

Draft Basic Assessment Report

**CHICKEN-BROILER FACILITY, FARM HERMAN
236, WESSELSBRON, FREE STATE PROVINCE**

Prepared By:

Environmental Management Group

September, 2019

Prepared For:

Department of Rural Development

and Land Reform





EMG

BASIC ASSESSMENT REPORT



destea

department of
economic, small business development,
tourism and environmental affairs
FREE STATE PROVINCE

(For official use only)

File Reference Number:

Application Number:

Date Received:

Basic assessment report in terms of the Environmental Impact Assessment Regulations, 2014, promulgated in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended.

Kindly note that:

1. This **basic assessment report** is a standard report that may be required by a competent authority in terms of the EIA Regulations, 2014 as amended and is meant to streamline applications. Please make sure that it is the report used by the particular competent authority for the activity that is being applied for.
2. This report format is current as of **07 April 2017**. It is the responsibility of the applicant to ascertain whether subsequent versions of the form have been published or produced by the competent authority
3. The report must be typed within the spaces provided in the form. The size of the spaces provided is not necessarily indicative of the amount of information to be provided. The report is in the form of a table that can extend itself as each space is filled with typing.
4. Where applicable **tick** the boxes that are applicable in the report.
5. An incomplete report may be returned to the applicant for revision.
6. The use of “not applicable” in the report must be done with circumspection because if it is used in respect of material information that is required by the competent authority for assessing the application, it may result in the rejection of the application as provided for in the regulations.
7. This report must be handed in at offices of the relevant competent authority as determined by each authority.
8. No faxed or e-mailed reports will be accepted.
9. The signature of the EAP on the report must be an original signature.
10. The report must be compiled by an independent environmental assessment practitioner.
11. Unless protected by law, all information in the report will become public information on receipt by the competent authority. Any interested and affected party should be provided with the information contained in this report on request, during any stage of the application process.
12. A competent authority may require that for specified types of activities in defined situations only parts of this report need to be completed.
13. Should a specialist report or report on a specialised process be submitted at any stage for any part of this application, the terms of reference for such report must also be submitted.

14. Two (2) colour hard copies and one (1) electronic copy of the report must be submitted to the competent authority.
15. Shape files (.shp) for maps must be included in the electronic copy of the report submitted to the competent authority.



SECTION A: ACTIVITY INFORMATION

Has a specialist been consulted to assist with the completion of this section?

YES

NO

If YES, please complete the form entitled "Details of specialist and declaration of interest" for the specialist appointed and attach in Appendix I.

1. PROJECT DESCRIPTION

a) Describe the project associated with the listed activities applied for

Relebohile Poultry Project is proposing the refurbishment and upgrade, construction of new infrastructure and additions to existing infrastructure for the existing chicken broiler facility. The proposed development is located on the remaining extent of the Farm Herman 236, Nala Local Municipality (Appendix A). The development will take place to the North-West of Wesselsbron, Free State, which falls under the Nala Local Municipality.

The facility is aimed at rearing 1-day old chicks of approximately 6 weeks (42 days), where they are sold for meat. Broilers shall be fed a high-protein diet to help support in rapid growth. Vaccination will also be administered, as set out by the South African Poultry Association.

The chicken broiler facility will entail the development of three (3) broiler houses (Appendix C). Each house has 2100 broiler capacity and will be populated with 1333 chickens. A total of 5332 broiler chickens will therefore be kept on the facility and later be increased to a maximum capacity of 6300 broiler chickens.

The physical footprint of the entire development, including the existing infrastructure will be 1067.77m². The chicken broiler facility will consist the following infrastructure:

- 3X chicken houses
- Storeroom
- Parking area

Each broiler house will be equipped with the following infrastructure:

- 2X 18.0m VAL nipple drinker lines, 1 hole per pipe per pipe (3m (180 nipples total), complete with regulator and winch system to adjust drinker height.
- 40X tube feeders
- 1X 100 liters plastic water tank.

BASIC ASSESSMENT REPORT

Water is supplied by the Nala Municipality. Supply pipes comprise of a 100mm HDPE pipe connected to a water meter. Water storage is enabled through the use of 2 x 2500 litre elevated storage tanks.

The affected farm portion is currently zoned for Agricultural, which accommodates the proposed development.

The manure will be temporarily stockpiled on an impenetrable (concrete) layer and covered with sails to prevent contamination of the surrounding environment. The manure stockpile area will be located approximately 600m to the North, away from the chicken broiler houses. The manure is estimated to be less than 9 tons per month. The manure will be bagged in 50kg bags and sold to local farmers on a continuous basis as fertiliser.

Mortalities will be removed on a daily basis by local predator park owner. The mortalities will not be utilised for human consumption.

During the washing process, all waste water is collected in a septic tank and removed from the farm once the tank is full.

b) Provide a detailed description of the listed activities associated with the project as applied for

Listed activity as described in GN 327,325 and 324	Description of project activity
<p>Example: <i>GN 327 Item xx xx): The construction of a bridge where such construction occurs within a watercourse or within 32 metres of a watercourse, measured from the edge of a watercourse, excluding where such construction will occur behind the development setback line.</i></p>	<p><i>A bridge measuring 5 m in height and 10m in length, no wider than 8 meters will be built over the Orange river</i></p>
<p>GN 324 (ACTIVITY 12 b (iv): The clearance of an area of 300 square metres or more of indigenous vegetation except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan.</p>	
<p>GN 327 (ACTIVITY 40 (ii): The expansion and related operation of facilities for the concentration of poultry, excluding chicks younger than 20 days, where the capacity of the facility will be</p>	<p>The chicken broiler facility will comprise of three (3) broiler houses of. Each house will be populated with 1333 chickens. A total of 5332</p>

BASIC ASSESSMENT REPORT

<p>increased by — (ii) more than 5 000 poultry per facility situated outside an urban area</p>	<p>chickens will be kept on the facility and further expansion of up to 6 300 chickens will be done at later stage.</p>
---	---

2. FEASIBLE AND REASONABLE ALTERNATIVES

“**alternatives**”, in relation to a proposed activity, means different means of meeting the general purpose and requirements of the activity, which may include alternatives to—

- (a) the property on which or location where it is proposed to undertake the activity;
- (b) the type of activity to be undertaken;
- (c) the design or layout of the activity;
- (d) the technology to be used in the activity;
- (e) the operational aspects of the activity; and
- (f) the option of not implementing the activity.

Describe alternatives that are considered in this application as required by Appendix 1 (3)(h) of GN 326, Regulation 2014 as amended. Alternatives should include a consideration of all possible means by which the purpose and need of the proposed activity (NOT PROJECT) could be accomplished in the specific instance taking account of the interest of the applicant in the activity. The no-go alternative must in all cases be included in the assessment phase as the baseline against which the impacts of the other alternatives are assessed.

The determination of whether site or activity (including different processes, etc.) or both is appropriate needs to be informed by the specific circumstances of the activity and its environment. After receipt of this report the, competent authority may also request the applicant to assess additional alternatives that could possibly accomplish the purpose and need of the proposed activity if it is clear that realistic alternatives have not been considered to a reasonable extent.

The identification of alternatives should be in line with the Integrated Environmental Assessment Guideline Series 11, published by the DEA in 2004. Should the alternatives include different locations and lay-outs, the co-ordinates of the different alternatives must be provided. The co-ordinates should be in degrees, minutes and seconds. The projection that must be used in all cases is the WGS84 spheroid in a national or local projection.

a) Site alternatives

Alternative 1 (preferred alternative)		
Description	Lat (DDMMSS)	Long (DDMMSS)
RE farm Herman 236	27°46'46.47"	26°21'30.60"
Alternative 2		
Description	Lat (DDMMSS)	Long (DDMMSS)
NA		
Alternative 3		

BASIC ASSESSMENT REPORT

Description	Lat (DDMMSS)	Long (DDMMSS)
NA		

In the case of linear activities:

Alternative:

Latitude (S):

Longitude (E):

Alternative S1 (preferred)

- Starting point of the activity
- Middle/Additional point of the activity
- End point of the activity

Alternative S2 (if any)

- Starting point of the activity
- Middle/Additional point of the activity
- End point of the activity

Alternative S3 (if any)

- Starting point of the activity
- Middle/Additional point of the activity
- End point of the activity

For route alternatives that are longer than 500m, please provide an addendum with co-ordinates taken every 250 meters along the route for each alternative alignment.

In the case of an area being under application, please provide the co-ordinates of the corners of the site as indicated on the lay-out map provided in Appendix A of this form.

b) Lay-out alternatives

Alternative 1 (preferred alternative)						
Description	Lat (DDMMSS)			Long (DDMMSS)		
RE farm Herman 236	27°	48'	46.47"	26°	21'	30.60 "
RE farm Herman 236	27°	48'	46.53"	26°	21'	29.89 "
RE farm Herman 236	27°	48'	46.80"	26°	21'	29.65 "
RE farm Herman 236	27°	48'	47.20"	26°	21'	30.16 "
RE farm Herman 236	27°	48'	46.89"	26°	21'	30.63 "

c) Technology alternatives

Alternative 1 (preferred alternative)
NA
Alternative 2
Alternative 3

d) Other alternatives (e.g. scheduling, demand, input, scale and design alternatives)

Alternative 1 (preferred alternative)		
Alternative 2		
Alternative 3		

e) No-go alternative

The No-Go Alternative will result in a decline in chicken production in the Wesselsbron area. Job creation opportunities will not be created if this development is not approved.

Paragraphs 3 – 13 below should be completed for each alternative.

3. PHYSICAL SIZE OF THE ACTIVITY

a) Indicate the physical size of the preferred activity/technology as well as alternative activities/technologies (footprints):

Alternative:

- Alternative A1¹ (preferred activity alternative)
- Alternative A2 (if any)
- Alternative A3 (if any)

Size of the activity:

5 000	m ²
	m ²
	m ²

or, for linear activities:

Alternative:

- Alternative A1 (preferred activity alternative)
- Alternative A2 (if any)
- Alternative A3 (if any)

Length of the activity:

	m
	m
	m

b) Indicate the size of the alternative sites or servitudes (within which the above footprints will occur):

Alternative:

- Alternative A1 (preferred activity alternative)
- Alternative A2 (if any)
- Alternative A3 (if any)

Size of the site/servitude:

	m ²
	m ²
	m ²

¹ "Alternative A.." refer to activity, process, technology or other alternatives.

4. SITE ACCESS

Does ready access to the site exist?

YES	NO
	m

If NO, what is the distance over which a new access road will be built

Describe the type of access road planned:

Main vehicle access to the site is off the R505 south of Moeding Road in Monyakeng. A gravel road must then be used to access the site north of the R505.

Include the position of the access road on the site plan and required map, as well as an indication of the road in relation to the site.

5. LOCALITY MAP

An A3 locality map must be attached to the back of this document, as Appendix A. The scale of the locality map must be relevant to the size of the development (at least 1:50 000. For linear activities of more than 25 kilometres, a smaller scale e.g. 1:250 000 can be used. The scale must be indicated on the map.). The map must indicate the following:

- an accurate indication of the project site position as well as the positions of the alternative sites, if any;
- indication of all the alternatives identified;
- closest town(s);
- road access from all major roads in the area;
- road names or numbers of all major roads as well as the roads that provide access to the site(s);
- all roads within a 1km radius of the site or alternative sites; and
- a north arrow;
- a legend; and
- locality GPS co-ordinates (Indicate the position of the activity using the latitude and longitude of the centre point of the site for each alternative site. The co-ordinates should be in degrees and decimal minutes. The minutes should have at least three decimals to ensure adequate accuracy. The projection that must be used in all cases is the WGS84 spheroid in a national or local projection.

6. LAYOUT/ROUTE PLAN

A detailed site or route plan(s) must be prepared for each alternative site or alternative activity. It must be attached as Appendix A to this document.

The site or route plans must indicate the following:

- the property boundaries and numbers of all the properties within 50 metres of the site;
- the current land use as well as the land use zoning of the site;
- the current land use as well as the land use zoning each of the properties adjoining the site or sites;
- the exact position of each listed activity applied for (including alternatives);
- servitude(s) indicating the purpose of the servitude;

- a legend; and
- a north arrow.

7. SENSITIVITY MAP

The layout/route plan as indicated above must be overlain with a sensitivity map that indicates all the sensitive areas associated with the site, including, but not limited to:

- watercourses;
- the 1:100 year flood line (where available or where it is required by DWS);
- ridges;
- cultural and historical features;
- areas with indigenous vegetation (even if it is degraded or infested with alien species); and
- critical biodiversity areas.

The sensitivity map must also cover areas within 100m of the site and must be attached in Appendix A.

8. SITE PHOTOGRAPHS

Colour photographs from the centre of the site must be taken in at least the eight major compass directions with a description of each photograph. Photographs must be attached under Appendix B to this report. It must be supplemented with additional photographs of relevant features on the site, if applicable.

9. FACILITY ILLUSTRATION

A detailed illustration of the activity must be provided at a scale of at least 1:200 as Appendix C for activities that include structures. The illustrations must be to scale and must represent a realistic image of the planned activity. The illustration must give a representative view of the activity.

10. ACTIVITY MOTIVATION

Motivate and explain the need and desirability of the activity (including demand for the activity):

1. Is the activity permitted in terms of the property's existing land use rights?	YES	NO	Please explain
The Farm falls within an Agricultural zoned area.			
2. Will the activity be in line with the following?			
(a) Provincial Spatial Development Framework (PSDF)	YES	NO	Please explain
The activity is an agricultural activity, which address food security in the province, and thus falls in line with the PSDF			
(b) Urban edge / Edge of Built environment for the area	YES	NO	Please explain
The activity is located outside the urban edge in an Agricultural zone.			

BASIC ASSESSMENT REPORT

<p>(c) Integrated Development Plan (IDP) and Spatial Development Framework (SDF) of the Local Municipality (e.g. would the approval of this application compromise the integrity of the existing approved and credible municipal IDP and SDF?).</p>	YES	NO	Please explain
<p>The municipality offers its communities, stakeholders and potential investors several dynamic opportunities where economic growth entails: Commercial agriculture is the main focus for expanded economic growth in this municipality. Thus, agricultural projects like this one will form part of the development for Nala Local Municipality: [Nala Local Municipality IDP 2017-2022, page 9]</p>			
<p>(d) Approved Structure Plan of the Municipality</p>	YES	NO	Please explain
<p>(e) An Environmental Management Framework (EMF) adopted by the Department (e.g. Would the approval of this application compromise the integrity of the existing environmental management priorities for the area and if so, can it be justified in terms of sustainability considerations?)</p>	YES	NO	Please explain
<p>The EMP will form part of the BAR and will be implemented throughout the project. The approval of this application will not compromise the integrity of the existing environmental management priorities for the area.</p>			
<p>(f) Any other Plans (e.g. Guide Plan)</p>	YES	NO	Please explain
<p>3. Is the land use (associated with the activity being applied for) considered within the timeframe intended by the existing approved SDF agreed to by the relevant environmental authority (i.e. is the proposed development in line with the projects and programmes identified as priorities within the credible IDP)?</p>	YES	NO	Please explain
<p>The proposed chicken broiler facility will address issues like job creation, food security and training to newly appointed employees. This proposed development falls in the timeframe intended by the existing approved SDF.</p>			
<p>4. Does the community/area need the activity and the associated land use concerned (is it a societal priority)? (This refers to the strategic as well as local level (e.g. development is a national priority, but within a specific local context it could be inappropriate.)</p>	YES	NO	Please explain
<p>The project will help in the economic growth within the local municipality where commercial agriculture is the main focus for expanded economic growth in this municipality. Therefore, the proposed development addresses poverty within the local community, as well as food security and nutrition. The activity will result in job creation, both permanent and temporary.</p>			

BASIC ASSESSMENT REPORT

<p>5. Are the necessary services with adequate capacity currently available (at the time of application), or must additional capacity be created to cater for the development? (Confirmation by the relevant Municipality in this regard must be attached to the final Basic Assessment Report as Appendix I.)</p>	YES	NO	Please explain
<p>Municipal water is available for the chicken broiler facility. Electricity is supplied by ESKOM via an overhead power line. An elevated 16 KVA mini sub is installed at the final post located within the property. It must however be noted that whilst power is available the cooperative does not utilise power for any particular function or operation.</p>			
<p>6. Is this development provided for in the infrastructure planning of the municipality, and if not what will the implication be on the infrastructure planning of the municipality (priority and placement of services and opportunity costs)? (Comment by the relevant Municipality in this regard must be attached to the final Basic Assessment Report as Appendix I.)</p>	YES	NO	Please explain
<p>This development is provided for in the infrastructure planning of the municipality. And thus, will not have any impact on the infrastructure planning of the municipality.</p>			
<p>7. Is this project part of a national programme to address an issue of national concern or importance?</p>	YES	NO	Please explain
<p>The agricultural sector in South Africa plays a valuable role in ensuring the sustainable supply of food to our growing population and represents one of the main sources of revenue. The project plays part of the national programme. The activity will result in job creation, both permanent and temporary, as well as addressing the concerns of food security in South-Africa.</p>			
<p>8. Do location factors favour this land use (associated with the activity applied for) at this place? (This relates to the contextualisation of the proposed land use on this site within its broader context.)</p>	YES	NO	Please explain
<p>The farm is currently zoned as Agricultural. The activity is an agricultural activity, which falls in line with the SDF. Thus, agricultural activities are permitted.</p>			
<p>9. Is the development the best practicable environmental option for this land/site?</p>	YES	NO	Please explain
<p>The proposed chicken broiler facility will be an agricultural development within an area zoned as agricultural. The surrounding land use is mainly small-scale agriculture and the zoning of the area provides for agriculture; therefore, the proposed activity is in line with the land use zoning.</p>			

BASIC ASSESSMENT REPORT

10. Will the benefits of the proposed land use/development outweigh the negative impacts of it?	YES	NO	Please explain
<p>The proposed activity is critical in terms local economy and will form part of the national sustainable food production plan. The project will also create new permanent employment opportunities as well as temporary jobs.</p> <p>The negative impacts identified during the impact assessment, as well as those raised by the I&AP's will be addressed by implementing the mitigation measures contained in this report. Hence, no negative impacts have been identified.</p>			
11. Will the proposed land use/development set a precedent for similar activities in the area (local municipality)?	YES	NO	Please explain
<p>The proposed development will set a precedent for similar activities in the area and aid in the creation of jobs in the area.</p>			
12. Will any person's rights be negatively affected by the proposed activity/ies?	YES	NO	Please explain
<p>After addressing all issues raised by the I&AP's, impacts identified during the impact assessment and implementing all the proposed mitigations, no rights of the surrounding landowners nor the surrounding environment will be negatively affected.</p>			
13. Will the proposed activity/ies compromise the "urban edge" as defined by the local municipality?	YES	NO	Please explain
<p>The proposed activity falls outside the urban edge in an area within agricultural zone.</p>			
14. Will the proposed activity/ies contribute to any of the 17 Strategic Integrated Projects (SIPS)?	YES	NO	Please explain
<p>No. 11: Agri-Logistics and Rural Infrastructure</p>			
15. What will the benefits be to society in general and to the local communities?	Please explain		
<p>The proposed broiler facility is anticipated to contribute to the provision of poultry products, thereby improving supply of the product and ensuring the costs of this preferred meat product are maintained at a reasonable and sustainable level.</p>			
16. Any other need and desirability considerations related to the proposed activity?	Please explain		
<p>Food security is one of the main concerns in the local farming sector and general communities of the Free State Province. This proposed development addresses this concern.</p>			
17. How does the project fit into the National Development Plan for 2030?	Please explain		
<p>Agriculture has the potential to create close to 1million new jobs by 2030, a significant contribution to the overall employment target. Therefore, the project fits into the National Development Plan. South Africa has strategies to achieve this by developing strategies that give new entrants access to product value chains and support from better-resourced players.</p>			

18. Please describe how the general objectives of Integrated Environmental Management as set out in section 23 of NEMA have been taken into account.

NEMA Section 23 requires the following general objectives:

(2) The general objective of integrated environmental management is to—

a. Promote the integration of the principles of environmental management set out in section 2 into the making of all decisions which may have a significant effect on the environment;

b. Identify, predict and evaluate the actual and potential impact on the environment, socio-economic conditions and cultural heritage, the risks and consequences and alternatives and options for mitigation of activities, with a view to minimising negative impacts, maximising benefits, and promoting compliance with the principles of environmental management set out in section 2;

c. Ensure that the effects of activities on the environment receive adequate consideration before actions are taken in connection with them;

d. Ensure adequate and appropriate opportunity for public participation in decisions that may affect the environment;

e. Ensure the consideration of environmental attributes in management and decision-making which may have a significant effect on the environment; and

f. Identify and employ the modes of environmental management best suited to ensuring that a particular activity is pursued in accordance with the principles of environmental management set out in section 2.

These are achieved as follows:

a) Decision making based on the findings of the BAR process

b) Impacts have been identified, predicted and evaluated in terms of environmental, socio-economic and cultural heritage environment. The risks, consequences and alternatives and options for mitigation have been evaluated.

c) This BAR process and the EMP ensure that the effects of the activities on the environment receive adequate consideration before actions are taken in connection with them.

d) There will have been adequate and appropriate opportunity for public participation that will lead to the decision being taken.

e) Environmental attributes have been considered in management and decision making.

f) The modes best suited to environmental management for this activity have been followed and recommended.

19. Please describe how the principles of environmental management as set out in section 2 of NEMA have been taken into account.

NEMA Section 2 requires:

(2) Environmental management must place people and their needs at the forefront of its concern, and serve their physical, psychological, developmental, cultural and social interests equitably.

This has been achieved as follows:

The environmental management relating to the proposed chicken broiler facility has been set up in such a way as to place the needs of people at the forefront of its concern while addressing the environmental issues concerning the construction of the broiler facility. The facility has been designed to allow for addition of modules utilizing the same infrastructure which allows for true sustainable management.

11. APPLICABLE LEGISLATION, POLICIES AND/OR GUIDELINES

List all legislation, policies and/or guidelines of any sphere of government that are applicable to the application as contemplated in the EIA regulations, if applicable:

Title of legislation, policy or guideline	Applicability to the project	Administering authority	Date
National Environmental Management Act (Act 107 of 1998)	The application for the proposed chicken broiler facility consists only of activities listed under Notice No. R327 therefore a Basic Assessment Report will be submitted for the authorization from the Local Authority.	National and provincial	April 2017
National Heritage Resources Act (Act 25 of 1999)		SAHRA	1999
National Water Act (Act 36 of 1998)	The development will be in close proximity to wetlands	DWS - National and provincial	1998
Environmental Impact Assessment Regulations, 2014	Competent Authority	DESTEA	2014
National Development Plan		National Government	2012
National Heritage Resources Act (ACT 25 OF 1999)	The development of infrastructure with a physical footprint of > 5000m ²	SAHRA	

12. WASTE, EFFLUENT, EMISSION AND NOISE MANAGEMENT

a) Solid waste management

Will the activity produce solid construction waste during the construction/initiation phase?

YES	NO
N/A	

If YES, what estimated quantity will be produced per month?
How will the construction solid waste be disposed of (describe)?

N/A

Where will the construction solid waste be disposed of (describe)?

N/A

Will the activity produce solid waste during its operational phase?
If YES, what estimated quantity will be produced per month?
How will the solid waste be disposed of (describe)?

YES	NO
9 ton/month	

During the operational phase solid waste in the form of chicken manure is produced. The manure will be temporarily stockpiled on an impenetrable (concrete) layer and covered with sails to prevent contamination of the surrounding environment. The manure stockpile area will be located approximately 100m to the away from the chicken broiler houses and will be purchased and removed on a weekly basis form the site. The manure will be sold to local farmers and producers as fertiliser.

By collecting the manure in this manner and within this time frame, flies do not have time to hatch and cause sanitary issues.

Any dead chickens will be removed daily from the chicken houses. The dead chickens will be taken to a nearest predator park or dog-breeding facility, where they will be cut into smaller pieces and boiled before being fed to the predators. The plastic containers are then disinfected before returning them to Relebohile Poultry Projects. This method of sterilizations will be done for a minimum of 60 minutes as stipulated by Regulation 2026 of 26 Sept 1986, Reg 24 (1) (c).

In the event where chickens are deemed to be contaminated with controlled or notifiable animal diseases, the Nala Local Municipality will be notified in advance, and the chickens will be disposed of into the impenetrable, concrete pit and covered with lime and a layer of soil.

If the solid waste will be disposed of into a municipal waste stream, indicate which registered landfill site will be used.

N/A

Where will the solid waste be disposed of if it does not feed into a municipal waste stream (describe)?

BASIC ASSESSMENT REPORT

The solid waste will be temporarily stockpiled on a designated stockpiling area, located approximately 100m north of the chicken broiler facility. It will then be removed from the premises on a weekly basis and sold as fertiliser.

If the solid waste (construction or operational phases) will not be disposed of in a registered landfill site or be taken up in a municipal waste stream, then the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.

Can any part of the solid waste be classified as hazardous in terms of the NEM:WA?

YES	NO
-----	----

 If YES, inform the competent authority and request a change to an application for scoping and EIA. An application for a waste permit in terms of the NEM:WA must also be submitted with this application.

Is the activity that is being applied for a solid waste handling or treatment facility?

YES	NO
-----	----

 If YES, then the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA. An application for a waste permit in terms of the NEM:WA must also be submitted with this application.

b) Liquid effluent

Will the activity produce effluent, other than normal sewage, that will be disposed of in a municipal sewage system?

YES	NO
-----	----

 If YES, what estimated quantity will be produced per month?

m ³	
----------------	--

 Will the activity produce any effluent that will be treated and/or disposed of on site?

YES	NO
-----	----

If YES, the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.

Will the activity produce effluent that will be treated and/or disposed of at another facility?

