duration	Severity	Degree of Certainty	Probability	Significance prior to mitigation	Status of Impact	Reversibility/Mitigation Measures to be Implemented
The construction and operation of the poultry 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 – Agriculture

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

Specific Impact & Risk	Extent	Duration	Severity	Degree of Certainty	Probability	Significance prior to mitigation	Status of Impact	Reversibility/Mitigation Measures to be Implemented
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.
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.
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.
Soil compaction and loss of fertility.	2	1	2	1	3	Low	Negative	No additional activity will take place, only agriculture that already

Specific Impact & Risk	Extent	Duration	Severity	Degree of Certainty	Probability	Significance prior to mitigation	Status of Impact	Reversibility/Mitigation Measures to be Implemented
								exists on the site. No mitigation recommended.
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.
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.
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.

Specific Impact & Risk	Extent	Duration	Severity	Degree of Certainty	Probability	Significance prior to mitigation	Status of Impact	Reversibility/Mitigation Measures to be Implemented
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 I&APS 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 are 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 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. Insignificant change or deterioration or disturbance Or improvement of natural and social environments	Short-term impact. Low cost to mitigate Small Moderate change or deterioration or disturbance Or improvement of natural and social environments	Medium term impact, which require 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	Long term impact High cost to mitigate Possible to mitigate Very significant change or deterioration or disturbance Or improvement of natural and social environments	Permanent impact Prohibitive cost to 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 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	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	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	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

		beneficial impacts, alternative means for achieving this benefit are likely to be easier, cheaper, more effective, less time consuming, or some combination of these.	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.	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.	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)	"No-go" alternative
Air pollution on a local level.	Negative	No impact
Contamination of soils, surface water and groundwater due to leakages from vehicles entering and exiting the site.	Negative	Negative
Pollution of soil, surface water and groundwater due to ineffective management of sewage and	Negative	Negative

general waste management.		
Pollution of soil, surface water and groundwater due to ineffective manure disposal.	Negative	No impact
Pollution of soil, surface water and groundwater due to ineffective disposal carcasses.	Negative	No impact
Soil compaction and loss of fertility.	Negative	No impact
Increased fire risk	Negative	No impact
Disturbance of fauna	Negative	No impact
Safety on the construction site	Negative	No impact
Degradation of aesthetics	Negative	Negative
The construction and operation of the poultry facility will provide employment opportunities to the local communities.	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.
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 poultry 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
Safety on the construction site	High	Low
Degradation of aesthetics	High	Low
The construction and operation of the poultry 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.
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.
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.
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.
This is not a cumulative impact
Nature, significance and consequences:
The poultry houses 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.
This is not a cumulative impact
Nature, significance and consequences:
Carcasses of dead poultry houses 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.
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.
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.
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:** Safety on the construction site.
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.

10. **Impact:** Degradation of aesthetics
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 poultry houses units.

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.

11. **Impact:** Economic benefit to the local communities.
This is not a cumulative impact
Nature, significance and consequences:
The construction and operation of the poultry facility will provide employment opportunities to the local communities.

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

8.8 Summary of specialist reports

No specialist studies were conducted during the Basic Assessment Process.

9. ENVIRONMENTAL IMPACT STATEMENT

9.1 Key findings of the environmental impact assessment

It is important that all the mitigation measures identified in Section 9 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)	"No-go" alternative
Air pollution on a local level.	Negative	No impact
Contamination of soils, surface water and groundwater due to leakages from vehicles entering and exiting the site.	Negative	Negative
Pollution of soil, surface water and groundwater due to ineffective management of sewage and general waste management.	Negative	No impact
Pollution of soil, surface water and groundwater due to ineffective manure disposal.	Negative	No impact
Pollution of soil, surface water and groundwater due to ineffective disposal carcasses.	Negative	No impact
Soil compaction and loss of fertility.	Negative	No impact
Increased fire risk	Negative	No impact
Disturbance of fauna	Negative	No impact
Safety on the construction site	Negative	No impact
Degradation of aesthetics	Negative	Negative
The construction and operation of the poultry facility will provide employment opportunities to the local communities.	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.
- Regular clean-up programs must be applied at and around the site to prevent litter and to ensure proper housekeeping practices.

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.
- 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 all 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.

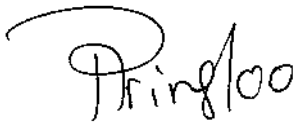
12. APPENDICES

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 11th day of August 2021