YES	NO X
-----	------

 If YES, provide the particulars of the facility:

Facility name:		
Contact person:		
Postal address:		
Postal code:		
Telephone:	Cell:	
E-mail:	Fax:	

Describe the measures that will be taken to ensure the optimal reuse or recycling of waste water, if any:

During washing of the chicken broiler facility, all wash water will drain into a septic tank and cleaned by the municipality, as soon as it is full.

c) Emissions into the atmosphere

Will the activity release emissions into the atmosphere other than exhaust emissions and dust associated with construction phase activities?

YES	NO
-----	----

 If YES, is it controlled by any legislation of any sphere of government?

YES	NO
-----	----

BASIC ASSESSMENT REPORT

If YES, the applicant must consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.

If NO, describe the emissions in terms of type and concentration:

NA

d) Waste permit

Will any aspect of the activity produce waste that will require a waste permit in terms of the NEM:WA?

YES	NO
-----	----

If YES, please submit evidence that an application for a waste permit has been submitted to the competent authority

e) Generation of noise

Will the activity generate noise?

YES	NO
-----	----

If YES, is it controlled by any legislation of any sphere of government?

YES	NO
-----	----

Describe the noise in terms of type and level:

NA

13. WATER USE

Please indicate the source(s) of water that will be used for the activity by ticking the appropriate box(es):

<input checked="" type="checkbox"/> Municipal	<input type="checkbox"/> Water board	<input type="checkbox"/> Groundwater	<input type="checkbox"/> River, stream, dam or lake	<input type="checkbox"/> Other	<input type="checkbox"/> The activity will not use water
--	--------------------------------------	--------------------------------------	---	--------------------------------	--

If water is to be extracted from groundwater, river, stream, dam, lake or any other natural feature, please indicate the volume that will be extracted per month:

N/A

Does the activity require a water use authorisation (general authorisation or water use license) from the Department of Water Affairs?

YES	NO
-----	----

If YES, please provide proof that the application has been submitted to the Department of Water Affairs.

14. ENERGY EFFICIENCY

Describe the design measures, if any, which have been taken to ensure that the activity is energy efficient:

EMG

The construction design limits work to make maximum use of available energy as efficiently as possible.

Chicken facilities buildings:

- Use of building material originating from sensitive environmental resources should be minimized.
- Building material should be legally obtained by the supplier, e.g. wood must have been legally harvested, sand should be obtained only from legal borrow pits and from commercial sources.
- Building material that can be recycled/ reused should be used rather than building material that cannot.
- Use highly durable material for part of the building that is unlikely to be changed during the life of the buildings (unlikely to change due to, e.g. renovation, fashion, change in family life cycle) is highly recommended.

The following energy saving technology may be considered for incorporation into the facility:

- The broiler houses shall be insulated to reduce the need for cooling or heating.
- Blinds will be installed where appropriate to decrease sunlight penetration and associated uncontrolled room temperature increase in summer, and to increase sunlight penetration and associated heating in winter. This will reduce electricity consumption associated with running heating, ventilation and Air Conditioning (HVAC) systems.
- Where appropriate, insulation of walls, double glazing will be employed to reduce heat exchange between conditioned and unconditioned spaces, thereby minimising energy consumption by HVAC systems.
- A balance between natural lighting and electrical lighting will be maintained to ensure minimal electricity consumption.
- Where appropriate, cool fluorescent tube lights, or energy saving compact fluorescent lamps (CFLs) will be installed to minimise electricity consumption for lighting

Describe how alternative energy sources have been taken into account or been built into the design of the activity, if any:

Same as above

SECTION B: SITE/AREA/PROPERTY DESCRIPTION

Important notes:

1. For linear activities (pipelines, etc) as well as activities that cover very large sites, it may be necessary to complete this section for each part of the site that has a significantly different environment. In such cases please complete copies of Section B and indicate the area, which is covered by each copy No. on the Site Plan.

Section B Copy No. (e.g. A):

2. Paragraphs 1 - 6 below must be completed for each alternative.

3. Has a specialist been consulted to assist with the completion of this section? YES NO
 If YES, please complete the form entitled "Details of specialist and declaration of interest" for each specialist thus appointed and attach it in Appendix I. All specialist reports must be contained in Appendix D.

Property description/physical address:

Province	Free State
District Municipality	Lejweleputswa District Municipality
Local Municipality	Nala Local Municipality
Ward Number(s)	4
Farm name and number	Herman 236
Portion number	RE
SG Code	F04100000000236

Where a large number of properties are involved (e.g. linear activities), please attach a full list to this application including the same information as indicated above.

Current land-use zoning as per local municipality IDP/records:

Agricultural

In instances where there is more than one current land-use zoning, please attach a list of current land use zonings that also indicate which portions each use pertains to, to this application.

Is a change of land-use or a consent use application required? YES NO



BASIC ASSESSMENT REPORT

1. GRADIENT OF THE SITE

Indicate the general gradient of the site.

Alternative S1:

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 S2 (if any):

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 S3 (if any):

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
------	-------------	-------------	-------------	--------------	-------------	------------------

2. LOCATION IN LANDSCAPE

Indicate the landform(s) that best describes the site:

2.1 Ridgeline <input type="checkbox"/>	2.4 Closed valley <input type="checkbox"/>	2.7 Undulating plain / low hills <input type="checkbox"/>
2.2 Plateau <input type="checkbox"/>	2.5 Open valley <input type="checkbox"/>	2.8 Dune <input type="checkbox"/>
2.3 Side slope of hill/mountain <input type="checkbox"/>	2.6 Plain <input checked="" type="checkbox"/>	2.9 Seafront <input type="checkbox"/>
2.10 At sea <input type="checkbox"/>		

3. GROUNDWATER, SOIL AND GEOLOGICAL STABILITY OF THE SITE

Is the site(s) located on any of the following?

	Alternative S1:		Alternative S2 (if any):		Alternative S3 (if any):	
Shallow water table (less than 1.5m deep)	YES	NO	YES	NO	YES	NO
Dolomite, sinkhole or doline areas	YES	NO	YES	NO	YES	NO
Seasonally wet soils (often close to water bodies)	YES	NO	YES	NO	YES	NO
Unstable rocky slopes or steep slopes with loose soil	YES	NO	YES	NO	YES	NO
Dispersive soils (soils that dissolve in water)	YES	NO	YES	NO	YES	NO
Soils with high clay content (clay fraction more than 40%)	YES	NO	YES	NO	YES	NO
Any other unstable soil or geological feature	YES	NO	YES	NO	YES	NO
An area sensitive to erosion	YES	NO	YES	NO	YES	NO

If you are unsure about any of the above or if you are concerned that any of the above aspects may be an issue of concern in the application, an appropriate specialist should be appointed to assist in the completion of this section. Information in respect of the above will often be available as part of the

BASIC ASSESSMENT REPORT

project information or at the planning sections of local authorities. Where it exists, the 1:50 000 scale Regional Geotechnical Maps prepared by the Council for Geo Science may also be consulted.

4. GROUND COVER

Indicate the types of groundcover present on the site. The location of all identified rare or endangered species or other elements should be accurately indicated on the site plan(s).

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

If any of the boxes marked with an “E” is ticked, please consult an appropriate specialist to assist in the completion of this section if the environmental assessment practitioner doesn’t have the necessary expertise.

5. SURFACE WATER

Indicate the surface water present on and or adjacent to the site and alternative sites?

Perennial River	YES	NO	UNSURE
Non-Perennial River	YES	NO	UNSURE
Permanent Wetland	YES	NO	UNSURE
Seasonal Wetland	YES	NO	UNSURE
Artificial Wetland	YES	NO	UNSURE
Estuarine / Lagoonal wetland	YES	NO	UNSURE

If any of the boxes marked YES or UNSURE is ticked, please provide a description of the relevant watercourse.

Seasonal wetlands surround the proposed demarcated development area. None of these wetlands will be affected by the development, as none of these are present on site.

EMG

6. LAND USE CHARACTER OF SURROUNDING AREA

Indicate land uses and/or prominent features that currently occur within a 500m radius of the site and give description of how this influences the application or may be impacted upon by the application:

Natural area	Dam or reservoir	Polo fields
Low density residential	Hospital/medical centre	Filling station ^H
Medium density residential	School	Landfill or waste treatment site
High density residential	Tertiary education facility	Plantation
Informal residential ^A	Church	Agriculture
Retail commercial & warehousing	Old age home	River, stream or wetland
Light industrial	Sewage treatment plant ^A	Nature conservation area
Medium industrial ^{AN}	Train station or shunting yard ^N	Mountain, koppie or ridge
Heavy industrial ^{AN}	Railway line ^N	Museum
Power station	Major road (4 lanes or more) ^N	Historical building
Office/consulting room	Airport ^N	Protected Area
Military or police base/station/compound	Harbour	Graveyard
Spoil heap or slimes dam ^A	Sport facilities	Archaeological site
Quarry, sand or borrow pit	Golf course	Other land uses (describe)

If any of the boxes marked with an "N" are ticked, how will this impact / be impacted upon by the proposed activity? Specify and explain:

N/A

If any of the boxes marked with an "An" are ticked, how will this impact / be impacted upon by the proposed activity? Specify and explain:

N/A

If any of the boxes marked with an "H" are ticked, how will this impact / be impacted upon by the proposed activity? Specify and explain:

N/A

Does the proposed site (including any alternative sites) fall within any of the following?

Critical Biodiversity Area (as per provincial conservation plan)	YES	NO
Core area of a protected area?	YES	NO
Buffer area of a protected area?	YES	NO
Planned expansion area of an existing protected area?	YES	NO
Existing offset area associated with a previous Environmental Authorisation?	YES	NO

BASIC ASSESSMENT REPORT

Buffer area of the SKA?	YES	NO
-------------------------	-----	----

If the answer to any of these questions was YES, a map indicating the affected area must be included in Appendix A.

7. CULTURAL/HISTORICAL FEATURES

Are there any signs of culturally or historically significant elements, as defined in section 2 of the National Heritage Resources Act, 1999, (Act No. 25 of 1999), including Archaeological or paleontological sites, on or close (within 20m) to the site? If YES, explain:	YES	NO

If uncertain, conduct a specialist investigation by a recognised specialist in the field (archaeology or palaeontology) to establish whether there is such a feature(s) present on or close to the site. Briefly explain the findings of the specialist:

Will any building or structure older than 60 years be affected in any way?	YES	NO
Is it necessary to apply for a permit in terms of the National Heritage Resources Act, 1999 (Act 25 of 1999)?	YES	NO

If YES, please provide proof that this permit application has been submitted to SAHRA or the relevant provincial authority.

8. SOCIO-ECONOMIC CHARACTER

a) Local Municipality

Please provide details on the socio-economic character of the local municipality in which the proposed site(s) are situated.

Level of unemployment:

Nala Local Municipality has a population of 81 220 with 26 611 economically active (employed or unemployed but looking for work) people, and of these 35.9% are unemployed. Of the 12 357 economically active youth (15–35 years) in the area, 47.6% are unemployed.

Economic profile of local municipality:



Level of education:

Of a population of 81 220, the level of education is as follows:

Group	Percentage
No Schooling	4.4%
Some Primary	44.3%
Completed Primary	6.6%
Some Secondary	33.6%
Completed Secondary	9.6%
Higher Education	0.7%
Not Applicable	0.8%

b) Socio-economic value of the activity

What is the expected capital value of the activity on completion?
 What is the expected yearly income that will be generated by or as a result of the activity?
 Will the activity contribute to service infrastructure?
 Is the activity a public amenity?
 How many new employment opportunities will be created in the development and construction phase of the activity/ies?
 What is the expected value of the employment opportunities during the development and construction phase?
 What percentage of this will accrue to previously disadvantaged individuals?
 How many permanent new employment opportunities will be created during the operational phase of the activity?
 What is the expected current value of the employment opportunities during the first 10 years?
 What percentage of this will accrue to previously disadvantaged individuals?

R 1 225 837.68	
R 500 000.00	
YES	NO
YES	NO
12	
R 400 000.00	
100 %	
6	
R 5 000 000.00	
100 %	

9. BIODIVERSITY

Please note: The Department may request specialist input/studies depending on the nature of the biodiversity occurring on the site and potential impact(s) of the proposed activity/ies. To assist with the identification of the biodiversity occurring on site and the ecosystem status consult <http://bgis.sanbi.org> or BGIShelp@sanbi.org. Information is also available on compact disc (cd) from the Biodiversity-GIS Unit, Ph (021) 799 8698. This information may be updated from time to time and it is the applicant/EAP's responsibility to ensure that the latest version is used. A map of the relevant biodiversity information (including an indication of the habitat conditions as per (b) below) and must be provided as an overlay map to the property/site plan as Appendix D to this report.

BASIC ASSESSMENT REPORT

- a) Indicate the applicable biodiversity planning categories of all areas on site and indicate the reason(s) provided in the biodiversity plan for the selection of the specific area as part of the specific category)

Systematic Biodiversity Planning Category				If CBA or ESA, indicate the reason(s) for its selection in biodiversity plan
Critical Biodiversity Area (CBA)	Ecological Support Area (ESA)	Other Natural Area (ONA)	No Natural Area Remaining (NNR)	The proposed development is located in a CBA 1 and 2. This area forms part of the biodiversity plan for on account of the presence of several wetlands. The vegetation in the area experience minor disturbances, which makes this area sensitive. It also forms a habitat for several water-bound plat and animal species.

- b) Indicate and describe the habitat condition on site

Habitat Condition	Percentage of habitat condition class (adding up to 100%)	Description and additional Comments and Observations (including additional insight into condition, e.g. poor land management practises, presence of quarries, grazing, harvesting regimes etc).
Natural	0%	
Near Natural (includes areas with low to moderate level of alien invasive plants)	0%	
Degraded (includes areas heavily invaded by alien plants)	0%	
Transformed (includes cultivation, dams, urban, plantation, roads, etc)	100%	The site has been previously ploughed for crop cultivation and consequently the vegetation is of secondary establishment, therefore largely transformed and consequently the habitat and species diversity are relatively low. Infrastructure also exist on the site, which gives the affected area applied for its transformed status.

c) Complete the table to indicate:

- (i) the type of vegetation, including its ecosystem status, present on the site; and
- (ii) whether an aquatic ecosystem is present on site.

Terrestrial Ecosystems		Aquatic Ecosystems						
Ecosystem threat status as per the National Environmental Management Biodiversity Act (Act No. 10 of 2004)	Critical	Wetland (including rivers, depressions, channelled and unchannelled wetlands, flats, seeps pans, and artificial wetlands)			Estuary		Coastline	
	Endangered							
	Vulnerable							
	Least Threatened	YES	NO	UNSURE	YES	NO	YES	NO

d) Please provide a description of the vegetation type and/or aquatic ecosystem present on site, including any important biodiversity features/information identified on site (e.g. threatened species and special habitats)

According to Mucina & Rutherford (2006) the area consists of Western Free State Clay Grassland (Gh 9). This vegetation type is currently listed as being of Least Concern (LC) under the National List of Threatened Ecosystems (Notice 1477 of 2009) (National Environmental Management Biodiversity Act, 2004). The vegetation type is not currently subjected to any pronounced transformation pressures. It is therefore of limited conservation value.

The site is considered to be largely transformed from the natural condition. This is due to the site previously being ploughed for dryland crop cultivation. As a result the vegetation layer is of secondary establishment, dominated by pioneer species, and although consisting of indigenous species is unlikely to be able to attain the species composition and diversity of the natural vegetation. The site is also already impacted on by an existing poultry house, buildings, vegetable patch and fruit trees, which cause local transformation on the site. Consequently the site doesn't contain any protected or rare species and the diversity of species is relatively low. The pans or wetland areas surrounding the site is however important in terms of groundwater and a shallow water table, but should remain unaffected by the development.



SECTION C: PUBLIC PARTICIPATION

1. ADVERTISEMENT AND NOTICE

Publication name	Vista	
Date published	Thursday 25 July 2019	
Site notice position	Latitude	Longitude
	27°48'49.09"S	26°21'30.81"E
	27°49'14.63"S	26°21'33.74"E
	27°49'51.47"S	26°21'37.04"E
Date placed	July 2019	

Include proof of the placement of the relevant advertisements and notices in Appendix E1.

2. DETERMINATION OF APPROPRIATE MEASURES

Provide details of the measures taken to include all potential I&APs as required by Regulation 41(2)(e) and 41(6) of GN 326

Key stakeholders (other than organs of state) identified in terms of Regulation 41(2)(b) of GN 326

Title, Name and Surname	Affiliation/ key stakeholder status	Contact details (tel number or e-mail address)
Please refer to Public Participation Report		

Include proof that the key stakeholder received written notification of the proposed activities as Appendix E2. This proof may include any of the following:

- e-mail delivery reports;
- registered mail receipts;
- courier waybills;
- signed acknowledgements of receipt; and/or
- or any other proof as agreed upon by the competent authority.

3. ISSUES RAISED BY INTERESTED AND AFFECTED PARTIES

Summary of main issues raised by I&APs	Summary of response from EAP
This document is still in Draft phase. All comments will be included into the final BAR	

4. COMMENTS AND RESPONSE REPORT

The practitioner must record all comments received from I&APs and respond to each comment before the Draft BAR is submitted. The comments and responses must be captured in a comments and response report as prescribed in the EIA regulations and be attached to the Final BAR as Appendix E3.

5. AUTHORITY PARTICIPATION

Authorities and organs of state identified as key stakeholders:

Authority/Organ of State	Contact person (Title, Name and Surname)	Tel No	e-mail	Postal address
Department of Rural Development and Land Reform	Mr. Mbulelo Kelly	0514004200	mbulelo.kelly@drdlr.gov.za	136 Charlotte Maxeke Street, Bloemfontein, 9300
Department of Agriculture and Rural Development	Mr Thabethe	0518618509	pa.hodagric@fs.agric.za schultzjg@gmail.com	Gielie Joubert St Glen, BFN, 9360
Department of Water & Sanitation	Mr Vernon Blair	0514059000 0828073552	blairV@dws.gov.za	Bloem Plaza, 2nd Floor, c/o Charlotte Maxeke & East Burger Streets
Free State Department of Public Works and Infrastructure	Ms G Brown	0514923909	hodoffice@fsworks.gov.za	Cnr Markgraaf & St Andrew's Streets, Bloemfontein 9301
Lejweleputswa District Municipality -Manager Environmental Assessment	Mr. G. Nkosi	0573533098 0573533094 /5/8/9	mm@lejwe.co.za jane@lejwe.co.za	Cnr Tempest & Jan Hofmeyer Road P.O. Box 2169 Welkom, 9460
Nala local Municipality Executive Mayor	Mr. Theko Mogoje	0565149200	rtsibonalane@nala.org.za	8 Preller Street, Bothaville, 9600
Nala local Municipality - MM	Mr. Boitumelo Chris Mokomela	0565149200	ttsibonalane@na;a.org.za	8 Preller Street, Bothaville, 9600
Ward Councillor - Ward 4	Mr. Moleleki Ngece	0565149200	mleeto@nala.org.za	8 Preller Street, Bothaville, 9600

Include proof that the Authorities and Organs of State received written notification of the proposed activities as appendix E4.

In the case of renewable energy projects, Eskom and the SKA Project Office must be included in the list of Organs of State.

6. CONSULTATION WITH OTHER STAKEHOLDERS

Note that, for any activities (linear or other) where deviation from the public participation requirements may be appropriate, the person conducting the public participation process may deviate from the requirements of that sub-regulation to the extent and in the manner as may be agreed to by the competent authority.

Proof of any such agreement must be provided, where applicable. Application for any deviation from the regulations relating to the public participation process must be submitted prior to the commencement of the public participation process.

A list of registered I&APs must be included as appendix E5.

Copies of any correspondence and minutes of any meetings held must be included in Appendix E6.

SECTION D: IMPACT ASSESSMENT

The assessment of impacts must adhere to the minimum requirements in the EIA Regulations, 2014 as amended and should take applicable official guidelines into account. The issues raised by interested and affected parties should also be addressed in the assessment of impacts.

1. IMPACTS THAT MAY RESULT FROM THE PLANNING AND DESIGN, CONSTRUCTION, OPERATIONAL, DECOMMISSIONING AND CLOSURE PHASES AS WELL AS PROPOSED MANAGEMENT OF IDENTIFIED IMPACTS AND PROPOSED MITIGATION MEASURES

Provide a summary and anticipated significance of the potential direct, indirect and cumulative impacts that are likely to occur as a result of the planning and design phase, construction phase, operational phase, decommissioning and closure phase, including impacts relating to the choice of site/activity/technology alternatives as well as the mitigation measures that may eliminate or reduce the potential impacts listed. This impact assessment must be applied to all the identified alternatives to the activities identified in Section A(2) of this report.

BASIC ASSESSMENT REPORT

Activity	Impact summary	Significance	Proposed mitigation
Alternative 1 (preferred alternative)			
DESIGN AND PLANNING PHASE			
Environmental Legal and Policy compliance	Direct impacts: Failure to adhere to existing policies and legal obligations could lead to the project conflicting with local, provincial and national policies, legislation etc. This could result in lack of institutional support for the project, overall project failure and undue disturbance to the natural environment.	HIGH	The planning and design of the road upgrade must comply with all relevant legislation and Policies.
	Indirect impacts: None		
	Cumulative impacts: None		
No-go option			
Should the No-go option be implemented this activity would per definition not entail any construction impacts.	Direct impacts: .		

BASIC ASSESSMENT REPORT

Activity	Impact summary	Significance	Proposed mitigation
Alternative 1 (preferred alternative)			
CONSTRUCTION PHASE			
Construction camp and construction activities	<p>Direct impacts: Siting of construction camp could lead to negative environmental impacts including dust, noise, soil contamination and erosion, and visual pollution.</p>	MEDIUM	<p>The construction camp must be located in an area that will not create a visual and noise hazard, not create a traffic hazard.</p> <p>The position must be determined in conjunction with the Environmental Control Officer (ECO) (see Environmental Management Plan – Appendix F)</p>
	<p>Indirect impacts: The generation of dust, noise and visual impacts will create a nuisance factor in the area, particularly with regards to the surrounding residential areas, as well as the riverine area located in close proximity.</p>	HIGH	<p>Construction activities must account for reducing and controlling dust, noise and visual impacts.</p> <p>Method Statements must be written and adhered to for measures to control and reduce noise, dust and visual impacts.</p> <p>Construction work must only take place in normal working hours, unless the neighbours are informed and agree to other working hours.</p>
	<p>Cumulative impacts: - None</p>		
Impacts on indigenous vegetation	<p>Direct impacts: Vegetation on site consists mainly of cultivated pastures. No natural veld will be disturbed.</p>	LOW	<p>Ensure the Environmental Management Plan includes localities of these plants and if applicable animals, and measures to rescue, protect/remove them.</p>

BASIC ASSESSMENT REPORT

			<p>Any animals found should be relocated to places of safety.</p> <p>No hunting or trapping of animals to be permitted.</p> <p>All persons should be sensitised to the fact that they are working in an open veld area, and ALL fauna encountered must be treated with respect.</p>
	<p>Indirect impacts: None</p>		
	<p>Cumulative impacts: - None</p>		
Hydrological – Storm water System and water supply	<p>Direct impacts: Initially storm water runoff will be as per natural state i.e. infiltration into soils and sheet washing.</p> <p>The construction of the chicken Broiler houses and transformation of base soil will result in higher levels of storm water runoff, with the possibility of increased erosion and decline in water quality.</p>	MEDIUM	Storm water run-off generated within the development should be accommodated through formal systems.
	<p>Indirect impacts: None.</p> <p>The construction phase of the development will require very little water.</p>	LOW	Personnel will be instructed not to waste water during the construction phase.
	<p>Cumulative impacts: -</p>		

BASIC ASSESSMENT REPORT

	None		
Waste – Sewage / Effluent	<p>Direct impacts: Very little sewage will be generated during the construction phase.</p>	LOW	<p>Portable toilets will be supplied for personnel during the construction phase of the development.</p> <p>Thereafter, suitable connection to the municipal sewerage system will take place.</p>
	<p>Indirect impacts: - None</p>		
	<p>Cumulative impacts: - None</p>		
Waste – Building Rubble & Littering	<p>Direct impacts: Littering may occur by personnel during construction phase.</p> <p>Building waste will thus be continuously generated in small quantities over the construction period.</p>	LOW	<p>The building waste will be transported at the Building Contractors / Developer's cost to the Municipality's landfill site.</p> <p>Waste and litter drums will be placed at strategic points for use by personnel.</p> <p>The drums will be regularly emptied and waste removed to the Municipal's landfill site.</p> <p>The municipality should ensure that municipal by-laws regarding waste disposal are upheld by the single residential home owners and their builders.</p> <p>Illegal dumping of domestic and other waste should not be allowed. Warning signs should be erected, spot fines imposed or even prosecution</p>

BASIC ASSESSMENT REPORT

			<p>should occur if dumping continues.</p> <p>The Developer will display an all-hours telephone number on the site for emergency calls or complaints.</p>
	<p>Indirect impacts: - None</p>		
	<p>Cumulative impacts: - None</p>		
<p>Land transformation – Dust Levels</p>	<p>Direct impacts: Increased dust levels due to the clearing of vegetation, earthmoving activities and movement of vehicles may impact on air quality and possibly surrounding natural vegetation.</p>	<p>MEDIUM</p>	<p>The Developer should ensure that dust levels are kept to a minimum by:</p> <p>Exposing only those areas to be developed i.e. areas corresponding to road surfaces, cables and pipelines.</p> <p>The Developer will display an all-hours telephone number on the site for emergency calls or complaints.</p>
	<p>Indirect impacts: - None</p>		
	<p>Cumulative impacts: - None</p>		
<p>Land transformation – Noise Levels</p>	<p>Direct impacts: Increased levels of noise due to earthmoving & construction activities. Associated noise may potentially impact on nearby natural surrounding ecosystems.</p>	<p>LOW</p>	<p>The Developer will ensure that noise levels are kept to a minimum by:</p> <p>Limiting operation of heavy earthmoving equipment and construction activities to normal working hours, and to normal work days (i.e.</p>

BASIC ASSESSMENT REPORT

			Monday to Friday, between 08h00 and 17h00). The Developer will display an all-hours telephone number on the site for emergency calls or complaints.
	Indirect impacts: - None		
	Cumulative impacts: - None		
Land transformation – Veldfire	Direct impacts: Machinery and human activity will increase veldfire risk levels. The site is currently covered with cultivated lands, from which a veldfire may spread to adjacent natural areas.	MEDIUM	The Developer will ensure that firefighting equipment is available on site in the event that an accidental fire should break out. Implementing firebreaks on the perimeter of the farm. Construction workers will not be allowed to make fires on the site. The Developer will display an all-hours telephone number on the site for emergency calls or complaints.
	Indirect impacts: - None		
	Cumulative impacts: - None		
Increased levels of traffic	Direct impacts: The transportation of construction material will increase traffic on the S1331 road. The	LOW	The Developer will ensure that traffic flow is not impeded by avoiding the transportation of materials during peak traffic hours of 7:00 am –

BASIC ASSESSMENT REPORT

	additional trips will have negligible impact on the current traffic flows.		8:00am and 4:00pm – 5:00pm.
	Indirect impacts: - None		
	Cumulative impacts: - None		
Socio-Economic	Direct impacts: Casual labour taking advantage of the job opportunities created by the construction phase may increase the number of people loitering, levels of vagrancy and possibly petty crime.	LOW	The Developer will secure the building site by fencing off the construction yard. The Developer should ensure that the appointed building contractor manages his/her labour force in such a way as to discourage the employment of casual labour. Labour should be transported to and from work. Labour brokering, if allowed, should be dealt with off-site.
	Indirect impacts: - None		
	Cumulative impacts: - None		
No-go option			
Should the No-go option be implemented this activity would per definition not entail any construction impacts.	Direct impacts: It is likely that illegal dumping of domestic and building wastes will occur on the vacant land. Vagrancy could start, with the associated safety	MEDIUM	Illegal dumping should be severely dealt with, and the perpetrators fined or prosecuted. Vagrants and loiters should be encouraged to seek help though interventions by the local

BASIC ASSESSMENT REPORT

	<p>and fire risks.</p> <p>Invasion of natural veld by alien plant species would continue unchecked.</p> <p>Loss of opportunities in terms of potential short and long-term employment, food production and education.</p>		<p>authorities.</p> <p>Alien invasive plants should be cleared.</p> <p>Firebreaks should be cut and maintained along the property boundaries. The local authority fire and disaster management plans should be put in place.</p> <p>The local authority's LED policy would be tested to find replacement employment opportunities. Increased burden on state for social security.</p>
	Indirect impacts: - None		
	Cumulative impacts: - None		
Activity	Impact Summary	Significance	Proposed mitigation
Alternative 1 (preferred alternative)			
OPERATIONAL PHASE			
Food security	<p>Direct impacts: More affordable protein will be made available to surrounding communities.</p> <p>Indirect impacts: None</p> <p>Cumulative impacts: None</p>	HIGH	None
Job creation	<p>Direct impacts: Several jobs will be made available, part time and permanent.</p>	HIGH	None

BASIC ASSESSMENT REPORT

	Indirect impacts: - Poverty will reduce		
	Cumulative impacts: - None		
Smell	Direct impacts: Increased levels of noise due to vehicles on the road. Associated noise may potentially impact on nearby residential neighbourhoods, or natural surrounding ecosystems.	LOW	Follow a diligent “housekeeping” practices which ensure frequent removal of chicken manure and other organic waste which may generate from time to time. Thus far all the necessary measures are taken to prevent any odour. Dispose of chicken feed, bedding, carcasses, and all other waste using effective and environmentally-friendly methods as planned. No carcasses may be dumped on site. Immediately implement effective measures to rehabilitate accidentally contaminated areas.
	Indirect impacts: - None		
	Cumulative impacts: - None		
Transmission of diseases of wildlife from poultry and pets.	Direct impacts: Death of chickens and humans.	MEDIUM	Implement procedures and measures (e.g. sand traps) to prohibit accidental dirty water or contamination from entering the surrounding environment.
	Indirect impacts: - None		
	Cumulative impacts: - None		
Poor / inappropriate control	Direct impacts:	MEDIUM	It is important to detect pest infestation before

BASIC ASSESSMENT REPORT

<p>of invertebrate pests such as flies, weevils, ants, termites, cockroaches, fleas, lice, mites, ticks, etc.</p>	<p>This could have a negative effect on the health of chickens, as well as humans in the facility.</p>		<p>they become a problem. Failure to do so will often result in increased costs of control, less effective or ineffective control measures and significant damage or loss.</p>
	<p>Indirect impacts: - None</p>		
	<p>Cumulative impacts: - None</p>		
<p>Poor / inappropriate control of vertebrate pests such as rodents, snakes, mammalian carnivores and bats.</p>	<p>Direct impacts: This could have a negative effect on the health of chickens, as well as humans in the facility.</p>	<p>MEDIUM</p>	<p>The following measures should be implemented:</p> <ul style="list-style-type: none"> • Keep grass and weeds mowed to 5cm or less immediately around the facilities, to prevent insect growth and hiding place for rats and mice. • Remove all trash and sources of feed and water for pests from the outside perimeter of the facilities.
	<p>Indirect impacts: - None</p>		
	<p>Cumulative impacts: - None</p>		
<p>Disturbance of surrounding fauna from vehicle and human activity, noise and light, environmental contamination, inappropriate pest management, disease transmission, proliferation of alien species, and unnatural fires.</p>	<p>Direct impacts: The dynamics and wellbeing of the surrounding environment will decrease if this issue is not mitigated.</p>	<p>MEDIUM</p>	<p>Highlight all prohibited activities to workers through training and notices. Implement measures (e.g. speed bumps) along the gravel access to control dust, erosion, sedimentation, and faunal roadkill and any sensory disturbance. Minimize lighting. Where this is not possible, lights should be hooded and orientated downwards to reduce the disturbance or attraction of fauna to lights. Fluorescent and</p>

BASIC ASSESSMENT REPORT

			mercury vapour lighting should be avoided and sodium vapour (yellow) lights should be used wherever possible.
	Indirect impacts: - None		
	Cumulative impacts: - None		
Potential visual intrusion of structures and buildings associated with the proposed development on existing views of sensitive visual receptors. This impact is rated as neutral.	Direct impacts: Scenes of place is impacted.	LOW	No specific mitigation measures are recommended.
	Indirect impacts: - None		
	Cumulative impacts: - None		
Potential impact of night lighting of the development on the nightscape of the surrounding landscape. This impact is rated as neutral.	Direct impacts: Scenes of place is impacted.	LOW	No specific mitigation measures are recommended as it is assumed that night lighting of the proposed storage facility will be planned in such a manner so as to minimize light pollution such as glare and light spill (light trespass) by: <ul style="list-style-type: none"> • Using light fixtures that shield the light and focus illumination on the ground (or only where light is required). • Using minimum lamp wattage within safety/security requirements. • Avoiding elevated lights within safety/security requirements. • Where possible, using timer switches or motion detectors to control lighting in areas that are not occupied continuously (if permissible and

BASIC ASSESSMENT REPORT

			in line with minimum security requirements). <ul style="list-style-type: none"> Switching off lights when not in use in line with safety and security.
	Indirect impacts: - None		
	Cumulative impacts: - None		
Land contamination as a result of storage of chicken waste on the proposed waste storage facility	Direct impacts: Soil contamination, as well as water contamination might occur prior to implementation of mitigation measures. .	HIGH	The waste storage facility must be operated within its design capacity. Ensure that the waste storage facility is free from odour or emissions at levels that are likely to cause annoyance. Personnel should ensure careful transportation of waste from the chicken facilities to the storage facility as to avoid spillage. Training must be provided continuously to all employees working with waste and all contract workers that might be exposed to waste.
	Indirect impacts: - None		
	Cumulative impacts: - None		
Potential impact on the health of operating personnel resulting in potential health injuries. This impact is rated as neutral	Direct impacts: Potential impact on the health of operating personnel resulting in potential health injuries. This impact is rated as neutral.		Operational personnel must wear basic PPE (e.g. gloves, goggles etc.) as necessary during the operational phase.
	Indirect impacts: - None		
	Cumulative impacts: -		

BASIC ASSESSMENT REPORT

	None		
Minor accidents to the public and moderate accidents to operational staff (e.g. fires). This impact is rated as neutral.	Direct impacts: Injuries to personnel	LOW	An Emergency Plan should be compiled in order to deal with potential spillages and fires. Records of practices should be kept on site. Scheduled inspections should be implemented by operating personnel in order to assure and verify the integrity of hoses, piping and waste storage facility. Portable fire extinguishers and fire water hydrants (i.e. appropriate fire-fighting equipment) should be provided at the facility as required.
	Indirect impacts: - None		
	Cumulative impacts: - None		
Improved service delivery with regards to produce. This impact is rated as positive	Direct impacts: Improved service delivery with regards to produce. This impact is rated as positive. .	HIGH	Ensure that the proposed infrastructure is maintained appropriately to ensure that all facilities and infrastructure operate within its design capacity to deliver as the market requires.
	Indirect impacts: - None		
	Cumulative impacts: - None		
No-go option			
Increased traffic congestion, deterioration of roads, and safety risks to motorists and other road users	Direct impacts:	MEDIUM	Implementation of traffic calming measures such as speed humps and regulatory signage to improve the safety of all road users find replacement employment opportunities. Increased burden on state for social security.

BASIC ASSESSMENT REPORT

	Indirect impacts: None		
	Cumulative impacts: None		
Further spread and infestation of alien and invasive vegetation along the road	Direct impacts:	MEDIUM	Systematic removal of all alien and invasive vegetation through a comprehensive control and eradication programme. Implement a monitoring programme to detect alien invasive species early, before they become established and, in the case of weeds, before the release of seeds.
	Indirect impacts: None		
	Cumulative impacts: None		
Potential increase in informal land-uses in open spaces forming part of the road reserve	Direct impacts:	MEDIUM	Enforce legal measures with the assistance of the local municipal authorities to control the illegal occupation of vacant land, and commercial operations thereon.
	Indirect impacts: None		
	Cumulative impacts: None		

A complete impact assessment in terms of Regulation 19(3) of GN 326 must be included as Appendix F.

2. ENVIRONMENTAL IMPACT STATEMENT

Taking the assessment of potential impacts into account, please provide an environmental impact statement that summarises the impact that the proposed activity and its alternatives may have on the environment after the management and mitigation of impacts have been taken into account, with specific reference to types of impact, duration of impacts, likelihood of potential impacts actually occurring and the significance of impacts.

Alternative A (preferred alternative)

Construction phase impacts

These are limited to the construction of the proposed chicken houses.

Noise impacts during construction - limited to the usual anticipated building noises. No impact.

Socio-economically short-term employment will be created for the construction of the chicken houses. Short term employment opportunities will be created. These should go to local residents.

Operational impacts

Smell:

The ventilator system expels air that smells of “chicken”, and could be detected up to 5m from the ventilator fans.

The continuation of diligent “housekeeping” practices which ensure frequent removal of chicken manure and other organic waste which may generate from time to time will be maintained to regulate the foul smell. Thus, all the necessary measures will be taken to prevent any odour.

Noise:

The noise that the emergency generator on the property makes when it runs (when there is a power failure).

Potential surface and groundwater contamination:

Solid waste, including dead chickens and left-over feed are removed from site every day and stored temporarily at the manure stockpile area.

Potential disease outbreaks:

The potential for disease outbreaks is always there, and can only be avoided by implementing efficient vaccination programs, as well as ensuring regular cleaning of chicken houses as well as sound “housekeeping”. Relebohile Poultry Project concedes itself as a leader in the industry with regards to the implementation of the above-mentioned activities. Regular vaccinations for diseases like Salmonella, Newcastle Disease and Avian Influenza are

implemented and all the sanitary precautions are in place.

The Animal Disease Act (Act number 35 of 1984) must be complied with.

General sanitation and biological hazard control:

Prevention / Control

Only staff members assigned to work in the hen houses is permitted entry.

Staff members who work in the hen houses will not be permitted to keep any fowl of any kind to prevent possible spread of disease / bacteria to hen houses.

When advice from consulting vet is required, samples of carcasses, birds, bloods etc is sent to him. Consulting vet is the ONLY visitor permitted to enter the hen houses.

Under no circumstances will ANY other visitor be allowed access to chicken houses.

Reaction

A Crisis Management team will be elected by the project management team to deal with any outbreak of a disease that may occur.

Because each and every Biological Hazard seems to have a life and personality of its own, a risk assessment will be performed to establish what the possible risks are, and to determine what further steps are to be taken to prevent contamination of the product, to protect the health of the staff, the health of the consumer, and any steps necessary to contain contamination to prevent further spread of any disease. These actions could be any of the following: Restricted movement, additional sanitizing, foot dips, additional veterinary medicines to broilers, inoculations and whatever other restrictions that the situation dictates.

As far as the palaeontological heritage is concerned, the site is buffered by paleontologically insignificant aeolian sand veneer with impact on potential fossil remains from underlying and moderately significant Ecca Group strata, considered to be low.

The terrain is also regarded as of low archaeological significance and is assigned a rating of Generally Protected C (GP.C). As far as the palaeontological and archaeological heritage is concerned, the proposed development may proceed with no additional heritage assessments necessary, provided that all excavation activities are restricted to within the boundaries of the development footprint.

In the opinion of Environmental Management Group, there are no environmental impacts that have been identified that will be detrimental to the environment to such an extent that the proposed development should not be permitted, nor were any sensitive environmental components or fatal environmental flaws identified within the study area, such that should result in refusal of Environmental Authorisation for this application. Therefore, it is recommended that this application receives favourable consideration, given that the overall social impact of this proposed activity will be of a positive nature.

Alternative B

--

Alternative C

--

No-go alternative (compulsory)

This option assumes that a conservative approach would ensure that the environment is not impacted upon any more than is currently the case. It is important to state that this assessment is informed by the current condition of the area. Should the Competent Authority decline the application, the 'No-Go' option will be followed and the status quo of the site will remain.

SECTION E. RECOMMENDATION OF PRACTITIONER

Is the information contained in this report and the documentation attached hereto sufficient to make a decision in respect of the activity applied for (in the view of the environmental assessment practitioner)?

YES	NO
-----	----

If "NO", indicate the aspects that should be assessed further as part of a Scoping and EIA process before a decision can be made (list the aspects that require further assessment).

--

If "YES", please list any recommended conditions, including mitigation measures that should be considered for inclusion in any authorisation that may be granted by the competent authority in respect of the application.

- The project should remain in full compliance with the requirements of the EMP and with all regulatory requirements;
- The EMP should be implemented by senior qualified environmental personnel that have competence and credibility to interpret the requirements of the EIA and the EMP, and that must be issued with a written mandate by a senior management member of Moqhaka Local Municipality and Fezile Dabi District Municipality to provide guidance and instructions to the contractors;
- Stakeholder engagement must be maintained during the closure/rehabilitation phases of the project, with the emphasis on ongoing provision of information stakeholder relations;
- A detailed record of all activities related to environmental and social management, as well as stakeholder engagement, should be retained for review and audit by independent parties for all phases of the project. The audit findings should be made available to the relevant environmental and local authorities; and
- Any substantive changes to the project configuration should be the subject of environmental assessments and should result in amendments to the EMP. Information related to any such changes should be made available to the authorities as well as for public review in the spirit of full disclosure.

BASIC ASSESSMENT REPORT

Is an EMPr attached?

YES

NO

The EMPr must be attached as Appendix G.

The details of the EAP who compiled the BAR and the expertise of the EAP to perform the Basic Assessment process must be included as Appendix H.

If any specialist reports were used during the compilation of this BAR, please attach the declaration of interest for each specialist in Appendix I.

Any other information relevant to this application and not previously included must be attached in Appendix J.

NAME OF EAP

SIGNATURE OF EAP

DATE



EMMG

SECTION F: APPENDIXES

The following appendixes must be attached:

Appendix A: Maps

Appendix B: Photographs

Appendix C: Facility illustration(s)

Appendix D: Specialist reports (including terms of reference)

Appendix D(i): Ecological assessment and wetland delineation

Appendix D(ii): Phase 1 Heritage Assessment Report

Appendix E: Public Participation Report

Appendix F: Impact Assessment

Appendix G: Environmental Management Programme (EMPr)

Appendix H: Details of EAP and expertise

Appendix I: Specialist's declaration of interest




Appendix J: Property Lease agreement

Appendix A: Maps

Locality Map

Wesselsbron Chicken Farm

Legend

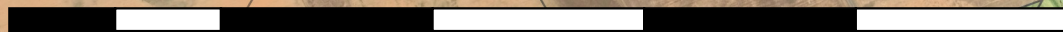
-  Poultry house
-  Wesselsbron
-  Wesselsbron













Wesselsbron Poultry House: Biodiversity Map



500 0 500 1000 1500 2000 m

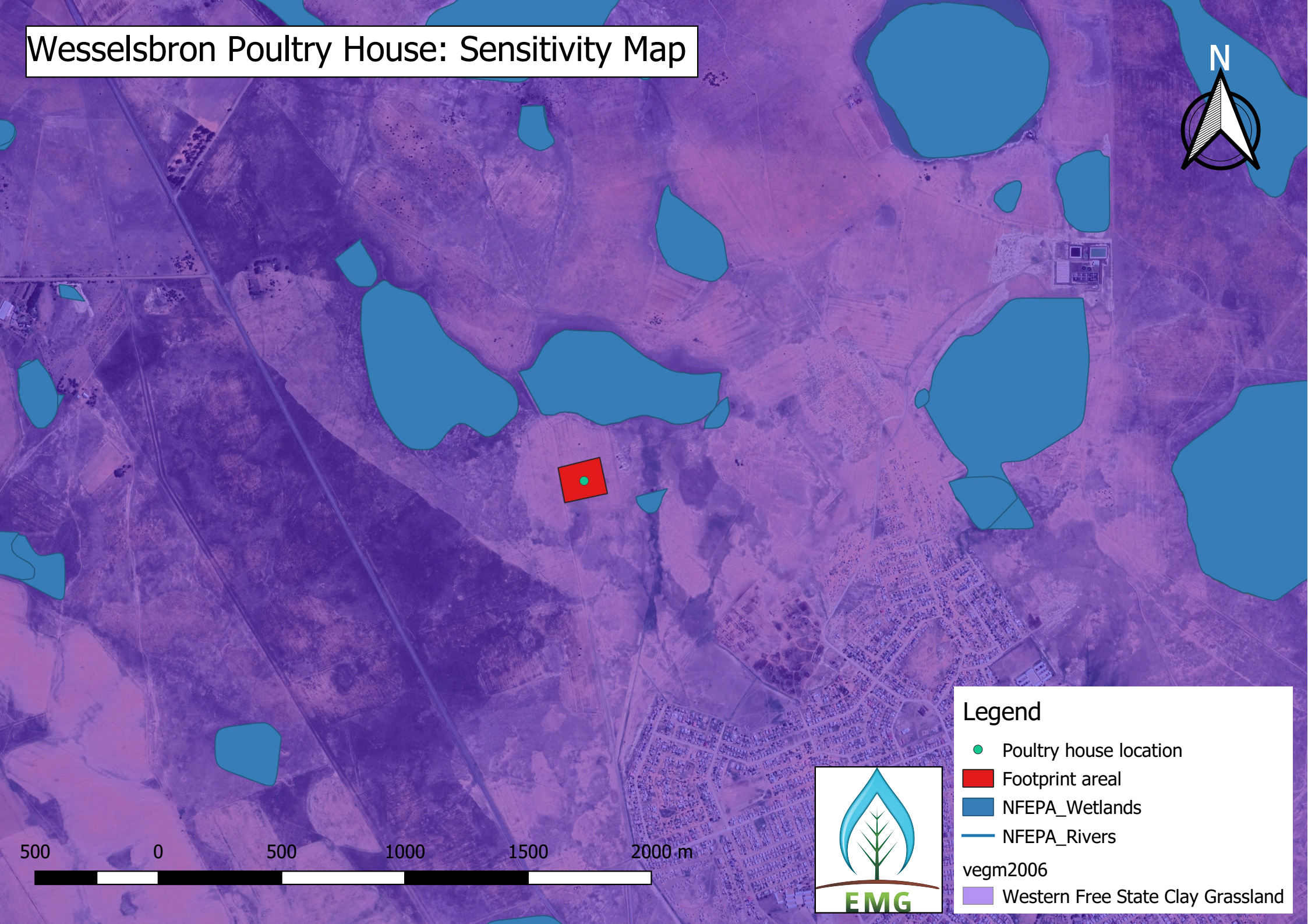


Legend

-  Poultry house Location
-  Footprint area
- PU_s_FINAL_for_distribution
 -  CBA1
 -  CBA2
 -  Degraded
 -  ESA1
 -  ESA2
 -  Other
 -  Protected
 - 

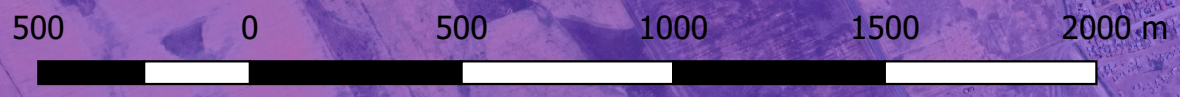


Wesselsbron Poultry House: Sensitivity Map



Legend

-  Poultry house location
-  Footprint areal
-  NFEPA_Wetlands
-  NFEPA_Rivers
- veg2006
-  Western Free State Clay Grassland



Appendix B: Photographs





Appendix C: Facility illustration(s)

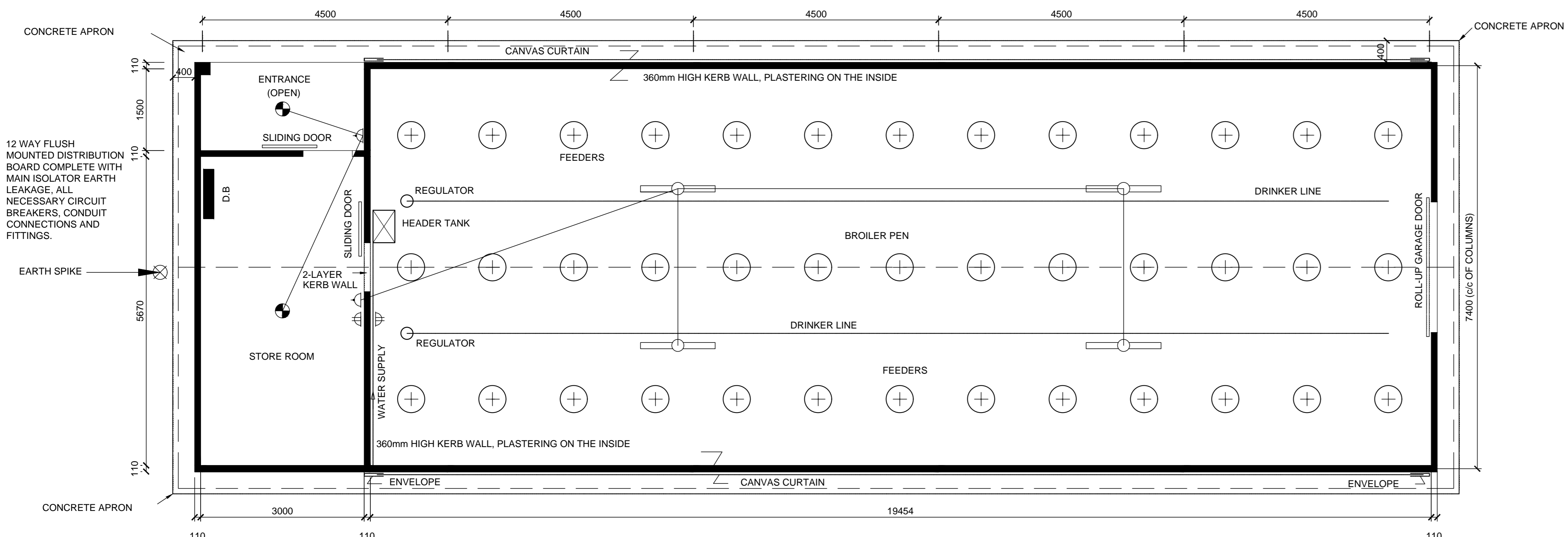
ALL DIMENSIONS AND HEIGHTS ARE TO BE CHECKED ON SITE BEFORE WORK IS PUT IN HAND.
ALL WORK AND MATERIAL ARE TO COMPLY TO RELEVANT SABS CODES WHERE APPLICABLE.
BRAND NAMES DENOTE SIMILAR OR EQUALLY APPROVED.
ALL WORK TO BE IN ACCORDANCE TO N.B.
REPORT DISCREPANCIES TO ARCHITECT OR ENGINEER.

NOTES:

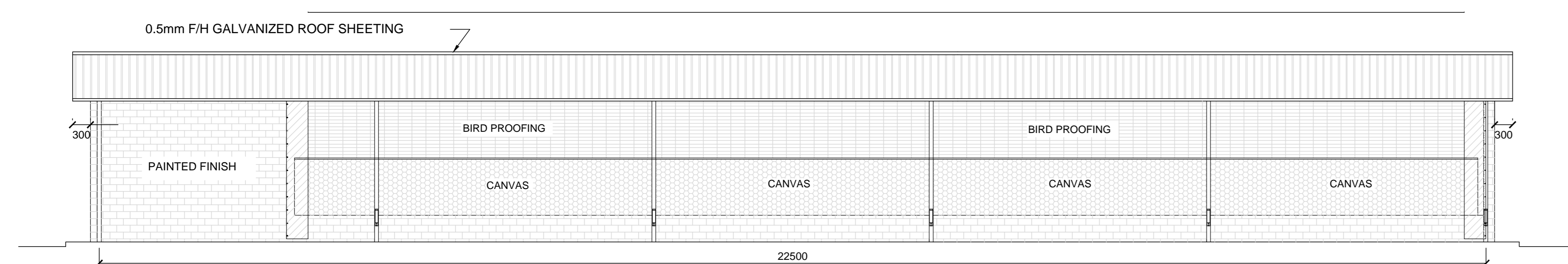
- GENERAL**
- FOR CONSTRUCTION DETAIL OF BROILER HOUSE - SEE DRAWING SL ST07/B-2
 - FOR SITE PLAN OF BROILER/LAYER PROJECT - SEE DRAWING SL ST07/B-1
 - SLIDING DOORS (1.0m x 2.0m) - 1.6mm MILD STEEL PLATE IN 40X40X5 ANGLE IRON FRAME WITH 200kg HILLADAM HANGER OR SIMILAR TRACK
 - ROLL-UP DOOR - STANDARD 2.4m WIDE X 2.0m HIGH GARAGE DOOR
 - ALL STEEL WORK TO BE PAINTED WITH 2 COATS OF RED OXIDE PRIMER.
 - BRICKWORK - 110mm WIDE CLAY, SEMENT OR ASH BRICKS PLASTERED ON THE INSIDE AND POINT FINISH (CLINKER FINISH ON THE OUTSIDE).
- EQUIPMENT NEEDED PER HOUSE (2100 BROILER)**
- 2 X 18.0m VAL NIPPLE DRINKER LINES, 1 HOLES PER PIPE (3m) (180 NIPPLES TOTAL) COMPLETE WITH REGULATOR AND WINCH SYSTEM TO ADJUST DRINKER HEIGHT.
 - 40 X TUBE FEEDERS.
 - 1 X 100 LITER PLASTIC WATER TANK.
- EQUIPMENT NEEDED PER SITE:**
- 40 X CHICK FONTS.
 - 40 X CHICK TRAYS.
 - 2 X 1000-BIRD SBM GAS BROODERS.
 - 1 X HALF-HOUSE BROODER CURTAIN DIVIDER TO HOOK ONTO PORTAL ROOF FRAME. HOOKS SUPPLIES ON PORTAL FRAME TO MATCH STEEL O-RINGS IN CURTAIN.
- EQUIPMENT NEEDED PER HOUSE (2100 BROILER)**
- SITE PREPARATION - REMOVE AT LEAST 100mm OF THE TOP SOIL LAYER OVER WHOLE OF BUILDING AREA
 - EXCAVATE AND CAST CONCRETE BASES OF ROOF COLUMNS
 - ERECT STEEL STRUCTURE WITH CEILING AND ROOF.
 - EXCAVATE AND CAST ALL WALL FOUNDATIONS.
 - ERECT FOUNDATION WALL TO FLOOR LEVEL.
 - CAST FLOOR
 - ERECT ALL WALLS AND PLASTER ON THE INSIDE WHILE ONLY POINT FINISH ON THE OUTSIDE
 - CAST 400 WIDE CONCRETE APRON AROUND BUILDING.
 - FIT MESH ON SIDE WALLS AND INSTALL CANVAS CURTAINS WITH WINCH AND CABLE SYSTEM.
 - FIT EQUIPMENT, WATER AND ELECTRICAL RETICULATIONS
 - EQUIP CENTRE ROOF FRAME WITH HOOKS TO WHICH THE DIVIDING CANVAS CURTAIN CAN BE ATTACHED WHEN NECESSARY.

TENDER

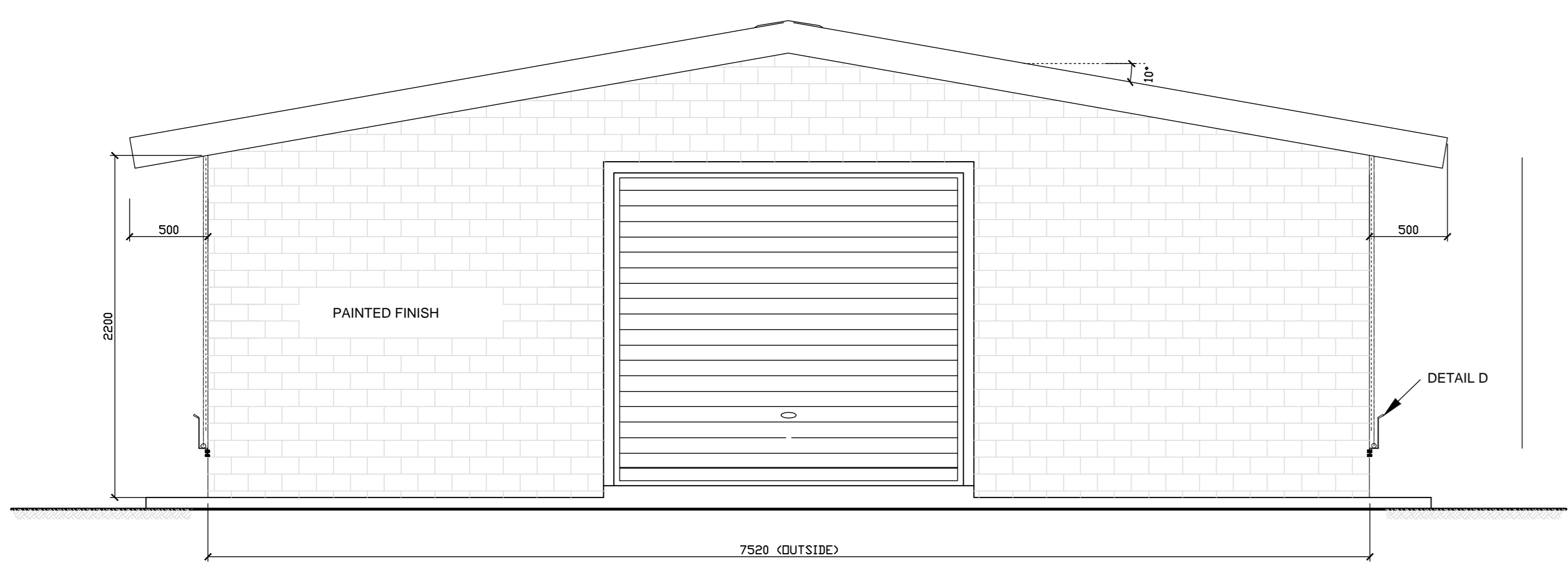
REV No	DATE	DESCRIPTION
A	06-12-17	ISSUED FOR APPROVAL
B	26-02-18	INFORMATION ADDED



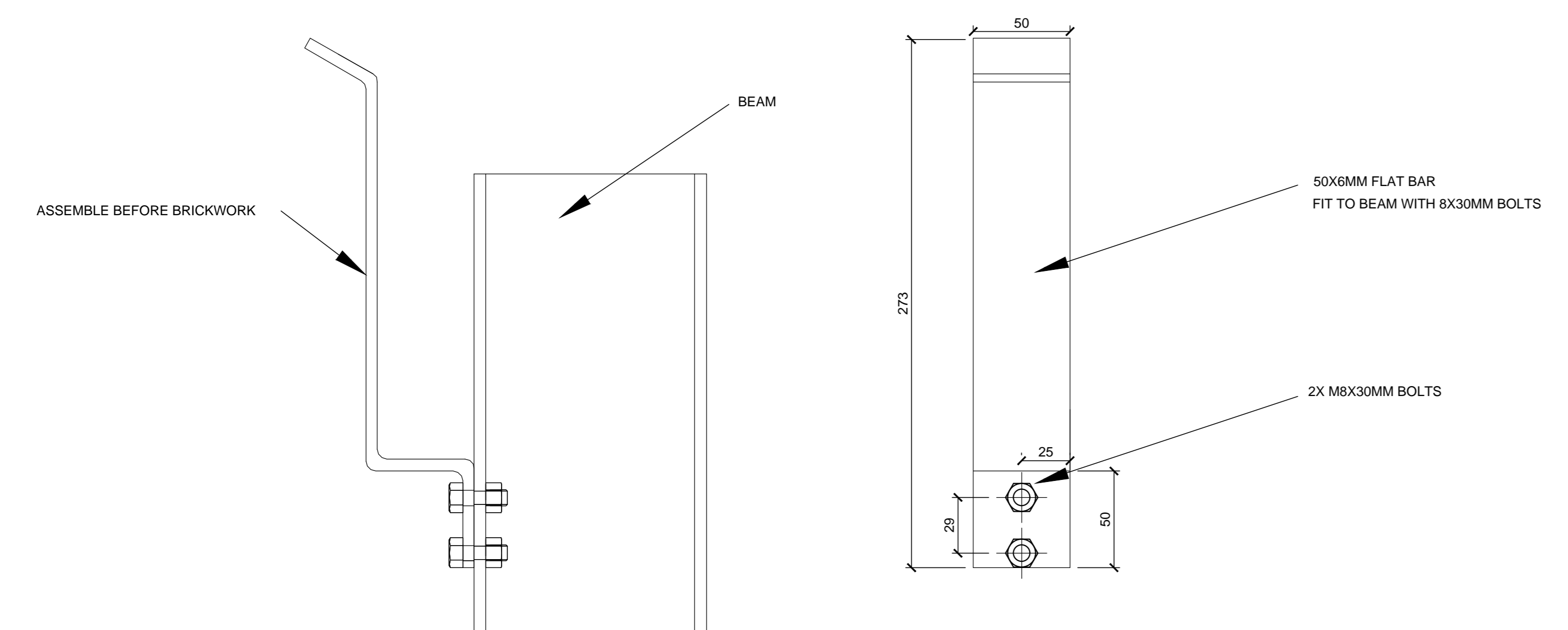
PLAN OF BROILER HOUSE
2100 BROILERS
SCALE 1:50



SIDE ELEVATION
SCALE 1:50



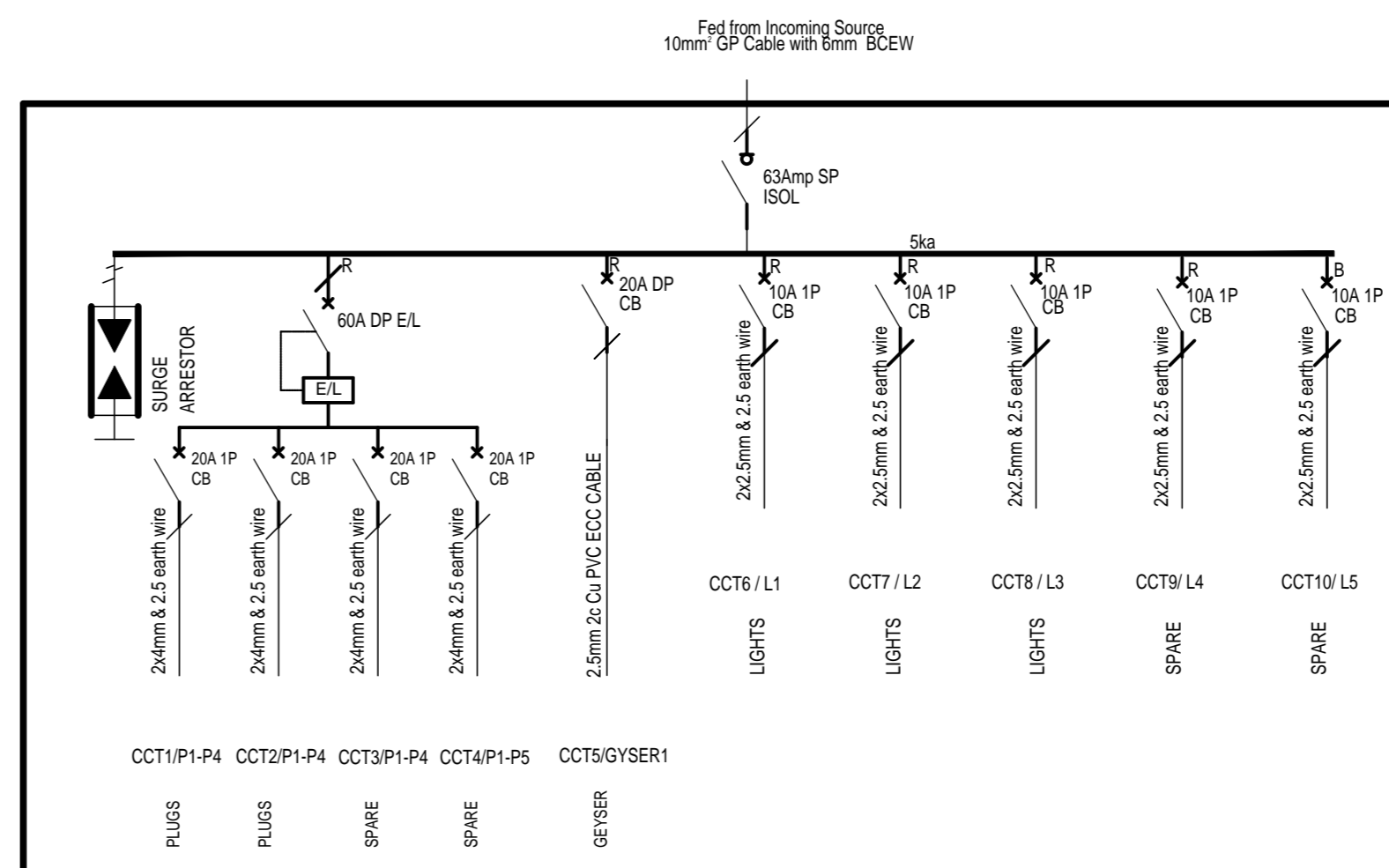
END ELEVATION
SCALE 1:25



DETAIL D
SCALE 1:2

SCHEDULE OF ELECTRICAL FITTINGS

SYMBOL	DESCRIPTION
	DISTRIBUTION BOARD
	OVERHEAD MOUNTED FILAMENT LIGHT
	6 FT. FLUORESCENT LIGHT
	ONE-WAY LIGHT PLUG
	DOUBLE WALL PLUG



DISTRIBUTION BOARD TYPE	FLUSH MOUNTED WITH DOOR
SWITCHGEAR TYPE	EQUAL OR SIMILAR APPROVED TO CB1
MATERIAL	ZINTEX
THICKNESS OF MATERIAL	2mm
PAINT COLOUR	ELECTRIC ORANGE
SPARE CAPACITY	30%
QUANTITY	1

- NOTES:
- THIS DRAWING FOR ELAP ONLY.
 - A CERTIFICATE OF COMPLIANCE TO BE COMPLETED BY CONTRACTOR ON COMPLETION OF WB.
 - ALL D.B.S AND ISOLATORS TO BE CLEARLY LABELLED.
- Identification:
- OC - Contractor
 - NO - Normal open
 - NC - Normal close
 - EO - Earth leakage
 - EP - Earth leakage
 - FP - Double Pole
 - TP - Triple Pole

SIZE ON ORIGINAL DRAWING 100 mm

CLIENT LOGO

PROJECT DETAILS
CONSTRUCTION OF A BROILER HOUSE
IN FREE STATE

CONTRACT No
TCE - 1102

DISCIPLINE
ARCHITECTURAL

DRAWING DESCRIPTION
BROILER HOUSE - FLOOR LAYOUT

DESIGNED BY	DRAWN BY	CHECKED BY
HEIN	N KGANAKGA	C KATIYHU
DRWG UNITS	SCALE	
MILLIMETERS	AS SHOWN	

RESPONSIBLE PROFESSIONAL			
DATE	NAME	SIGNATURE	PR NUMBER
31/01/2018	TAPIWA MUTANDA		PSAT20684
31/01/2018	CLEVER KATIYHU		201670183

UNIT 6,
GARDENS BUSINESS PARK
ATELJEE STREET
RANDPARK RIDGE
2169
Web address: www.thembakete.co.za
Telephone: 011 475 4560
Facsimile: 011 475 9140

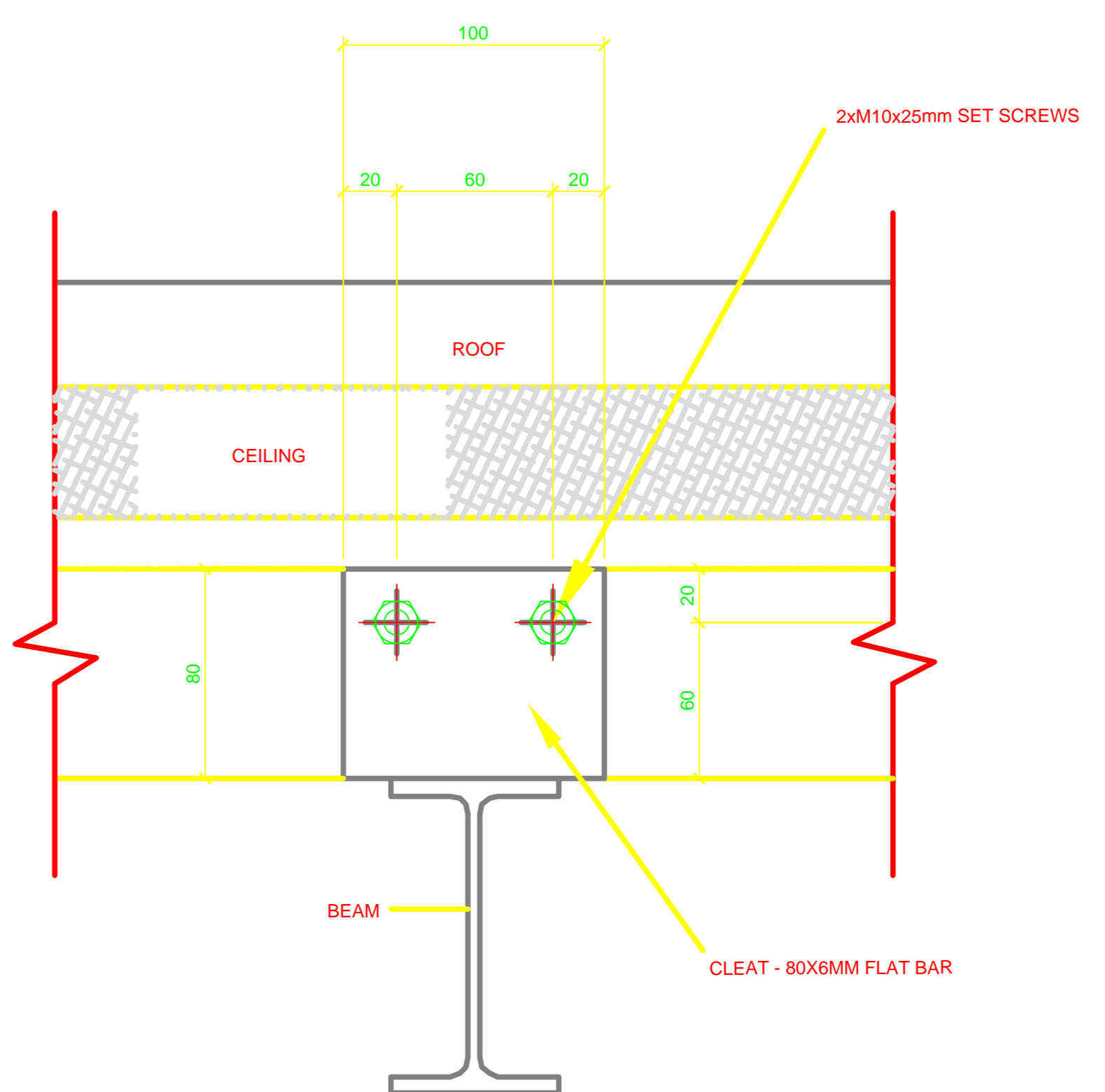
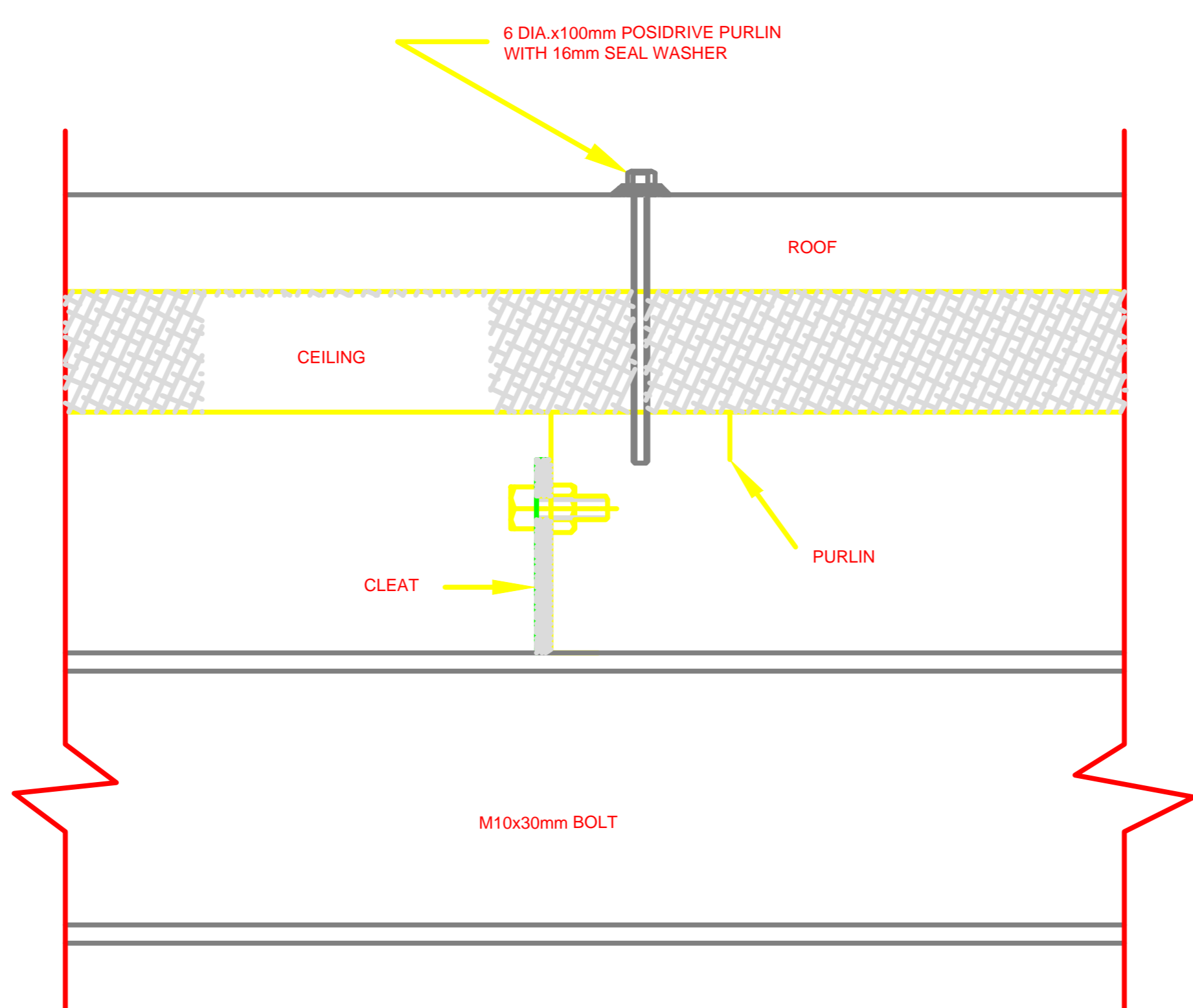
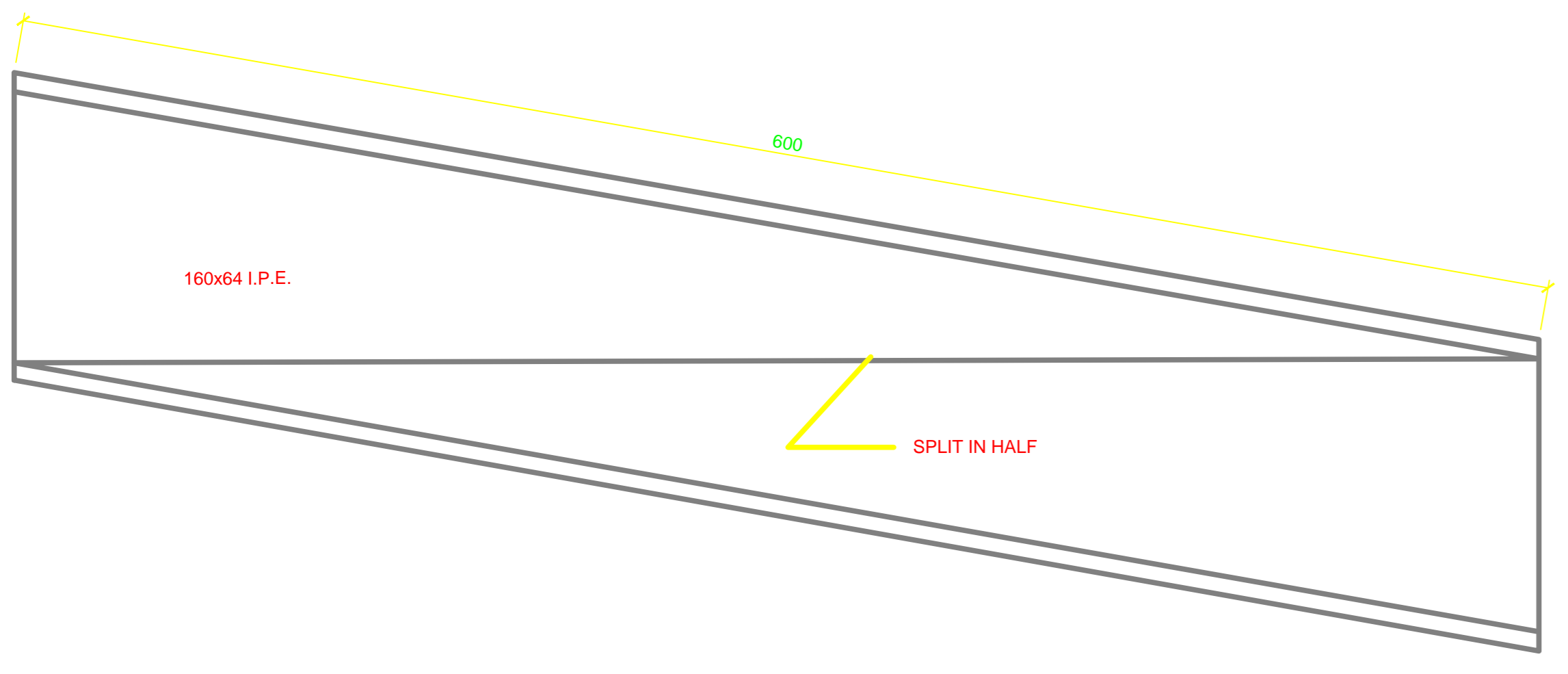
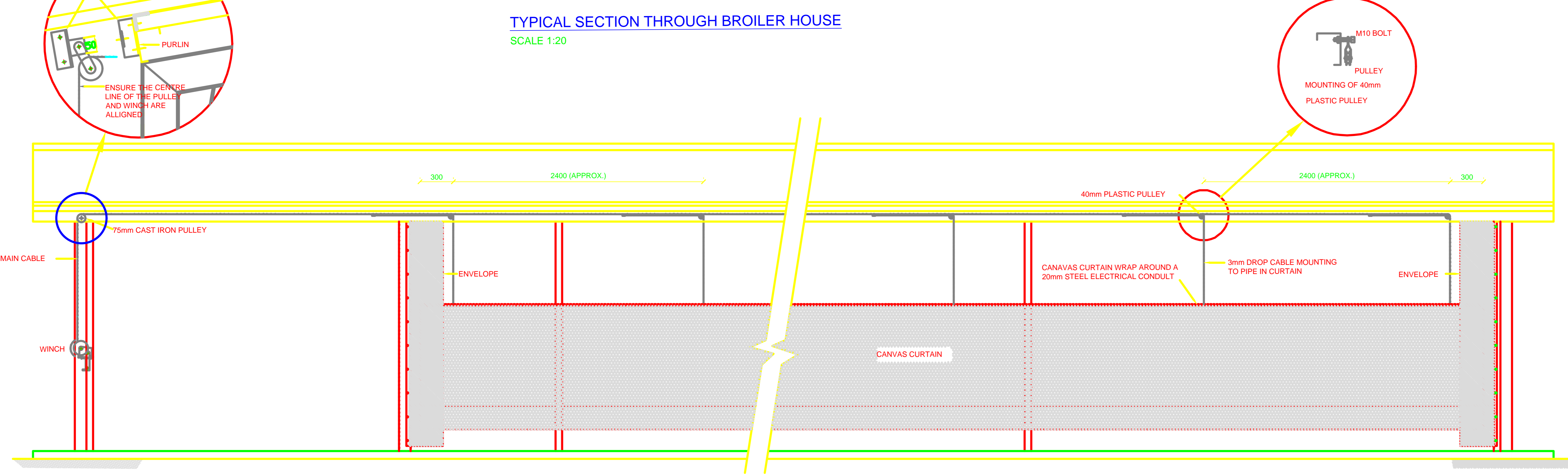
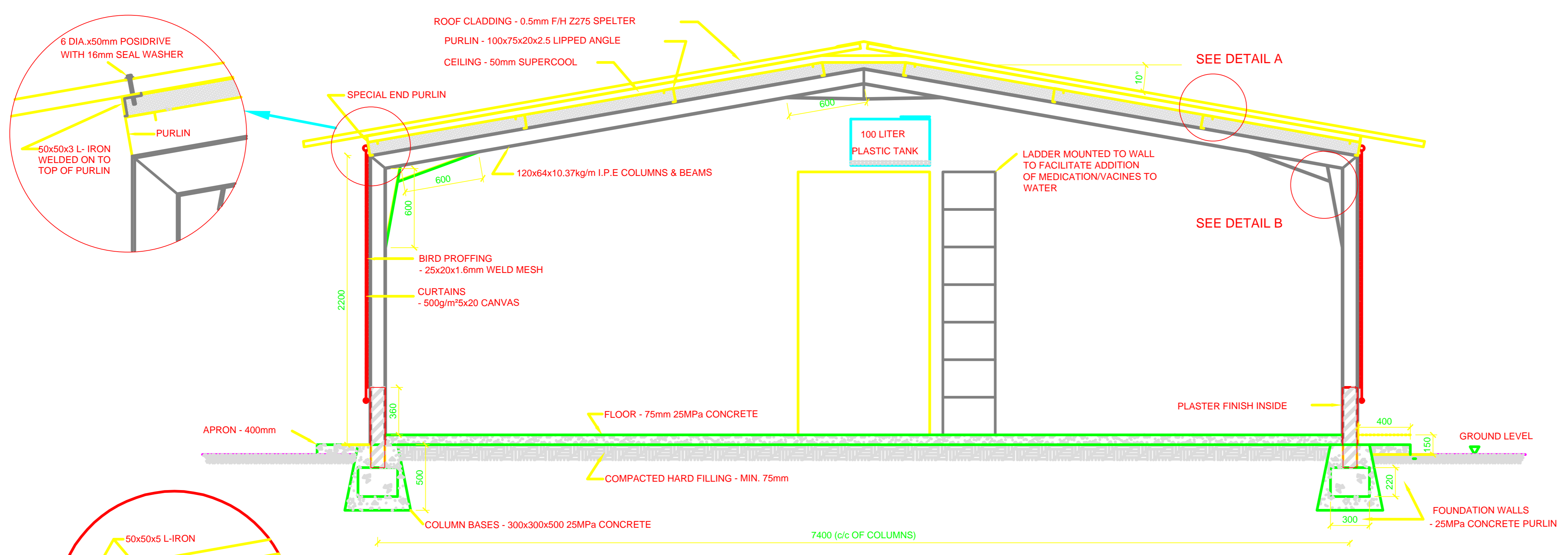
SIZE	DRAWING NUMBER	REV
A1	TCE - 1102-TEN-ARCH-CL-01	B

ALL DIMENSIONS AND HEIGHTS ARE TO BE CHECKED ON SITE BEFORE WORK IS PUT IN HAND.
 ALL WORK AND MATERIAL ARE TO COMPLY TO RELEVANT SABS CODES WHERE APPLICABLE.
 BRAND NAMES DENOTE SIMILAR OR EQUALLY APPROVED.
 ALL WORK TO BE IN ACCORDANCE TO R.A.B.
 REPORT DISCREPANCIES TO ARCHITECT OR ENGINEER.

NOTES:
 -

TENDER

REV No	DATE	DESCRIPTION
A	20-12-17	ISSUED FOR APPROVAL



CLIENT LOGO

PROJECT DETAILS

CONSTRUCTION OF BROILER HOUSE IN FREE STATE

CONTRACT No

TCE-1102

DISCIPLINE

ARCHITECTURAL

DRAWING DESCRIPTION

BROILER HOUSE - TYPICAL SECTION

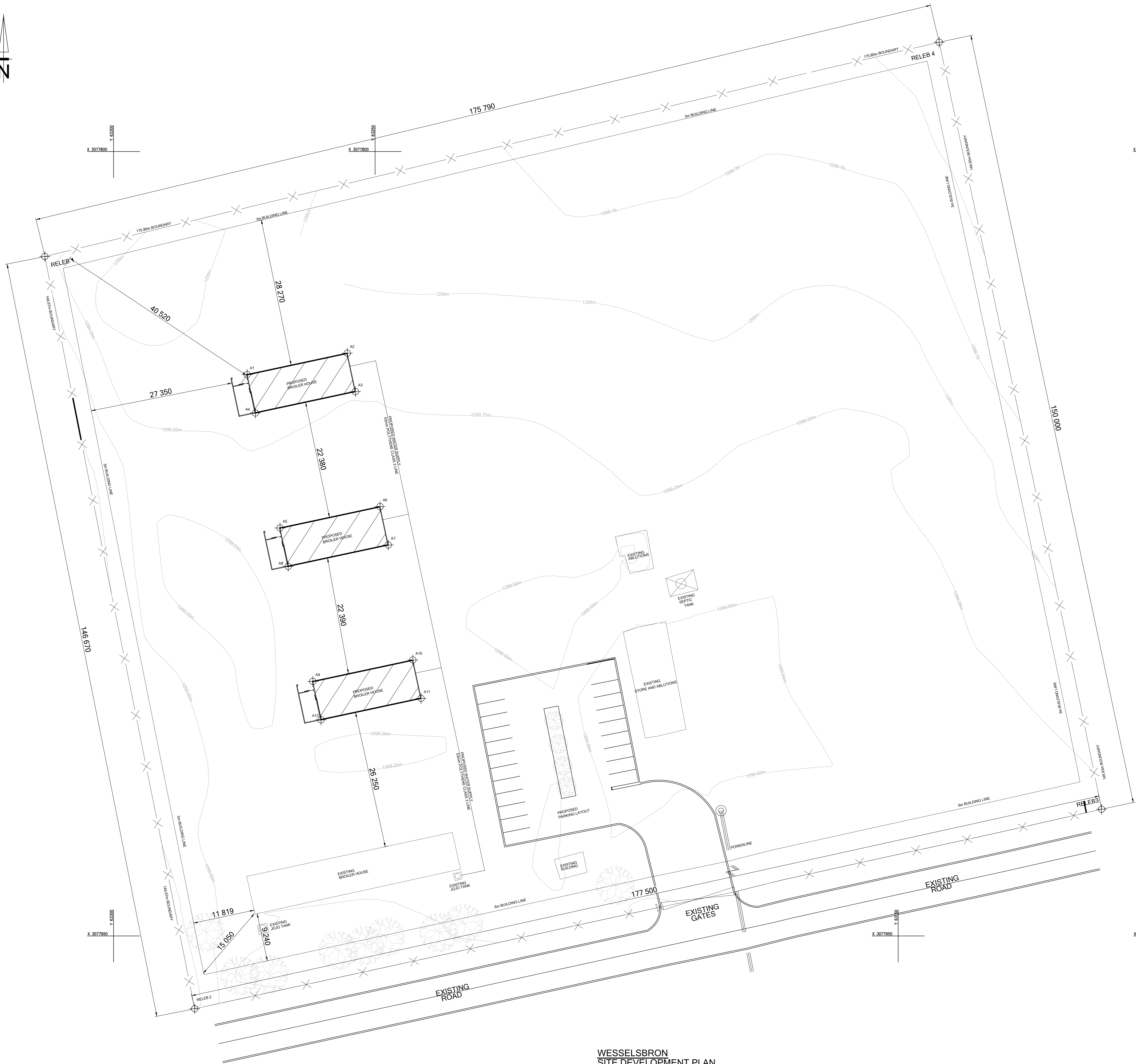
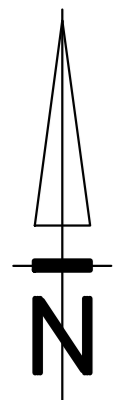
DESIGNED BY: R.MOLOTO
 DRAWN BY: C.KATIVHU
 CHECKED BY:

DATE	NAME	SIGNATURE	PR NUMBER
31/01/2018	TAPIWA MUTANDA		PSAT20664
31/01/2018	CLEVER KATIVHU		201670183

Thembakele CONSULTING ENGINEERS (PTY) LTD

UNIT 6, GARDENS BUSINESS PARK, ATELJEE STREET, RANDPARK RIDGE, 2169
 Web address: www.thembakele.co.za
 Telephone: 011 475 4500
 Facsimile: 011 475 3100

SIZE	DRAWING NUMBER	REV
A0	TCE-1102-TEN-ARCH-CL-02	A



BENCHMARK CO-ORDINATE LIST

NAME	Y-COORDINATE	X-COORDINATE	ELEVATION
RELEB 1	63312.543	3077820.307	1299.301
RELEB 2	63284.303	3077963.374	1299.810
RELEB 4	63142.376	3077779.403	1298.524
RELEB 3	63111.525	3077925.567	1299.299

SETTING OUT CO-ORDINATE LIST

Name	Y-Coord	X-Coord
A1	63277.594	3077843.316
A2	63255.315	3077838.553
A3	63253.743	3077845.904
A4	63276.022	3077850.667
A5	63288.173	3077871.980
A6	63249.043	3077867.890
A7	63247.471	3077875.241
A8	63266.602	3077879.331
A9	63265.050	3077879.331
A10	63242.771	3077897.227
A11	63241.199	3077904.578
A12	63263.478	3077909.341

AREA SCHEDULE

NO.	Description	Area (m ²)
1	SITE AREA	26 250.30
2	PROPOSED BUILDINGS	513.78
3	EXISTING BUILDINGS	527.84
4	EXISTING SEPTIC TANK	20.85
5	EXISTING STORAGE TANK	5.30
TOTAL PERCENT COVERAGE		24.59%

ALL DIMENSIONS AND HEIGHTS ARE TO BE CHECKED ON SITE BEFORE WORK IS PUT IN HAND.
 ALL WORK AND MATERIAL ARE TO COMPLY TO RELEVANT SABS CODES WHERE APPLICABLE.
 BRAND NAMES DENOTE SIMILAR OR EQUALLY APPROVED.
 ALL WORK TO BE IN ACCORDANCE TO N.B.E.
 REPORT DISCREPANCIES TO ARCHITECT OR ENGINEER.

NOTES:

REV No	DATE	DESCRIPTION
A	18-12-2017	ISSUED FOR APPROVAL
B	21-02-2018	ADDITIONAL INFORMATION INCLUDED

TENDER

REV No	DATE	DESCRIPTION
A	18-12-2017	ISSUED FOR APPROVAL
B	21-02-2018	ADDITIONAL INFORMATION INCLUDED

SIZE ON ORIGINAL DRAWING 100 mm

CLIENT LOGO

PROJECT DETAILS

CONSTRUCTION OF BROILER HOUSES IN FREE STATE

CONTRACT No
TCE-1103

DISCIPLINE
ARCHITECT

DRAWING DESCRIPTION

RELEBOHILE POULTRY PROJECT - SDP

DESIGNED BY	DRAWN BY	CHECKED BY
N KGANAKGA	N KGANAKGA	C KATIVHU

DATE	NAME	SIGNATURE	PR NUMBER
31/01/2018	TAPIWA MUTANDA C		PSAT20664
31/01/2018	CLEVER NYARUGWE KATIVHU		201670183

UNIT 6,
GARDENS BUSINESS PARK
ATELJEE STREET
RANDPARK RIDGE
2169
Web address: www.thembakete.co.za
Telephone: 011 475 4560
Facsimile: 011 475 5140

SIZE	DRAWING NUMBER	REV
A0	TCE-1102-TEN-ARCH-SDP-01	B

**WESSELSBRON
SITE DEVELOPMENT PLAN
SCALE 1:250**

Contents

1. Background	1
2. Introduction	1
3. Scope of Works	1
4. Project Management Support	2
5. Overview of Project Work Stages	2
5.1 Supplementary Scope of Services to be provided	2
5.2 Contractor Project Procurement Approach Policy	2
6. Report on Project Site and Functional Requirements	2
Table 1: Specific Site Coordinates	3
6.1.1 Topography and Access	3
6.1.2 Founding Conditions	3
6.1.3 Bulk Services	4
6.1.3.1 Water Reticulation	4
6.1.3.2 Sewer Reticulation	4
6.1.3.3 Storm Water Reticulation	4
6.1.3.4 Existing Electrical Network Findings	4
6.2 Land Survey	4
6.3 Environmental Impact Assessment	4
7. Conclusions and Recommendations	9
8. Acknowledgement	10
9. Annexures	11
Annexure A – Preliminary Project Photographs	11
Annexure B – EIA and WULA Triggers	14
Annexure C – Project Programme	15
Annexure D – Preliminary Geotechnical Report	16
Annexure E – Survey	17
Annexure F – Priced BOQ	17
Annexure G - Drawings	18

1. Background

This report seeks to address design requirements to progress towards the procurements stage of the Relebohile Poultry Project. The process of determining what is included / excluded within this report is a culmination of the Engineering Council of South Africa (ECSA) Project Roll-Out Process Flow and the specific requirements, as well as alignment to the ECSA Deliverables required per project work stage.

2. Introduction

The Department of Rural Development and Land Reform - hereinafter referred to as DRDLR - appointed Thembakele Consulting Engineers Pty Ltd - hereinafter referred to as TCE - as professional service providers for the design and construction monitoring of 3 new broiler houses for Relebohile Poultry Project. This project is located in Wesselsbron, within the Nala Local Municipality of the Lejweleputswa District Municipality in the Free State Province. The Relebohile Poultry Project is one of many that is funded by DRDLR.

As the DRDLR funds the cooperatives who will be the users of these facilities, it is a requirement that the proposed projects are completed as soon as possible.

3. Scope of Works

The project scope was discussed and agreed to with the respective client representatives. The scope of works entails the design and monitoring of construction of 3 Broiler Houses at the Relebohile Poultry Project in Wesselsbron. Designs of the proposed infrastructure must conform to specifications and standards prepared by the Agricultural Research Council. These designs must however be confirmed in liaison with representatives of Department of Rural Development and Land and other local authorities. The scope of works entails the following activities to be undertaken:

- To gather information and assist with engineering investigation to establish needs and user requirements for the proposed project.
- Investigation of availability of key infrastructure relating to the project (Water, sanitation, electricity, access roads and storm water)
- Investigation of positioning of the proposed broiler house infrastructure.
- Investigations of all existing and proposed future facilities that are associated with surrounding proposed development.
- Investigations and adoption of required guidelines, specification and standards for providing the required facility and services.
- The Agricultural Research Council be consulted for generic designs and specifications.
- Drawings obtained from the Agricultural Research Council are in PDF format and must be redrawn for design, council submission and construction purposes.
- Investigation and advice on the existing and future environmental impacts associated with proposed infrastructure.

Based on the above, the required professional services include:

- Civil and Structural Engineering services
- Mechanical & Electrical Engineering Services
- Environmental Management Programme and Control, limited to value as per appointment fee schedule.
- Topographical survey and Geotechnical engineering investigations limited to the provisional sum as per approved fee schedule.
- Part time construction monitoring limited to an anticipated construction period of 2 months and to the value of the provisional sum as per the approved. If in any event such period may be exceeded TCE shall inform the client providing thorough motivation and substantiation.

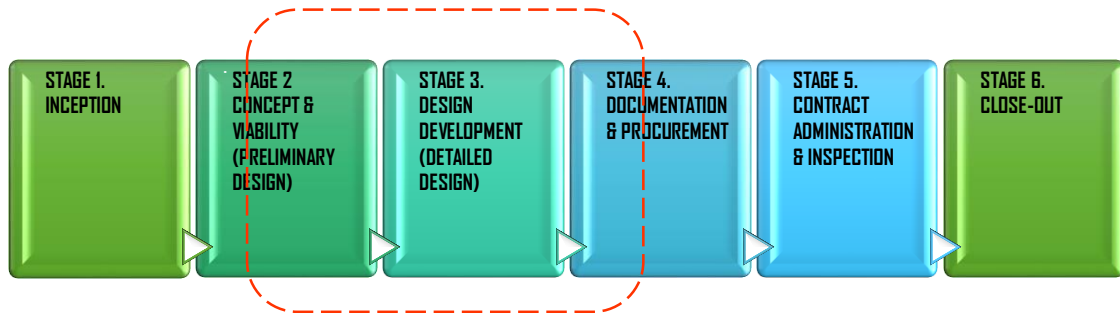
4. Project Management Support

This project aims to initiate the planning, development and construction of the agricultural facilities defined above.

Thembakele Consulting Engineers will provide senior and executive management with accurate, up-to-date information on all projects and strategic imperatives aligned to the proposed construction programme.

The projects will be run in accordance with basic project management practices and standards and according to the methodologies dictated by the Client.

5. Overview of Project Work Stages



The following items are included under the list of supplementary deliverables required in order to meet the requirements of both Stage 1,2 and 3 and the eligibility for having to proceed to Stage 4.

5.1 Supplementary Scope of Services provided

- Quantity Surveyor
- Architect
- Geotechnical Consultant & Investigation
- Environmental Consultant

5.2 Contractor Project Procurement Approach Policy

- To be determined and advised by the DRDLR.
- The Department had stated at project hand over that the proposed construction programme must be scheduled for completion by the end of March 2018. At a meeting held on 16th January 2018 it was agreed between TCE and the client that the projected allowable duration for detailed design compilation and procurement of a contractor is 4 months.
- To comply with this requirement, documentation for the design and contract tender would have been required to have been completed and made available for tender invitation in the second week of January 2018. Since this has not been achieved an adjusted project procurement programme would be required to be adopted and endorsed by the client.

The original targeted date of commencement of construction was identified as February 2018. Subsequent to submission of the Preliminary Design Report on January 2018 it became apparent during discussion that the anticipated procurement and construction period would extend into the new financial year.

6. Report on Project Site and Functional Requirements

Wesselsbron is a small maize farming town 75 km south of Bothaville, 50 km west of Welkom and approximately 154 km from Bloemfontein in the Free State province. It was established in 1920 and became a municipality - now known as Nala Municipality which forms part of the Lejweleputswa District - in 1936. Bloemfontein is 1395m above sea level with a recorded mean annual rainfall of 531mm. This city is located on the southern edge of the South Africa's Highveld and borders on the semi-arid region of the Karoo. On hot summer days, this region can reach a maximum 32° C and minimum of 19°C. In

the cool, dry winters, the region often experiences severe frost with daytime temperatures reaching a maximum 14°C and minimums of -3°C being a common occurrence.

Table 1: Specific Site Coordinates

PROVINCE	DISTRICT MUNICIPALITY	LOCAL MUNICIPALITY
Free State Province	Lejweleputswa District Municipality	Nala Local Municipality
GPS Co-ordinates	27°48'51.50" S 26°21'44.12" E	

6.1.1 Topography and Access

The site slopes in a south to north direction at approximately 3%. Main vehicle access to the site is off the R505 south of Moeding Road in Monyakeng. A gravel road must then be used to access the site north of the R505. This road is in a satisfactory condition and is suitable for use by both light and single axle delivery vehicles up to 6-ton load capacity.

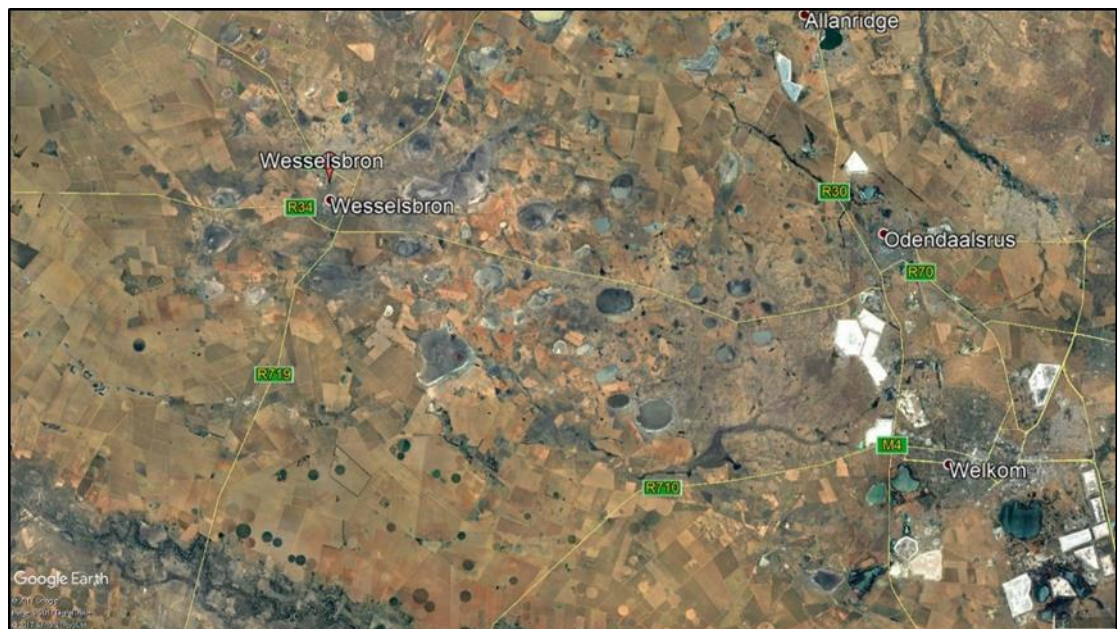


Illustration 2A: Google Earth Image of Proposed Site: Relebohile Poultry Project.

6.1.2 Founding Conditions

Relebohile Poultry (Wesselsbron) is underlain by shales of the Palaeozoic era of the Ecca group of the Volkrust formations. The vegetation is sparse and primarily comprises of veld grass. A geotechnical investigation was conducted and concluded on 15 December 2017. A final geotechnical report inclusive of findings is now available for perusal and is attached as annexure to this report. The information available is adequate to enable a foundation design.

It is recommended that the residual materials is competent for founding, however the foundation structure should be sufficiently reinforced to withstand possible movement. However, it is recommended that the topsoil should be removed to expose the residual material for founding purposes. Any required backfilling (or terrace construction) should then be carried out with G7 material, or better, compacted in 150mm layers to 93% Mod. AASHTO at -1% to +2% OMC. The in-situ materials are of poor quality and cannot be used as backfill

(or borrow) materials during construction. All backfill materials should be sourced from other competent excavation or commercial sources.

6.1.3 Bulk Services

6.1.3.1 Water Reticulation

Water is supplied by the Nala Municipality. Supply pipes comprise a 100mm HDPE pipe connected to a water meter. Water storage is enabled through the use of 2 x 2500 litre elevated storage tanks. Flows are manually controlled since no float valves are currently provided. Available water pressure was not measured at the time of the first inspection.

6.1.3.2 Sewer Reticulation

A water borne sewerage system or network is not available. An existing septic tank is located adjacent to the existing ablution block. This structure is however extensively damaged. This concrete structure is not recommended for reconstruction and/or refurbishment and will have to be demolished and a new one constructed in its entirety. A new septic tank is strongly recommended despite not forming part of the current scope of the project.

6.1.3.3 Storm Water Reticulation

The general slope of the site is in a south to north direction at a fall of approximately 3%. Run off flows on surface and sub-surface or surface drainage systems are in place. A shallow sand pan is located approximately 40m north of the site.

6.1.3.4 Existing Electrical Network Findings

Electricity is supplied by ESKOM via an overhead power line. An elevated 16 KVA mini sub is installed at the final post located within the property. It must however be noted that whilst power is available the cooperative does not utilise power for any particular function or operation.

6.2 Land Survey

A topographical survey, commissioned by TCE, was completed on 13 December 2017. This topographical survey was used to prepare site layouts as well as to inform space and service requirements.

6.3 Environmental Impact Assessment

A Preliminary desk top study was carried out by an environmental specialist and findings are as follows:

Further Consultation with an EIA specialist is currently underway and preliminary evaluation against the NEMA triggers are as indicated below and further detailed in an annexure.

It is important to consider the proposed project period in conjunction with the required Water Use License Application and other environmental management factors for approval purposes. Experience shows that the approvals of EIA and WULA normally takes a minimum of 6 months. As these projects are deemed to be agricultural, approval may be granted to continue construction through the waiting period. This however requires further investigation and consent from the appropriate National Departments.

Design Parameters

Background

A Code of practice, which has been compiled by the South African Poultry Association, serves as an objective guide for all poultry and poultry products, produced in South Africa. This code endeavours to lay down accepted norms for the poultry industry, incorporating various legal requirements where necessary and applicable. We have therefore incorporated the requirements contained in this code so that it informs designs and other technical specifications. We do however advise that the recommendations required to be used were regarded as a guide and do not necessarily consider all possible conditions. The minimum standards outlined in this Code are intended to assist producers and people involved in the care and management of poultry to adopt standards of husbandry that are acceptable in the light of current knowledge and changing attitudes.

Practice for Broiler Production

We further advise that the Code does not substitute any regulatory requirements and should where applicable, be read and applied in conjunction with all relevant laws, by-laws, regulations and compulsory specifications including the following:

- Animal Improvement Act (Act no 62 of 1998)
- Animal Disease Act (Act no 35 of 1984)
- Animal Protection Act (Act no 71 of 1962)
- Meat Safety Act (Act no 40 of 2000)
- Agriculture Products Standards Act (Act 119 of 1990)
- Foodstuffs, Cosmetic and Disinfectant Act (Act 54 of 1972)
- National Health Act (Act 62 of 2003)
- Occupational and Safety Act (Act 85 of 1993)
- Fertilizer, Farm Feeds, Agriculture Remedies and Stock Remedies Act (Act 36 of 19947)
- GMO Act and Regulation (Act 36 of 1983)
- Livestock Brands Act (Act 25 of 1977)
- Sterilization Facility Act (Act 36 of 1947)
- Water Treatment Chemicals for Use in the Food Industry (SANS 1827)
- Cleaning Chemicals for Use in the Food Industry (SANS 1828)
- Disinfections and Detergent – Disinfections for use in the Food Industry (SANS 1853)
- Application of Pesticides in Food-Handling, Food-Processing and Catering Establishments (SANS 10133)
- Food Hygiene Management (SANS 1049)
- Food Safety Management Systems – Requirements for Organizations throughout the Food Chain (ISO 22000)
- Requirement for HACCP Systems (SANS 10330)

Broiler Production Systems

Housing of broilers in Floor Systems

The space guidelines for broiler rearing are as follows:

Measure	Density
Bird Density	Not to exceed 40 kg/m ²
Feeder Space	
Pans with diameter of 30cm	70 birds per pan
Trough Feeders	2.5 cm/bird
Water Drinker Space	
Troughs	2.0 cm/bird
Bell Drinkers	1/100
Nipple and Cup Drinkers	1/10 to 20 birds

Table 2.A: Space Requirement for broilers in floor systems

Houses shall be designed to provide chickens with a safe environment. Chicken house flooring shall allow for effective cleaning and disinfecting, preventing significant build-up of parasites and other pathogens. Where possible the floor should be **concrete that is well maintained**. Light intensity for the first 3 days shall be sufficient to encourage chicks to start eating normally. Thereafter **light intensity shall provide a period of adequate illumination for normal daily feed and water intake**.

Heating and ventilation systems shall maintain the recommended temperature and ventilation with reasonable accuracy in order to prevent either overheating or chilling of the chickens. Chickens raised in floor pens shall have enough freedom of movement to be able to stand normally, turn around and stretch their wings without difficulty. The density of 40 kg live mass per square meter is the maximum density that should be applied under conditions of good ventilation and cooling systems by mechanical means. Where ventilation is supplied by natural convection, the density should be reduced appropriately.

Houses shall be designed to provide chickens with a safe environment. Cage height shall permit standing chickens free head movement. The cage doors shall allow for easy insertion and removal of birds. Cage floors shall not cause any injury or deformity during the rearing of the birds. Cage floors shall preferably be covered with temporary supportive flooring such as paper or matting for the chicks during the early brooding period. Chicken house flooring shall allow for effective cleaning and disinfecting, preventing significant build-up of parasites and other pathogens. Where possible the floor should be concrete that is well maintained.

Chicken houses must be so constructed that it provides for the welfare needs of the birds, whilst simultaneously providing protection from inclement weather conditions and both physical and thermal discomfort. Whilst concrete floors are desirable, these are not mandatory, provided that whatever flooring is used allows for effective cleansing. Where open-type housing structures in excess of 6 meters wide are used, provision should be made for ridge openings to facilitate ventilation. Mechanical assistance to natural ventilation (e.g. fans) is an acceptable practice. Where housing is predominantly enclosed, ventilation by fans with a minimum airflow of 5 cubic meters per hour per kg of bird mass is required. Litter must be provided on entire floor area. Such litter must be of sufficient quality and quantity to allow for the proper dilution of droppings and to allow birds to dust bathe. Stocking densities must be adequate to accommodate the birds' normal behaviour. A maximum stocking density of 15 broiler birds per square meter of available floor space is permitted.

Light intensity for the first 3 days shall be sufficient to encourage chicks to start eating normally. Thereafter light intensity shall provide a period of adequate illumination for normal daily feed and water intake. If using chain, trough or box feeders, which can be accessed from both sides, then a maximum of bird per 5 cm of feeder length, may be housed. If only one side is accessible, then 10 cm per bird must be provided. If pan or tube feeders are used, a maximum of 40 birds per feeder may be housed.

Temperature Control

Subject to housing insulation, breed and seasonal variations supplements heat at gradual decreasing levels is to be applied until no longer required. Bird behaviour is the best indicator of bird comfort. As birds become fully feathered, they can withstand and adapt to wider temperature fluctuation. Where extreme high temperatures are experienced, especially under climatic conditions of high humidity, procedures such as increased ventilation and air flow over birds, evaporative cooling equipment, reduced stocking density and supply of cool water, should be considered to deal with such extremes. Low temperature conditions should not be overcome at the expense of minimum rates of ventilation. Recognizing the extreme possibilities of weather conditions, house conditions within temperature range of 15 to 33°C and maximum relative humidity of 80% should be aimed at for fully feathered birds during rearing.

It is advisable to have a temperature alarm system installed to warn operators of high and low temperature conditions for corrective action to be taken. It is advisable to record daily maximum and minimum house temperature levels.

Ventilation Control

A minimum rate of ventilation is required at all times to provide fresh air and to remove moisture and other metabolic gases from the building. This minimum rate of ventilation would be dependent on the biomass in the building and the operator shall be aware thereof. In rearing of birds the minimum

ventilation rate required therefore needs regular adjustment as the birds grow and increase in body weight. With forced air ventilation systems, the operator shall be fully trained in how to set up and control the ventilation system. With open sided buildings the operator shall be fully trained in how to set the curtains or whatever natural ventilation system under varying climatic conditions Carbon dioxide levels should be kept below 3000 ppm (3%). The presence of ammonia is usually a reliable indicator of build-up of noxious gasses. A level of 10 to 15 ppm of ammonia can be detected by smell and once this level is reached, corrective action should be taken. Mechanically ventilated buildings should have a back-up power supply or alternative emergency ventilation systems linked to an alarm system to warn operators of power failure.

Light Control

Chicks are started at higher light intensity (around 20 lux) for the first couple of days in order to learn to find the feed and drinker systems. Thereafter the light intensity should be adequate to allow for birds to feed normally and allow for thorough inspection of the flock. Sudden changes in intensity should be avoided as this could lead to flight reaction in some strains. Various rearing light programs are prescribed by suppliers of breeding stock in order to control body weight gain within acceptable limits. Total light period of less than 12 hours during rearing of broiler chicks should be discouraged.

Drinking Water

Newly hatched broiler chicks should receive water within 24 hours of hatching but sooner during hot weather. Birds should have access to sufficient potable water to meet their daily physiological requirements. Chickens shall not be deprived of water except for necessary management of vaccine application and therapeutic purposes. When house temperature exceeds 30°C interruption of water supply should not exceed 2 hours. Water should not be so hot that birds refuse to drink. The water should be regularly tested for chemical content as well as microbial contamination.

Rearing Establishment

Broiler rearing facilities should preferably be well separated and isolated from other poultry. Broiler rearing facilities should preferably be single purpose entities and ideally operated on an all-in, all-out replacement basis with single age groups per site. The area immediately surrounding the poultry houses should be free of vegetation and debris and if grass is grown between buildings, it should be kept short. Vermin and wild birds should not have access to feed storage. Domestic animals should not be allowed access to the fenced area. (*SAPA: Code of Practice for Broiler Construction 2012*)

Structural Elements

The design of all structural elements will comply with the following relevant SANS Codes of Practice:

SANS 10160 – General Procedures and Loadings to be adopted in the Design of Buildings. Analysis of all loads which the structure could be subjected during its lifespan will be considered in different combinations. These loads include the self-weight of the structure, occupancy (superimposed/ live) loads and wind loads.

SANS 10100 – The Structural use of Concrete. Designs of all the concrete elements of the proposed structure will be to the required criteria and standards of this code. The two basic criteria of Ultimate Limit State for strength and Serviceability Limit State for deflection and cracking will be adhered to.

SANS 10162 – The Structural use of Steel. Designs of all the structural steel elements will be carried out to satisfy the requirements of this code.

The following codes will also be complied with:

SANS 10400 – The Application of the National Building Regulations

The SANS 1200 set of technical specifications will be applied in addition to the above.

Design Loads

All loads to which the structure could be subjected during its lifespan were considered in different combinations. These loads include the self-weight of the different structural elements, brickwork and partitioning loads, occupancy (live) loads and wind loads.

Building Tolerances and Levelness

Building tolerances will be in accordance with the requirements of clause 6 of SANS 1200 G. Degree of accuracy II will in general be specified for all in-situ concrete unless a higher accuracy is required on particular elements. A degree of accuracy I will be specified for exposed precast concrete elements.

Geotechnical Report

A preliminary Geotechnical reports investigation and report has been concluded. For the purposes of the preliminary designs, a bearing capacity of 100kPa was assumed.

Foundations

Structural Steel portal frames are founded on individual footings of 1000 x 1000 x 250 deep. All external walls are founded on 800 wide x 250 deep strip footings whilst the internal walls are founded on 500 wide x 200 deep strip. The foundation sizes were based on a bearing pressure of 100 kPa. Soil conditions and bearing pressures will be verified on site and revised if necessary.

Surface Beds

Surface beds are designed to be 100mm thick, with 30 MPa concrete and will be reinforced with mesh ref 193 (min laps for mesh = 400mm). Mesh will be placed 40mm from the top surface. The concrete finish will be power floated. Vertical sawcut joints will be provided within the upper surface to control the shrinkage of the slab. Isolation joints will be provided against all vertical elements (concrete columns and brick walls).

Brickwork

All brickwork walls will be constructed of hard burnt clay bricks with a minimum compressive strength of 7MPa (14MPa for load-bearing). The use of any other type of brickwork must be approved by the engineer in writing prior to use. All brickwork is to be constructed according to the architect's layout drawings.

Mortar for brickwork will be Class II with a minimum 28-day compressive strength of 7MPa (14Mpa for Load-bearing).

Sand for mortar will be according to SABS 0190 (Latest Edition/Amendment)

SABS 0164: (Latest Edition/Amendment) – The structural use of Masonry will be used for the design and specification of all masonry together with, National Home Builders Regulation Council (NHBRC); Home Building Manual, Parts 1,2 and 3. (Latest Revision) and, SANS 10400: (Latest Edition / Amendment): “Code of Practice for the Application of the National Building Regulation”.

Brickwork reinforcement (brick-force) specifications and the placement thereof will be specified on the construction drawings.

Ventilation

Due to the type of construction, the new broiler houses will be equipped with manually operated, retractable canvas curtains. These curtains will be manufactured from 500 grams/m² industrial canvas and be strengthened top and bottom with integrated steel conduit bracing.

Electrical

Despite the current electrical availability not being utilised by the cooperative, all electrical installations will be carried out to conform to the requirements of the regulations contained in SANS 10400.

Additionally, the following specific codes shall apply to all relevant portions or components of the electrical installations:

- SABS 0313 Code of Practice of Structures against Lightning and incorporating SABS IEC 61;24-1-1,2 & 4
- SABS 1065 Metallic Conduits and Accessories;
- SABS 1765 Flush Mounted Distribution Boards; and
- SABS 10142 Busbars.

Estimated Costs of Construction

A detailed cost estimate has been compiled and is attached as Annexure D hereto. A summary cost schedule of an individual broiler house is as follows:

Bill Number and Item Description	Amount
1. Earthworks	R 48 975.00
2. Concrete, Formwork and Reinforcement	R 178 960.00
3. Masonry	R 45 736.00
4. Waterproofing	R 36 440.00
5. Carpentry and Joinery	R 10 000.00
6. Roof Coverings	R 121 815.00
7. Structural Steelwork	R 280 775.00
8. Metalwork	R 30 000.00
9. Plastering	R 28 911.00
10. Provisional Sums	R 185 000.00
11. Budgetary Allowances	R 15 000.00
12. Preliminaries	R 120 000.00
13. SUB TOTAL	R 1 101 612.00
14. VAT	R 154 225.68
15. GRAND TOTAL	R 1 255 837.68

7. Conclusions and Recommendations

TCE embarked upon a design process which, to a greater extent, involved the gathering of information necessary for the design of the broiler houses. Generic designs developed by the Agricultural Research Council, and Codes of Practise compiled by the South African Poultry Association are two essential

sources of information which assisted in the form of fundamental requirements for the design of the Relebohile Cooperative Broiler Houses. In addition, the information gathered at the site inception meeting held on the 2nd November 2017, where Thembakele Consulting Engineers were introduced to local cooperative and community representatives, also provided key project inputs.

We therefore recommend that this report together with all detail designs be considered for approval to allow for the progression towards the procurement stage of the project.

8. Acknowledgement

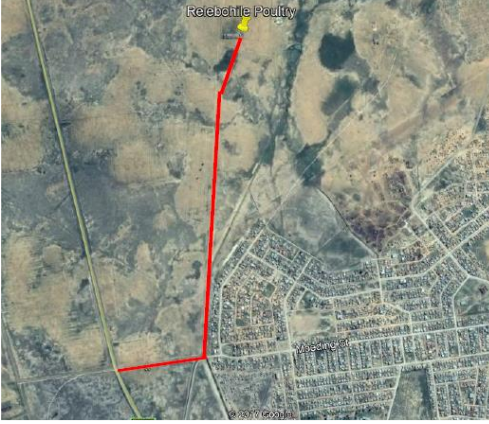



We hereby confirm the contents of this report to be true and accurate, based on the information made available at the time of preparation, and that this information is consistent with the progression of the project.






A handwritten signature in black ink, appearing to read 'M. Quliyi', written in a cursive style.

Engineering Project Manager
Thembakele Consulting Engineers

9. Annexures

Annexure A – Preliminary Project Photographs

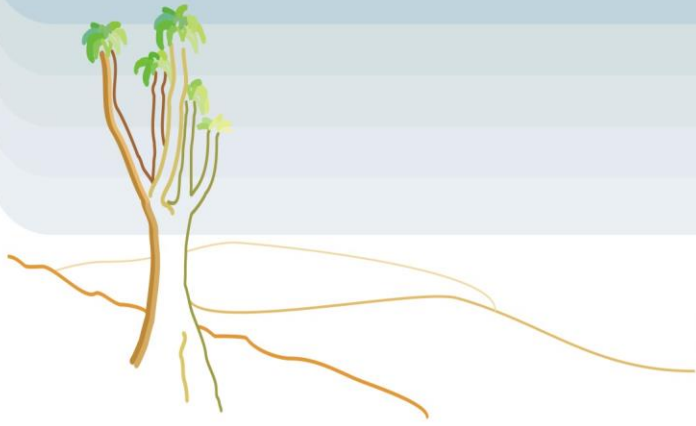
Engineering Item/Service/Aspect	Observations/Findings/Comments	Image/Photograph
Access Road	Main vehicle access to the site is off the R505 south of Moeding Road in Monyakeng. A gravel road must then be used to access the site north of the R505. This road is in a satisfactory condition and is suitable for use by both light and single axle delivery vehicles up to 6 ton load capacity.	
Perimeter Fencing	Perimeter fencing had been installed in 2007 and secures the site entirely along its perimeter. It comprises a rectangular welded mesh 1,800m high and a 300mm single razor coil which provides a total fence height of 2,100m. A 6,00m single access gate is provided at the main entrance.	
Water Supply	Water is supplied by the Nala Municipality. The comprises a 100mm HDPE pipe connected to a water meter. Water storage is enabled through the use of 2 x 2500l elevated storage tanks. Flows are manually controlled since no float valves are currently provided. Available water pressure was not measured at the time of the first inspection.	
Electricity Supply	Electricity is supplied by ESKOM via an overhead line. An elevated 16 KVA mini sub is installed at the final post located within the property. It must however be noted that whilst power is available the cooperative does not utilize power for any particular function.	

<p>Sewerage</p>	<p>Water borne sewerage is not available. An existing septic tank is located adjacent to the existing ablution block. However, this structure is extensively damaged. This concrete structure is not recommended for reconstruction and/or refurbishment and will have to be demolished and a new one constructed in its entirety</p>	
<p>Stormwater Drainage</p>	<p>The general slope of the site is in a south to north direction at a fall of approximately 3%. Run off flows on surface and no surface sub-surface or surface drainage systems are in place. A shallow sand pan is located approximately 40m north of the site.</p>	
<p>Vegetation</p>	<p>Veld grass is dominant throughout the site. A few small trees exist at various locations within the site, these however will pose no serious impact on the proposed location of the new broiler houses.</p>	
<p>Ground Conditions</p>	<p>Geotechnical Investigations had not been concluded at the time of submission of this report. Visual assessments however illustrate reasonably that soil conditions are stable with no visible rocks outcrops or ground water. A Geotechnical Investigation will however confirm these observations.</p>	
<p>Existing Infrastructure</p>	<p>Existing Broiler House The existing broiler house extends over an area of approximately 150m² and comprises a brick and mortar foundation, perimeter low height walls, canvas external covers and corrugated roof sheeting. Its location permits that its operation will continue during construction since this is outside the proposed footprint of the new broiler houses.</p>	

	<p>Existing Storage Shed and Ablution Block</p> <p>These existing brick and mortar structures are extensively damaged and its recommended that they be demolished and reconstructed.</p>	
Other	<p>An existing fence which divides the into a north and south extremity will be removed prior to construction.</p>	

Appendix D: Specialist reports (including terms of reference)

Appendix D(i): Ecological assessment and wetland delineation



DPR

Ecologists & Environmental Services

Report on the ecological assessment and wetland delineation of proposed poultry houses for the Relebohile Poultry Project near the town of Wesselsbron, Free State Province.

July 2019

Prepared by:

Darius van Rensburg

Pr.Sci.Nat. 400284/13

T 083 410 0770

darius@dprecologists.co.za

P.O. Box 12726 | 61 Topsy Smith Street

Brandhof | Langenhovenpark

9324 | 9300

Prepared for:

Environmental Management Group


P.O. Box 28242

Danhof

9310

DECLARATION OF INDEPENDENCE

DPR Ecologists and Environmental Services is an independent company and has no financial, personal or other interest in the proposed project, apart from fair remuneration for work performed in the delivery of ecological services. There are no circumstances that compromise the objectivity of the study.

Report Version	Final 1.0		
Title	Report on the ecological assessment and wetland delineation of proposed poultry houses for the Relebohile Poultry Project near the town of Wesselsbron, Free State Province.		
Author	DP van Rensburg (Pr.Sci.Nat)		Jul'19

Executive Summary

According to Mucina & Rutherford (2006) the area consists of Western Free State Clay Grassland (Gh 9). This vegetation type is currently listed as being of Least Concern (LC) under the National List of Threatened Ecosystems (Notice 1477 of 2009) (National Environmental Management Biodiversity Act, 2004) (Map 2). The vegetation type is not currently subjected to any pronounced transformation pressures. It is therefore of limited conservation value. The Free State Province Biodiversity Management Plan (2015) has recently been published and has identified areas which are essential to meeting conservation targets for specific vegetation types, i.e. Critical Biodiversity Areas. The site in question is however listed as being an Ecological Support Area 1 and 2 (Map 3).

The site is dominated by a grass layer but which has been subjected to previous ploughing and is therefore of secondary establishment. On-site observations clearly indicate a mostly pioneer species assemblage indicative of the secondary nature of the natural vegetation. In addition, rare and endangered species which are often habitat specific and require pristine conditions do not occur on the site and is unlikely to ever establish here. The site is fenced and largely isolated from the surrounding area; it is also not affected by the extensive overgrazing by domestic stock as the surroundings. It is however affected by a few other anthropogenic impacts. Two small residential houses cause local transformation, a moderate poultry house is already present on the site and also causes some transformation, dilapidated buildings, small vegetable patches, fruit trees and a small water reservoir all contribute to significant transformation of the site. The surrounding area is quite heavily degraded, mostly by overgrazing of domestic stock.

In conclusion the site is considered to be largely transformed from the natural condition. This is due to the site previously being ploughed for dryland crop cultivation. As a result the vegetation layer is of secondary establishment, dominated by pioneer species, and although consisting of indigenous species is unlikely to be able to attain the species composition and diversity of the natural vegetation. The site is also already impacted on by an existing poultry house, buildings, vegetable patch and fruit trees which cause local transformation on the site. Consequently the site doesn't contain any protected or rare species and the diversity of species is relatively low. The pans or wetland areas surrounding the site is however important in terms of groundwater and a shallow watertable but should remain unaffected by the development (Map 1).

Due to the relatively flat topography and shallow groundwater the area contains numerous and extensive pan depressions (Map 1). These areas contain clear indicators of wetland conditions. Large depressions occur to the north, east and west of the site but are located between 150 and 200 meters from it and should therefore not be affected. These areas were therefore surveyed although their exact borders not determined. Smaller depressions occur approximately 40 meters to the south of the site and these areas were more thoroughly surveyed and their exact borders determined as they may be affected by the development.

Soil and vegetation confirm the presence of wetland conditions in these depressions surrounding the site. Furthermore, although their borders may not be very distinct the combination of soil wetland indicators and obligate wetland vegetation ensure easy and accurate delineation of the wetland boundary. The depressions around the site can be categorised as depression wetland systems (SANBI 2009).

The site has a relatively flat topography and therefore does not generate a significant amount of runoff. Storm water will rather infiltrate to the groundwater. The surrounding pans, especially the southern pan which is nearest to the site should therefore not be directly affected by the development. The development should also not contribute to any significant sediment runoff and erosion and should therefore not contribute to the sediment load of the pan. The survey of the site also identified the absence of any substantial effluent associated with the development. Should the development contaminate groundwater this may eventually enter the subsurface recharge of the southern pan and is considered the only likely impact on the pan. Therefore, as long as the poultry houses are built on an impenetrable surface and an adequate storm water management system is implemented to contain any runoff on the site the development should not result in any impact on the surrounding pan areas.

As discussed, the area surrounding the site contains large pan areas (Map 1). These will be excluded from the site although they may still be affected by it should they occur in close proximity. Therefore, as long as a suitable buffer is retained between the development and nearest pan the impact should remain negligible. Due to the small extent of the development and the flat topography which limits runoff, only a 15 meter buffer between the development and adjacent pan areas are recommended (Appendix D). It should therefore be clear that as long as recommended mitigation is implemented it is unlikely that the development will have any significant impacts on the surrounding pans.

Table of contents

Ecological assessment and wetland delineation.

Declaration of Independence

Executive Summary

1. Introduction	6
1.1 Background	
1.2 The value of biodiversity	
2. Scope and limitations	8
2.1 Vegetation	
2.2 Fauna	
2.2 Watercourses	
2.3 Limitations	
3. Methodology	9
3.1 Desktop study	
3.2 Survey	
3.3 Criteria used to assess sites	
3.4 Biodiversity sensitivity rating (BSR)	
4. Ecological overview of the site	13
4.1 Overview of ecology and vegetation types	
4.2 Overview of fauna	
4.3 Wetland delineation	
4.4 Buffer zone determination	
5. Anticipated impacts	20
6. Site specific results	22
7. Biodiversity sensitivity rating (BSR) interpretation	23
8. Discussion and conclusions	24
9. Recommendations	26
10. References	27
Annexure A: Maps and Site photos	30
Annexure B: Species list	37
Annexure C: Soil samples	38
Annexure D: Buffer Zone Determination	41
Annexure E: Impact methodology	44

Ecological assessment and wetland delineation.

1. INTRODUCTION

1.1 Background

Natural vegetation is an important component of ecosystems. Some of the vegetation units in a region can be more sensitive than others, usually as a result of a variety of environmental factors and species composition. These units are often associated with water bodies, water transferring bodies or moisture sinks. These systems are always connected to each other through a complex pattern. Degradation of a link in this larger system, e.g. tributary, pan, wetland, usually leads to the degradation of the larger system. Therefore, degradation of such a water related system should be prevented.

Though vegetation may seem to be uniform and low in diversity it may still contain species that are rare and endangered. The occurrence of such a species may render the development unviable. Should such a species be encountered the development should be moved to another location or cease altogether.

South Africa has a large amount of endemic species and in terms of plant diversity ranks third in the world. This has the result that many of the species are rare, highly localised and consequently endangered. It is our duty to protect our diverse natural resources.

South Africa's water resources have become a major concern in recent times. As a water scarce country, we need to manage our water resources sustainably in order to maintain a viable resource for the community as well as to preserve the biodiversity of the system. Thus, it should be clear that we need to protect our water resources so that we may be able to utilise this renewable resource sustainably. Areas that are regarded as crucial to maintain healthy water resources include wetlands, streams as well as the overall catchment of a river system.

Development around cities and towns are necessary to accommodate an ever-growing population. Areas along the boundaries of cities and towns are usually in a degraded state due to the impact of the large population these areas house. Though this may be the case in most situations there may still be areas that consist of sensitive habitats such as water courses, wetlands or rare vegetation types that need to be conserved. These areas may also contain endangered fauna and flora.

The proposed poultry houses will be situated in a fenced area already containing agricultural activities and which is situated to the north west of the settlement of Monyakeng which forms part of the town of Wesselsbron (Map 1). The site has clearly been previously ploughed and therefore consist of secondary grassland and is notably degraded although dominated by indigenous species. The site is situated in a regional panfield and consequently wetland areas are common in the area.

A site visit was conducted on 16 July 2019. The entire footprint of the poultry development was surveyed over the period of one day. The site survey was conducted during winter and it is therefore likely that annual species were overlooked though adequate species identification was still possible in order to accurately assess the site condition.

For the above reasons it is necessary to conduct an ecological assessment and wetland delineation of an area proposed for development.

The report together with its recommendations and mitigation measures should be used to minimise the impact of the proposed development.

1.2 The value of biodiversity

The diversity of life forms and their interaction with each other and the environment has made Earth a uniquely habitable place for humans. Biodiversity sustains human livelihoods and life itself. Although our dependence on biodiversity has become less tangible and apparent, it remains critically important.

The balancing of atmospheric gases through photosynthesis and carbon sequestration is reliant on biodiversity, while an estimated 40% of the global economy is based on biological products and processes.

Biodiversity is the basis of innumerable environmental services that keep us and the natural environment alive. These services range from the provision of clean water and watershed services to the recycling of nutrients and pollution. These ecosystem services include:

- Soil formation and maintenance of soil fertility.
- Primary production through photosynthesis as the supportive foundation for all life.
- Provision of food, fuel and fibre.
- Provision of shelter and building materials.
- Regulation of water flows and the maintenance of water quality.
- Regulation and purification of atmospheric gases.
- Moderation of climate and weather.
- Detoxification and decomposition of wastes.
- Pollination of plants, including many crops.
- Control of pests and diseases.
- Maintenance of genetic resources.

2. SCOPE AND LIMITATIONS

- To evaluate the present state of the vegetation and ecological functioning of the area proposed for the poultry development.
- To identify possible negative impacts that could be caused by the proposed construction of a poultry development.
- Identify and delineate wetland areas associated with the Highveld Salt Pans around the construction site.

2.1 Vegetation

Aspects of the vegetation that will be assessed include:

- The vegetation types of the region with their relevance to the proposed site.
- The overall status of the vegetation on site.
- Species composition with the emphasis on dominant-, rare- and endangered species.

The amount of disturbance present on the site assessed according to:

- The amount of grazing impacts.
- Disturbance caused by human impacts.
- Other disturbances.

2.2 Fauna

Aspects of the fauna that will be assessed include:

- A basic survey of the fauna occurring in the region using visual observations of species as well as evidence of their occurrence in the region (burrows, excavations, animal tracks, etc.).
- The overall condition of the habitat.
- A list of species that may occur in the region (desktop study).

2.3 Wetlands

Aspects of the wetlands that will be assessed include:

- Identification and delineation of watercourses including rivers, streams, pans and wetlands.
- Describe condition and status of wetlands and importance relative to the larger system.

2.4 Limitations

Some geophytic or succulent species may have been overlooked due to a specific flowering time or cryptic nature. Several geophytic species are deciduous and would likely have been overlooked.

Although a comprehensive survey of the site was done it is still likely that several species were overlooked.

Some animal species may not have been observed as a result of their nocturnal and/or shy habits.

3. METHODOLOGY

3.1 Several literature works were used for additional information.

Vegetation:

Red Data List (Raymondo *et al.* 2009)

Vegetation types (Mucina & Rutherford 2006)

Field guides used for species identification (Bromilow 1995, 2010, Coates-Palgrave 2002, Fish *et al* 2015, Gibbs-Russell *et al* 1990, Manning 2009, Retief & Meyer 2017, Van Oudtshoorn 2004, Van Wyk & Malan 1998, Van Wyk & Van Wyk 1997, Venter & Joubert 1985).

Terrestrial fauna:

Field guides for species identification (Smithers 1986a, Child *et al* 2016).

Wetland methodology, delineation and identification:

Department of Water Affairs and Forestry 2004, 2008, Collins 2006, Gerber *et al* 2004, Kleynhans 2000, Marnewecke & Kotze 1999, Macfarlane *et al* 2014, Nel *et al* 2011, SANBI 2009, Van Ginkel *et al* 2011.

3.2 Survey

The site was assessed by means of transects and sample plots.

Noted species include rare and dominant species.

The broad vegetation types present on the site were determined.

The state of the environment was assessed in terms of condition, grazing impacts, disturbance by humans, erosion and presence of invader and exotic species.

Animal species were also noted as well as the probability of other species occurring on or near the site according to their distribution areas and habitat requirements.

The state of the habitat was also assessed.

The wetlands associated with the surrounding pans were identified and surveyed where they were affected by the poultry development.

These systems were delineated by use of topography (land form and drainage pattern) and riparian vegetation.

The following were used to determine and delineate the rivers, streams, pans and wetlands:

- Department of Water Affairs and Forestry. 2005. A practical field procedure for identification and delineation of wetlands and riparian areas. Edition 1. Department of Water Affairs and Forestry, Pretoria.
- Marnewecke, G. & Kotze, D. 1999. Appendix W6: Guidelines for delineation of wetland boundary and wetland zones. In: MacKay (Ed.), H. Resource directed measures for protection of water resources: wetland ecosystems. Department of Water Affairs and Forestry, Pretoria.

The following were used to determine the sensitivity or importance of these identified watercourses:

- Nel, J.L., Murray, K.M., Maherry, A.M., Petersen, C.P., Roux, D.J., Driver, A., Hill, L., Van Deventer, H., Funke, N., Swartz, E.R., Smith-Adao, L.B., Mbona, N., Downsborough, L. and Nienaber, S. (2011). Technical Report for the National Freshwater Ecosystem Priority Areas project. WRC Report No. K5/1801.
- Government of South Africa. 2008. National Protected Area Expansion Strategy for South Africa 2008: Priorities for expanding the protected area network for ecological sustainability and climate change adaptation. Government of South Africa, Pretoria.

These guidelines provide the characteristics which can be utilised to determine if a wetland or watercourse is present and also aids in determining the boundary of these systems.

3.3 Criteria used to assess sites

Several criteria were used to assess the site and determine the overall status of the environment.

Vegetation characteristics

Characteristics of the vegetation in its current state. The diversity of species, sensitivity of habitats and importance of the ecology as a whole.

Habitat diversity and species richness: normally a function of locality, habitat diversity and climatic conditions.

Scoring: Wide variety of species occupying a variety of niches – 1, Variety of species occupying a single niche – 2, Single species dominance over a large area containing a low diversity of species – 3.

Presence of rare and endangered species: The actual occurrence or potential occurrence of rare or endangered species on a proposed site plays a large role on the feasibility of a development. Depending on the status and provincial conservation policy, presence of a Red Data species can potentially be a fatal flaw.

Scoring: Occurrence actual or highly likely – 1, Occurrence possible – 2, Occurrence highly unlikely – 3.

Ecological function: All plant communities play a role in the ecosystem. The ecological importance of all areas though, can vary significantly e.g. wetlands, drainage lines, ecotones, etc.

Scoring: Ecological function critical for greater system – 1, Ecological function of medium importance – 2, No special ecological function (system will not fail if absent) – 3.

Degree of rarity/conservation value:

Scoring: Very rare and/or in pristine condition – 1, Fair to good condition and/or relatively rare – 2, Not rare, degraded and/or poorly conserved – 3.

Vegetation condition

The sites are compared to a benchmark site in a good to excellent condition. Vegetation management practises (e.g. grazing regime, fire, management, etc.) can have a marked impact on the condition of the vegetation.

Percentage ground cover: Ground cover is under normal and natural conditions a function of climate and biophysical characteristics. Under poor grazing management, ground cover is one of the first signs of vegetation degradation.

Scoring: Good to excellent – 1, Fair – 2, Poor – 3.

Vegetation structure: This is the ratio between tree, shrub, sub-shrubs and grass layers. The ratio could be affected by grazing and browsing by animals.

Scoring: All layers still intact and showing specimens of all age classes – 1, Sub-shrubs and/or grass layers highly grazed while tree layer still fairly intact (bush partly opened up) – 2, Mono-layered structure often dominated by a few unpalatable species (presence of barren patches notable) – 3.

Infestation with exotic weeds and invader plants or encroachers:

Scoring: No or very slight infestation levels by weeds and invaders – 1, Medium infestation by one or more species – 2, Several weed and invader species present and high occurrence of one or more species – 3.

Degree of grazing/browsing impact:

Scoring: No or very slight notable signs of browsing and/or grazing – 1, Some browse lines evident, shrubs shows signs of browsing, grass layer grazed though still intact – 2, Clear browse line on trees, shrubs heavily pruned and grass layer almost absent – 3.

Signs of erosion: The formation of erosion scars can often give an indication of the severity and/or duration of vegetation degradation.

Scoring: No or very little signs of soil erosion – 1, Small erosion gullies present and/or evidence of slight sheet erosion – 2, Gully erosion well developed (medium to large dongas) and/or sheet erosion removed the topsoil over large areas – 3.

Faunal characteristics

Presence of rare and endangered species: The actual occurrence or potential occurrence of rare or endangered species on a proposed site plays a large role on the feasibility of a development. Depending on the status and provincial conservation policy, presence of a Red Data species or very unique and sensitive habitats can potentially be a fatal flaw.

Scoring: Occurrence actual or highly likely – 1, Occurrence possible – 2, Occurrence highly unlikely.

3.4 Biodiversity sensitivity rating (BSR)

The total scores for the criteria above were used to determine the biodiversity sensitivity ranking for the sites. On a scale of 0 – 30, six different classes are described to assess the suitability of the sites to be developed. The different classes are described in the table below:

Table 1: Biodiversity sensitivity ranking

BSR	BSR general floral description	Floral score equating to BSR class
Ideal (5)	Vegetation is totally transformed or in a highly degraded state, generally has a low level of species diversity, no species of concern and/or has a high level of invasive plants. The area has lost its inherent ecological function. The area has no conservation value and potential for successful rehabilitation is very low. The site is ideal for the proposed development.	29 – 30
Preferred (4)	Vegetation is in an advanced state of degradation, has a low level of species diversity, no species of concern and/or has a high level of invasive plants. The area's ecological function is seriously hampered, has a very low conservation value and the potential for successful rehabilitation is low. The area is preferred for the proposed development.	26 – 28
Acceptable (3)	Vegetation is notably degraded, has a medium level of species diversity although no species of concern are present. Invasive plants are present but are still controllable. The area's ecological function is still intact but may be hampered by the current levels of degradation. Successful rehabilitation of the area is possible. The conservation value is regarded as low. The area is acceptable for the proposed development.	21 – 25
Not preferred (2)	The area is in a good condition although signs of disturbance are present. Species diversity is high and species of concern may be present. The ecological function is intact and very little rehabilitation is needed. The area is of medium conservation importance. The area is not preferred for the proposed development.	11 – 20
Sensitive (1)	The vegetation is in a pristine or near pristine condition. Very little signs of disturbance other than those needed for successful management are present. The species diversity is very high with several species of concern known to be present. Ecological functioning is intact and the conservation importance is high. The area is regarded as sensitive and not suitable for the proposed development.	0 - 10

4. ECOLOGICAL OVERVIEW OF THE SITE

4.1 Overview of ecology and vegetation types (Mucina & Rutherford 2006)

Refer to the list of species encountered on the site in Appendix B.

According to Mucina & Rutherford (2006) the area consists of Western Free State Clay Grassland (Gh 9). This vegetation type is currently listed as being of Least Concern (LC) under the National List of Threatened Ecosystems (Notice 1477 of 2009) (National Environmental Management Biodiversity Act, 2004) (Map 2). The vegetation type is not currently subjected to any pronounced transformation pressures. It is therefore of limited conservation value.

The Free State Province Biodiversity Management Plan (2015) has recently been published and has identified areas which are essential to meeting conservation targets for specific vegetation types, i.e. Critical Biodiversity Areas. The site in question is however listed as being an Ecological Support Area 1 and 2 (Map 3). However, although this is not a Critical Biodiversity Area it still functions in ecological support of surrounding wetland areas.

The proposed poultry houses will be situated in a fenced area already containing agricultural activities and which is situated to the north west of the settlement of Monyakeng which forms part of the town of Wesselsbron (Map 1). The site has clearly been previously ploughed and therefore consist of secondary grassland and is notably degraded although dominated by indigenous species. The site is situated in a regional panfield and consequently wetland areas are common in the area.

The site is dominated by a grass layer but which has been subjected to previous ploughing and is therefore of secondary establishment. The vegetation is therefore significantly modified from the natural condition. The site is fenced and largely isolated from the surrounding area; it is also not affected by the extensive overgrazing by domestic stock as the surroundings. It is however affected by a few other anthropogenic impacts. Two small residential houses cause local transformation, a moderate poultry house is already present on the site and also causes some transformation, dilapidated buildings, small vegetable patches, fruit trees and a small water reservoir all contribute to significant transformation of the site. The surrounding area is quite heavily degraded, mostly by overgrazing by domestic stock.

The topography of the site is relatively uniform and consists of a largely flat area without a discernible slope. The topography is considered largely intact. The elevation of the site ranges from 1306 m to 1307 m and indicates the absence of a discernible slope. This also contributes to the absence of pronounced runoff patterns and the accumulation of surface water which in turn leads to the formation of pan systems in the surrounding areas (Map 1). Depression wetlands or pans are clearly visible in the surrounding area though their border may be indistinct in some areas. They are however easily delineated by means of soils and wetland vegetation (See following sections).

The area consists of the Dc and Db landtypes which are mostly located in bottomland situations such as the Pan Veld situated in the Wesselsbron and Welkom Districts. These map units are not suitable for agronomy, due to the high clay (> 35%) content of these bottomland soils, and land use is mainly restricted to sheep farming. The geology of the area consists mainly of Ecca sandstone, shale and mudstone with the sporadic intrusion of dolerite sills (Kooij *et al* 1990).

The area has a mean average temperature of 16.8°C, with a maximum of 30°C in January and temperatures below zero common in winter. Summer rainfall occurs mostly as thunderstorms with an average annual rainfall of 542 mm.

As mentioned previously the vegetation structure on the site is dominated by a well-developed, though secondary, grass layer. Due to the secondary nature of the vegetation caused by previous ploughing the grass species are dominated by pioneer species. These include *Eragrostis lehmanniana*, *Eragrostis superba*, *Cynodon dactylon*, *Eragrostis obtusa*, *Aristida stipitata*, *Aristida congesta* and *Trichoneura grandiglumis*. A few clumps of the climax grass, *Digitaria eriantha*, is however also present and indicates an advanced stage of succession. A few dwarf karroid shrubs are present but are not prominent and indicate relatively low levels of grazing. These include *Nenax microphylla*, *Ruschia hamata*, *Indigofera sp.* and *Nolletia ciliaris*. The herbaceous component is quite prominent with several pioneer species indicating the secondary nature of the vegetation. These include *Helichrysum caespitum*, *Senecio consanguineus*, *Gazania krebsiana* and *Selago densiflora*. Geophytic species are absent from the site although the pioneer geophytic species, *Moraea pallida*, is present. The low shrub, *Asparagus larcinus*, is an indicator of disturbance where it occurs in grassland and here it occurs as scattered specimens especially around disturbances, i.e. buildings, etc. These areas of disturbance also encourage the establishment of exotic weeds which include *Conyza bonariensis*, *Medicago sativa* and *Bidens bipinnata*. A row of planted fruit trees are also present along the southern border. The low species diversity, dominated by pioneer species is evident from this vegetation description.

Although the site itself does not contain any pans or wetland areas the surroundings were also surveyed to determine the proximity of such wetland areas and the probable impact on them (Map 1). These wetland areas are however affected by heavy overgrazing by domestic stock and the identification of wetland vegetation was not easy and it is highly likely that several species were overlooked. The dominant vegetation in these pans are dominated by the hygrophilous grass, *Leptochloa fusca*. Other herbaceous species having an affinity for waterlogged conditions include *Limosella major* and *Platycarphella parvifolia*. The pioneer grass, *Cynodon dactylon*, is also prominent and well adapted to seasonally waterlogged soils.

On-site observations clearly indicate a mostly pioneer species assemblage indicative of the secondary nature of the natural vegetation. However, plough furrows are no longer visible on the site itself although aerial imagery clearly indicate that the site was previously ploughed for dryland crop cultivation (Google Earth 2017). As a result the natural vegetation layer was cleared and the soil profile disturbed. Consequently the current vegetation layer is of secondary establishment and it is unlikely that it would be able to attain the species diversity of remaining natural areas. In addition, rare and endangered species which are often habitat specific and require pristine conditions do not occur on the site and is unlikely to ever establish here.

The aerial image also illustrates the existing buildings, vegetable patches and row of fruit trees on the site (Figure 1).



Figure 1: Aerial view of the proposed site (Google Earth 2019). Plough furrows are clearly visible on the site and surrounding areas. Other elements on the site are also clearly visible and include buildings (yellow), vegetable patches (green) and row of fruit trees (blue). Note also the surrounding pan areas visible as darker patches.

In conclusion the site is considered to be largely transformed from the natural condition. This is due to the site previously being ploughed for dryland crop cultivation. As a result the vegetation layer is of secondary establishment, dominated by pioneer species, and although consisting of indigenous species is unlikely to be able to attain the species composition and diversity of the natural vegetation. The site is also already impacted on by an existing poultry house, buildings, vegetable patch and fruit trees which cause local transformation on the site. Consequently the site doesn't contain any protected or rare species and the diversity of species is relatively low. The pans or wetland areas surrounding the site is however important in terms of groundwater and a shallow watertable but should remain unaffected by the development (Map 1). These areas will be discussed in greater detail in the following sections.

4.2 Overview of terrestrial fauna (actual & possible)

Tracks and signs of mammals are present on the site but notably diminished from the natural condition. This is mostly as a result of previous ploughing as well as current impacts and transformation on the site. The faunal population is also notably dominated by generalist species which are well adapted to disturbed habitats such as occurs on the site. It is highly unlikely that the site will be able to support a natural mammal population both in terms of diversity and population size.

The region is well known for colonies of the threatened Sungazer Lizzard (*Smaug giganteus*) which is considered to be a Vulnerable (VU) species largely due to collecting for the illegal pet trade and traditional medicine as well as the transformation of available habitat. The site was therefore also purposefully surveyed for the presence of this species. No specimens or burrows of this species could be identified and due to the degraded condition of the site and previous transformation of the vegetation it is considered highly unlikely that it would occur on the site.

Mammal species identified on the site include the Ground Squirrel (*Xerus inauris*) and the Common Mole rat (*Cryptomys hottentotus*). Both species are widespread and common and well adapted to disturbed areas such as occurs on the site. These species often inhabit peri-urban environments. They are consequently not of high conservation value.

The proposed development will transform the majority of the vegetation on the site and thus also the available habitat to fauna. However, the current habitat is already degraded and mammal population already notably diminished and therefore this cannot be considered to be a high impact. Furthermore, being well adapted to disturbed environments the species currently present on the site is likely to return to the site after construction has been completed.

It is also considered likely that a few mammal species were overlooked during the survey but owing to the degraded condition of the site it is considered highly unlikely that any rare or endangered species would occur on the site.

In order to ensure no direct impact on the mammals on the site the hunting, capturing or trapping of mammals on the site should be strictly prohibited during construction as well as during operation of the poultry facility.

List of some Red Data terrestrial mammals that could occur in the region:

South African Hedgehog	<i>Atelerix frontalis</i>
Aardwolf	<i>Proteles cristatus</i>
African Wild Cat	<i>Felis lybica</i>
Small-Spotted Cat	<i>Felis nigripes</i>
Bat-Eared Fox	<i>Otocyon megalotis</i>
Striped Weasel	<i>Poecilogale albinucha</i>

It is considered unlikely that any of these species would occur on the site due to the degraded condition of the site.

4.3 Wetland Delineation

The depressions or pans in the surrounding area will be discussed below (Map 1).

The term watercourse refers to a river, stream, wetland or pan. The National Water Act (NWA, 1998) includes rivers, streams, pans and wetlands in the definition of the term watercourse. This definition follows:

Watercourse means:

- A river or spring.
- A natural channel in which water flows regularly or intermittently.
- A wetland, lake or dam into which water flows.
- Any collection of water which the Minister may, by notice in the Gazette, declare to be a watercourse, and a reference to a watercourse includes, where relevant, its bed and banks.

Riparian habitat is an accepted indicator of watercourses used to delineate the extent of wetlands, rivers, streams and pans (Department of Water Affairs and Forestry 2005).

Due to the relatively flat topography and shallow groundwater the area contains numerous and extensive pan depressions (Map 1). These areas contain clear indicators of wetland conditions and the large areas are perennially saturated whilst smaller portions are seasonally activated. Obligate wetland vegetation was utilised to determine the presence as well as the border of wetland conditions on the site. Soil samples were also used to determine the border and also to confirm the presence of wetland soils where obligate wetland vegetation indicated wetland conditions (Appendix C). Soil samples were investigated for the presence of anaerobic evidence which characterises wetland soils.

Large depressions occur to the north, east and west of the site but located between 150 and 200 meters from it and should therefore not be affected by the development (Map 1). These areas were therefore surveyed although their exact borders not determined. Smaller depressions occur approximately 40 meters to the south of the site and these areas were more thoroughly surveyed and their exact borders determined as they may be affected by the development.

The soil samples taken in these southern depressions indicate very clear wetland conditions (Appendix C). A grey matrix and mottling is very clearly present, representing seasonal wetland conditions. These wetland conditions are even more clearly defined when compared with the surrounding terrestrial areas which consist of sandy soils and are therefore easily differentiated from the wetland areas.

The vegetation present in the depressions to the north, east, south and west are all dominated by obligate wetland species and therefore also confirm the presence of wetland conditions. The hygrophilous grass, *Leptochloa fusca*, is prominent in these depression areas. This is an obligate wetland grass and therefore indicate the presence of wetland conditions. Other herbaceous species occurring in these depressions include *Limosella major* and *Platycarphella parvifolia*. Both are associated with saturated soil conditions. The pioneer grass, *Cynodon dactylon*, is also abundant but not a good indicator of wetland conditions.

In conclusion, soil and vegetation confirm the presence of wetland conditions in these depressions surrounding the site. Furthermore, although their borders may not be very distinct the combination of soil wetland indicators and obligate wetland vegetation ensure easy and accurate delineation of the wetland boundary.

The depressions around the site can be categorised as depression wetland systems (SANBI 2009):

A depression wetland is a basin shaped area with a closed elevation contour with an increase in depth from the perimeter to the central areas that allows for the accumulation of surface water (i.e. it is inward draining). It may also receive sub-surface water. An outlet is usually absent. Dominant water sources are precipitation, ground water discharge, interflow and (diffuse or concentrated) overland flow. For 'depressions with channeled inflow', concentrated overland flow is typically a major source of water for the wetland, whereas this is not the case for 'depressions without channeled inflow'. Dominant hydrodynamics are (primarily seasonal) vertical fluctuations. Depressions may be flatbottomed (in which case they are often referred to as 'pans') or round-bottomed (in which case they are often referred to as 'basins'), and may have any combination of inlets and outlets or lack them completely. For 'exorheic depressions', water exits as concentrated surface flow while, for 'endorheic depressions', water exits by means of evaporation and infiltration.

This accurately describes the depressions around the site (Map 1). They are all relatively flat bottomed and clearly visible as depressions. They are mostly seasonal in nature although the larger depressions to the north are perennial, although this is also influenced by storm water being channelled into this depression from the adjacent urban area.

The depressions around the site was delineated by using obligate wetland vegetation and soil wetness indicators. The following guidelines and frameworks were used to determine and delineate the wetland areas:

- Department of Water Affairs and Forestry. 2005. A practical field procedure for identification and delineation of wetlands and riparian areas. Edition 1. Department of Water Affairs and Forestry, Pretoria.
- Marnewecke & Kotze 1999. Appendix W6: Guidelines for delineation of wetland boundary and wetland zones. In: MacKay (Ed.), H. Resource directed measures for protection of water resources: wetland ecosystems. Department of Water Affairs and Forestry, Pretoria.

The depression wetlands around the site has been heavily degraded by several impacts. The settlement of Monyakeng has a poor storm water management system and inadequate waterborne sewer system (Map 2). As a result a large volume of storm water having a poor water quality are channelized toward the northern large pan system. This visibly increases the flow regime within the pan system and the survey also identified highly polluted effluent from the urban area entering the pan system. The dumping of several tons of used nappies into the channel draining into the pan will also cause high levels of pollution. This has a large impact on the surrounding pan system. Another large impact is the sustained overgrazing by domestic stock of this area. This causes high levels of trampling, decreases the vegetation cover and alters the functioning of these pans. The pan system around the site is therefore considered to be heavily degraded from the natural condition.

The site has a relatively flat topography and therefore does not generate a significant amount of runoff. Storm water will rather infiltrate to the groundwater. The surrounding pans, especially the southern pan which is nearest to the site should therefore not be directly affected by the development. The development should also not contribute to any significant sediment runoff and erosion and should therefore not contribute to the sediment load of the pan. The survey of the site also identified the absence of any substantial effluent associated with the development. Should the development contaminate groundwater this may eventually enter the subsurface recharge of the southern pan and is considered the only likely impact on the pan. Therefore, as long as the poultry houses are built on an impenetrable surface and an adequate storm water management system is implemented to contain any runoff on the site the development should not result in any impact on the surrounding pan areas.

4.4 Buffer zone determination

As discussed, the area surrounding the site contains large pan areas. These will be excluded from the site although they may still be affected by it should they occur in close proximity. Therefore, as long as a suitable buffer is retained between the development and nearest pan the impact should remain negligible.

In order to establish a suitable buffer for the depression wetlands the Buffer Zone Tool for the Determination of Aquatic Impact Buffers and Additional Setback Requirements for Wetland Ecosystems (2014) was utilised (Appendix D). This determination was also done in conjunction with Macfarlane *et al* (2014). It should be noted that the buffers determined by this model only caters for impacts associated with diffuse-source surface runoff and will not take into account groundwater movement. By using the above tools, a suitable buffer was determined at 15 meters during the construction and operational phases of the development (Map 1).

Due to the small extent of the development and the flat topography which limits runoff only a 15 meter buffer between the development and adjacent pan areas are recommended (Appendix D). It should therefore be clear that as long as recommended mitigation is implemented it is unlikely that the development will have any significant impacts on the surrounding pans.

5. ANTICIPATED IMPACTS

Anticipated impacts that the development will have is primarily concerned with the loss of habitat and species diversity but will also include impacts on the adjacent wetland areas.

The site was previously ploughed for crop cultivation and consequently the vegetation on the site is of secondary establishment and largely transformed from the natural condition. Consequently the species diversity is also relatively low. In addition, the vegetation type present on the site is currently listed as being of Least Concern (LC) and therefore does not have a high conservation value (Map 2). As a result the loss of habitat and species diversity can therefore not be considered as a high impact.

No protected, Red Listed or rare species could be identified on the site and due to the degraded and transformed nature it is unlikely that such species would occur. The impact on these species would therefore be negligible.

Large wetland areas occur in the area surrounding the site (Map 1). These are not located near the site and should therefore remain unaffected by it. A pan area to the south of the site is nearest, approximately 40 meters and is most likely to be affected by the development. However, the extent of the development and nature of the operation coupled with the flat topography which will not generate significant runoff significantly decreases the likelihood that the development will impact on it. An applicable buffer has been determined at 15 meters and should also indicate that the distance of 40 meters from the site should be more than enough to mitigate any impacts that the development will have. In addition, should adequate mitigation be implemented this will also prevent the development from impacting on the pan area. This should include building the poultry houses on an impenetrable, preferably concrete, surface and implementing an adequate storm water management system which will contain any effluent generated on the site.

Disturbance caused by the proposed development may cause susceptible conditions for the establishment of exotic weeds. This can be easily managed by simply implementing an exotic weed monitoring and eradication programme which can be initiated during construction and incorporated into the management of the facility during operation.

The development will primarily entail a loss of habitat for fauna which will decrease the population size. This is not anticipated to exceed a low impact as the mammal population on the site is already heavily diminished and degraded.

The impact significance has been determined and it is clear that the impacts before mitigation will mostly be low-moderate with the potential infestation by exotic weeds being the only moderate impact. With adequate mitigation these can all be decreased to low-moderate.

Please refer to Appendix E for the impact methodology.

Significance of the impact:

Impact	Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Significance
Before Mitigation								
Loss of vegetation type and clearing of vegetation	1	5	1	2.3	4	3	3.5	8
Loss of protected species	1	5	1	2.3	1	1	1	2.3
Impact on wetlands	3	4	2	3	3	3	3	9
Infestation with weeds and invaders	3	4	2	3	4	3	3.5	10.5
Impact on Terrestrial fauna	1	5	1	2.3	3	3	3	6.9
After Mitigation								
Loss of vegetation type and clearing of vegetation	1	5	1	2.3	4	3	3.5	8
Loss of protected species	1	5	1	2.3	1	1	1	2.3
Impact on wetlands	2	4	2	2.6	2	3	2.5	6.5
Infestation with weeds and invaders	3	2	1	2	3	2	2.5	5
Impact on Terrestrial fauna	1	5	1	2.3	3	3	3	6.9

6. SITE SPECIFIC RESULTS

Habitat diversity and species richness:

The site has been previously ploughed for crop cultivation and consequently the vegetation is of secondary establishment, therefore largely transformed and consequently the habitat and species diversity is relatively low.

Presence of rare and endangered species:

No protected, Red Listed or rare species could be identified on the site and due to the degraded and transformed nature it is unlikely that such species would occur.

Ecological function:

The ecological function of the site has been transformed to a large degree. The site functions as habitat for fauna and the depression wetlands primarily function as groundwater recharge. The habitat function has been degraded significantly as a result of previous ploughing and current impacts on the site. The functioning of the depression wetlands has also been degraded significantly by polluted runoff from the adjacent urban area as well as sustained heavy overgrazing and trampling by domestic stock. Furthermore, the function of the site is not paramount to the continued functioning of the surrounding natural areas. In other words, development of the site should not impair the functioning of the surrounding area to a large extent.

Degree of rarity/conservation value:

According to Mucina & Rutherford (2006) the area consists of Western Free State Clay Grassland (Gh 9). This vegetation type is currently listed as being of Least Concern (LC) under the National List of Threatened Ecosystems (Notice 1477 of 2009) (National Environmental Management Biodiversity Act, 2004) (Map 2). The vegetation type is not currently subjected to any pronounced transformation pressures. It is therefore of limited conservation value. The site is listed as an Ecological Support Area 2 under the Free State Province Biodiversity Management Plan (2015) (Map 3). Although this is not a Critical Biodiversity Area it still functions in ecological support of surrounding wetland areas. The site has been largely transformed as a result of previous ploughing, further decreasing the conservation value.

Percentage ground cover:

The percentage vegetation cover is moderate. Although modified, the grass cover is significant and considered at least moderate. Grazing is also limited within the fenced site contributing to a better vegetation cover.

Vegetation structure:

The vegetation structure is still natural to some degree although the species composition is not representative of the natural condition.

Infestation with exotic weeds and invader plants:

Several exotic weeds occur on the site but do not dominate in any portions. It is therefore still possible to eradicate these.

Degree of grazing/browsing impact:

Grazing by domestic stock is moderate. Although the surroundings are affected by high levels of overgrazing this is limited to moderate within the fenced site.

Signs of erosion:

Due to the relatively flat topography no prominent erosion is present.

Terrestrial animals:

Tracks and signs of mammals are present on the site but notably diminished from the natural condition. This is mostly as a result of previous ploughing as well as current impacts and transformation on the site. The faunal population is also notably dominated by generalist species which are well adapted to disturbed habitats such as occurs on the site. It is highly unlikely that the site will be able to support a natural mammal population both in terms of diversity and population size. It is also considered likely that a few mammal species were overlooked during the survey but owing to the degraded condition of the site it is considered highly unlikely that any rare or endangered species would occur on the site.

Table 2: Biodiversity Sensitivity Rating for the proposed poultry facility.

	Low (3)	Medium (2)	High (1)
Vegetation characteristics			
Habitat diversity & Species richness	3		
Presence of rare and endangered species	3		
Ecological function		2	
Uniqueness/conservation value	3		
Vegetation condition			
Percentage ground cover		2	
Vegetation structure		2	
Infestation with exotic weeds and invader plants or encroachers		2	
Degree of grazing/browsing impact		2	
Signs of erosion			1
Terrestrial animal characteristics			
Presence of rare and endangered species	3		
Sub total	12	10	1
Total		23	

7. BIODIVERSITY SENSITIVITY RATING (BSR) INTERPRETATION

Table 3: Interpretation of Biodiversity Sensitivity Rating.

Site	Score	Site Preference Rating	Value
Poultry facility	23	Acceptable	3

8. DISCUSSION AND CONCLUSION

The site proposed for the poultry facility has been rated as being acceptable for this development.

According to Mucina & Rutherford (2006) the area consists of Western Free State Clay Grassland (Gh 9). This vegetation type is currently listed as being of Least Concern (LC) under the National List of Threatened Ecosystems (Notice 1477 of 2009) (National Environmental Management Biodiversity Act, 2004) (Map 2). The vegetation type is not currently subjected to any pronounced transformation pressures. It is therefore of limited conservation value.

The Free State Province Biodiversity Management Plan (2015) has recently been published and has identified areas which are essential to meeting conservation targets for specific vegetation types, i.e. Critical Biodiversity Areas. The site in question is however listed as being an Ecological Support Area 1 and 2 (Map 3). However, although this is not a Critical Biodiversity Area it still functions in ecological support of surrounding wetland areas.

The proposed poultry houses will be situated in a fenced area already containing agricultural activities and which is situated to the north west of the settlement of Monyakeng which forms part of the town of Wesselsbron (Map 1). The site has clearly been previously ploughed and therefore consist of secondary grassland and is notably degraded although dominated by indigenous species. The site is situated in a regional panfield and consequently wetland areas are common in the area.

The site is dominated by a grass layer but which has been subjected to previous ploughing and is therefore of secondary establishment. On-site observations clearly indicate a mostly pioneer species assemblage indicative of the secondary nature of the natural vegetation. In addition, rare and endangered species which are often habitat specific and require pristine conditions do not occur on the site and is unlikely to ever establish here. The site is fenced and largely isolated from the surrounding area; it is also not affected by the extensive overgrazing by domestic stock as the surroundings. It is however affected by a few other anthropogenic impacts. Two small residential houses cause local transformation, a moderate poultry house is already present on the site and also causes some transformation, dilapidated buildings, small vegetable patches, fruit trees and a small water reservoir all contribute to significant transformation of the site. The surrounding area is quite heavily degraded, mostly by overgrazing of domestic stock.

In conclusion the site is considered to be largely transformed from the natural condition. This is due to the site previously being ploughed for dryland crop cultivation. As a result the vegetation layer is of secondary establishment, dominated by pioneer species, and although consisting of indigenous species is unlikely to be able to attain the species composition and diversity of the natural vegetation. The site is also already impacted on by an existing poultry house, buildings, vegetable patch and fruit trees which cause local transformation on the site. Consequently the site doesn't contain any protected or rare species and the diversity of species is relatively low. The pans or wetland areas surrounding the site is however important in terms of groundwater and a shallow watertable but should remain unaffected by the development (Map 1).

Due to the relatively flat topography and shallow groundwater the area contains numerous and extensive pan depressions (Map 1). These areas contain clear indicators of wetland conditions. Large depressions occur to the north, east and west of the site but are located between 150

and 200 meters from it and should therefore not be affected. These areas were therefore surveyed although their exact borders not determined. Smaller depressions occur approximately 40 meters to the south of the site and these areas were more thoroughly surveyed and their exact borders determined as they may be affected by the development.

The soil samples taken in these southern depressions indicate very clear wetland conditions (Appendix C). These wetland conditions are even more clearly defined when compared with the surrounding terrestrial areas which consist of sandy soils and are therefore easily differentiated from the wetland areas. The vegetation present in the depressions to the north, east, south and west are all dominated by obligate wetland species and therefore also confirm the presence of wetland conditions. The hygrophilous grass, *Leptochloa fusca*, is prominent in these depression areas. This is an obligate wetland grass and therefore indicate the presence of wetland conditions.

In conclusion, soil and vegetation confirm the presence of wetland conditions in these depressions surrounding the site. Furthermore, although their borders may not be very distinct the combination of soil wetland indicators and obligate wetland vegetation ensure easy and accurate delineation of the wetland boundary. The depressions around the site can be categorised as depression wetland systems (SANBI 2009).

The depression wetlands around the site has been heavily degraded by several impacts. The settlement of Monyakeng has a poor storm water management system and inadequate waterborne sewer system (Map 2). As a result a large volume of storm water having a poor water quality are channelized toward the northern large pan system. This visibly increases the flow regime within the pan system and the survey also identified highly polluted effluent from the urban area entering the pan system. Another large impact is the sustained overgrazing by domestic stock of this area. This causes high levels of trampling, decreases the vegetation cover and alters the functioning of these pans. The pan system around the site is therefore considered to be heavily degraded from the natural condition.

The site has a relatively flat topography and therefore does not generate a significant amount of runoff. Storm water will rather infiltrate to the groundwater. The surrounding pans, especially the southern pan which is nearest to the site should therefore not be directly affected by the development. The development should also not contribute to any significant sediment runoff and erosion and should therefore not contribute to the sediment load of the pan. The survey of the site also identified the absence of any substantial effluent associated with the development. Should the development contaminate groundwater this may eventually enter the subsurface recharge of the southern pan and is considered the only likely impact on the pan. Therefore, as long as the poultry houses are built on an impenetrable surface and an adequate storm water management system is implemented to contain any runoff on the site the development should not result in any impact on the surrounding pan areas.

As discussed, the area surrounding the site contains large pan areas (Map 1). These will be excluded from the site although they may still be affected by it should they occur in close proximity. Therefore, as long as a suitable buffer is retained between the development and nearest pan the impact should remain negligible. Due to the small extent of the development and the flat topography which limits runoff, only a 15 meter buffer between the development and adjacent pan areas are recommended (Appendix D). It should therefore be clear that as long as recommended mitigation is implemented it is unlikely that the development will have any significant impacts on the surrounding pans.

9. RECOMMENDATIONS

- The development should be contained in its entirety within the fenced area with no activities allowed outside this area (Map 1). This should include all construction materials, laydown area and waste.
- The hunting, capturing and trapping of fauna should be prevented by making this a punishable offense during the construction phase and operation of the development.
- After construction has ceased all construction materials should be removed from the area.
- No littering must be allowed and all litter must be removed from the site.
- The development should maintain the recommended buffer zone of 15 meters from the border of the depression wetlands around the site, as determined by the Buffer Zone Tool for the Determination of Aquatic Impact Buffers and Additional Setback Requirements for Wetland Ecosystems (2014) (Appendix D).
- Poultry houses should be built on an impenetrable, preferably concrete, surface and implement an adequate storm water management system which will contain any effluent generated on the site.
- The depression wetlands should be treated as no-go areas as far as possible and no construction activities, material or waste should occur or be placed in these areas or the buffer zone (Map 1). This is also applicable to the operational phase.
- The exotic species occurring on the site must be eradicated prior to construction. It is also recommended that the eradication of exotic species be maintained and form part of the management of the poultry facility throughout the lifetime of the development.
- Monitoring of construction including weed establishment and erosion should take place and should also specifically include any impacts or alterations to the surrounding depression wetlands.

10. REFERENCES

- Bromilow, C. 1995. Problem Plants of South Africa. Briza Publications CC, Cape Town.
- Bromilow, C. 2010. Problem plants and alien weeds of South Africa. Briza Publications CC, Cape Town.
- Child MF, Roxburgh L, Do Linh San E, Raimondo D, Davies-Mostert HT, editors. The 2016 Red List of Mammals of South Africa, Swaziland and Lesotho. South African National Biodiversity Institute and Endangered Wildlife Trust, South Africa.
- Coates-Palgrave, M. 2002. Keith Coates-Palgrave Trees of Southern Africa, edn 3, imp. 4. Random House Struik (Pty.) Ltd, Cape Town.
- Collins, N.B. 2005. Wetlands: The basics and some more. Free State Department of Tourism, Environmental and Economic Affairs.
- Conservation of Agricultural Resources Act, 1983 (ACT No. 43 OF 1983) Department of Agriculture.
- Department of Water Affairs and Forestry. 2005. A practical field procedure for identification and delineation of wetlands and riparian areas. Edition 1. Department of Water Affairs and Forestry, Pretoria.
- DWAF. 2008. Updated manual for the identification and delineation of wetlands and riparian areas, prepared by M.Rountree, A.L. Batchelor, J. MacKenzie and D. Hoare. Stream Flow Reduction Activities, Department of Water Affairs and Forestry, Pretoria, South Africa.
- Fish, L., Mashau, A.C., Moeaha, M.J. & Nembudani, M.T. 2015. Identification guide to the southern African grasses. An identification manual with keys, descriptions and distributions. *Strelitzia* 36. South African National Biodiversity Institute, Pretoria.
- Government of South Africa. 2008. National Protected Area Expansion Strategy for South Africa 2008: Priorities for expanding the protected area network for ecological sustainability and climate change adaptation. Government of South Africa, Pretoria.
- Germishuizen, G. & Meyer, N.L. (eds) 2003. Plants of Southern Africa: an annotated checklist. *Strelitzia* 14. National Botanical Institute, Pretoria.
- Gerber, A., Cilliers, C.J., Van Ginkel, C. & Glen, R. 2004. Easy identification of aquatic plants. Department of Water Affairs, Pretoria.
- Gibbs Russell, G.E., Watson, L., Koekemoer, M., Smook, L., Barker, N.P., Anderson, H.M. & Dallwitz, M.J. 1990. Grasses of Southern Africa. Memoirs of the Botanical Survey of South Africa No. 58. Botanical Research Institute, South Africa.
- Google Earth V 7.3.2.5776. 2019. Wesselsbron, South Africa. S 27.813057°, E 26.358776°. Eye alt. 1.75 km. Digital Globe 2019. <http://www.earth.google.com> (July 2019).

Kleynhans, C.J. 2000. Desktop estimates of the ecological importance and sensitivity categories (EISC), default ecological management classes (DEMC), present ecological status categories (PESC), present attainable ecological management classes (present AEMC), and best attainable ecological management class (best AEMC) for quaternary catchments in South Africa. DWAF report, Institute for Water Quality Studies, Pretoria, South Africa.

Kooij, M.S., Bredenkamp, G.J. & Theron, G.K. 1990. The vegetation of the north-western Orange Free State, South Africa. 2. The D land type. *Strelitzia* 20.2: 241-248.

Macfarlane, D.M., Bredin, I.P., Adams, J.B., Zungu, M.M., Bate, G.C. and Dickens, C.W.S. (2014). Preliminary guideline for the determination of buffer zones for rivers, wetlands and estuaries. Final Consolidated Report. WRC Report No TT 610/14, Water Research Commission, Pretoria.

Manning, J. 2009. Field Guide to Wild Flowers. Struik Nature, Cape Town.

Marnewecke, G. & Kotze, D. 1999. Appendix W6: Guidelines for delineation of wetland boundary and wetland zones. In: MacKay (Ed.), H. Resource directed measures for protection of water resources: wetland ecosystems. Department of Water Affairs and Forestry, Pretoria.

Mucina, L. & Rutherford, M.C. (eds.) 2006. The Vegetation of South Africa, Lesotho and Swaziland. *Strelitzia* 19. South African National Biodiversity Institute, Pretoria.

National Environmental Management: Biodiversity Act (10/2004): National list of ecosystems that are threatened and in need of protection. Government Notice 1002 of 2011, Department of Environmental Affairs.

National Water Act (Act No. 36 of 1998). Republic of South Africa.

Nel, J.L., Murray, K.M., Maherry, A.M., Petersen, C.P., Roux, D.J., Driver, A., Hill, L., Van Deventer, H., Funke, N., Swartz, E.R., Smith-Adao, L.B., Mbona, N., Downsborough, L. and Nienaber, S. (2011). Technical Report for the National Freshwater Ecosystem Priority Areas project. WRC Report No. K5/1801.

Raymondo, D. Van Staden, L. Foden, W. Victor, J.E. Helme, N.A. Turner, R.C. Kamundi, D.A. Manyama, P.A. (eds.) 2009. Red List of South African Plants. *Strelitzia* 25. South African National Biodiversity Institute, Pretoria.

Retief, E. & Meyer, N.L. 2017. Plants of the Free State: Inventory and identification guide. *Strelitzia* 38. South African National Biodiversity Institute, Pretoria.

SANBI. 2009. Further Development of a Proposed National Wetland Classification System for South Africa. Primary Project Report. Prepared by the Freshwater Consulting Group (FCG) for the South African National Biodiversity Institute (SANBI).

Smithers, R.H.N. 1986a. Land Mammals of Southern Africa. Macmillan, Johannesburg.

Smithers, R.H.N. 1986b. South African Red Data Book - Terrestrial Mammals. *South African National Scientific Programmes Report No. 125*. A report for the Committee for Nature Conservation Research National Programme for Ecosystem Research.

Van Ginkel, C.E., Glen, R.P., Gordon-Grey, K.D., Cilliers, C.J., Musaya, M. & Van Deventer, P.P. 2011. Easy Identification of some South African Wetland Plants. WRC Report No. TT 479/10.

Van Oudtshoorn, F. 2004. Gids tot Grasse van Suider-Afrika. Briza Publications, Pretoria.

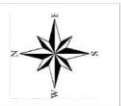
Van Wyk, B. & Malan, S. 1998. Field guide to the wild flowers of the Highveld. Struik Publishers, Cape Town.

Van Wyk, B. & Van Wyk, P. 1997. Field guide to trees of Southern Africa. Struik Publishers, Cape Town.

Venter, H.J.T. & Joubert, A.M. 1985. Climbers, trees and shrubs of the Orange Free State. P.J. de Villiers Publishers, Bloemfontein.

Annexure A: Maps and Site photos

Locality and wetland map for the proposed poultry houses near the town of Wesselsbron, Free State Province.








Map 1: Locality map of the proposed poultry houses near Wesselsbron. The wetland areas surrounding the site has been delineated as well as the recommended 15 meter buffer. Note the pan area to the south being nearest to the site. The surrounding terrestrial area clearly has a low percentage vegetation cover and plough furrows are still visible in some areas. Note also the proximity of the urban area and channelization of storm water into the pan systems.



Prepared for:
Environmental Management Group
P.O. Box 28242
Danhof
9310

Legend:

-  Road network
-  Watercourses
-  Site location
-  Wetlands and impoundments
-  15m buffer around wetlands

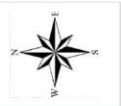
Map Information

Spheroid: WGS 84
Quantum GIS
Scale: 1:10 000

DPR Ecologists
Contact Darius van Rensburg at:
darius@dprecologists.co.za
P.O. Box 12726, Brandhof, 9324
Tel: 083 410 0770



**General ecology map for the proposed poultry houses near the town of Wesselsbron,
Free State Province.**



Map 2: General ecology map of the proposed poultry houses near Wesselsbron. The vegetation type, Western Free State Clay Grassland is indicated. This area is not considered to contain Threatened Ecosystems or National Protected Areas Expansion Strategy (NPAES): Focus Areas. The wetland areas surrounding the site is indicated. Note also the storm water drainage channel from the urban area flowing into these pans.



Prepared for:
Environmental Management Group
P.O. Box 28242
Danhof
9310

Legend:

- Road network
- Watercourses
- Site location
- Urban development
- Wetlands and impoundments
- Threatened ecosystems
- NPAES Focus Areas
- Western FS Clay Grassland

Map Information

Spheroid: WGS 84
Quantum GIS
Scale: 1:10 000

DPR Ecologists
Contact Darius van Rensburg at:
darius@dprecologists.co.za
P.O. Box 12726, Brandhof, 9324
Tel: 083 410 0770



Free State Biodiversity Plan map for the proposed poultry houses near the town of Wesselsbron, Free State Province.



Map 3: Biodiversity plan map of the proposed poultry houses near Wesselsbron. The site is situated within an Ecological Support Area 1 and 2.



Prepared for:
Environmental Management Group
P.O. Box 28242
Danhof
9310

Legend:

- Road network
- Watercourses
- Site location
- Urban development
- Wetlands and impoundments
- Threatened ecosystems
- NPAES Focus Areas
- Critical Biodiversity Area 1
- Critical Biodiversity Area 2
- Ecological Support Area 1
- Ecological Support Area 2
- Degraded

Map Information

Spheroid: WGS 84
Quantum GIS
Scale: 1:10 000

DPR Ecologists
Contact Darius van Rensburg at:
darius@dprecologists.co.za
P.O. Box 12726, Brandhof, 9324
Tel: 083 410 0770





Figure 1: Panorama of the pan areas (red) to the north of the site. The boudnary of these areas are clearly visible.



Figure 2: View of the site (red) as seen from the northern pans. The distance from the site is such that these areas will not be affected by the development. Note also the short, overgrazed grass layer.



Figure 3: Panorama of one of the storm water channels (red) from the adjacent urban areas diverted into the surrounding pan systems. Note white patches are dumps of used nappies (blue).



Figure 4: Panorama of the fenced site (red). Note a well-developed grass layer dominated by pioneer species. One of the dilapidated buildings on the site is also visible.



Figure 5: Another panorama of the grass layer on the site. The existing buildings and infrastructure on the site is also visible.



Figure 6: View of one of the vegetable patches on the site in the foreground with the existing poultry house in the background.



Figure 7: Panorama of the southern border of the site. Note the clear difference in grazing between the area outside and inside the site fence. The row of fruit trees on the site is also visible.



Figure 8: View of the depression wetland (blue) to the south of the site (red). It should be evident that the proposed development is unlikely to affect this wetland area.



Figure 9: Close-up view of the depression wetland to the south of the site. Surface is considered likely a result of a leaking water pipe but this could not be confirm with certainty.



Figure 10: The site and surroundings contain large populations of the Common Molerat (*Cryptomys hottentottus*) (Left) and Ground Squirrel (*Xerus inauris*) (Right).

Appendix B: Species list

Species indicated with an * are exotic.

Protected species are coloured orange and Red Listed species red.

Species	Growth form
* <i>Bidens bipinnata</i>	Herb
* <i>Conyza bonariensis</i>	Herb
* <i>Medicago sativa</i>	Herb
* <i>Prunus sp.</i>	Tree
<i>Aristida congesta</i>	Grass
<i>Aristida stipitata</i>	Grass
<i>Asparagus larcinus</i>	Shrub
<i>Cynodon dactylon</i>	Grass
<i>Digitaria eriantha</i>	Grass
<i>Eragrostis lehmanniana</i>	Grass
<i>Eragrostis obtusa</i>	Grass
<i>Eragrostis superba</i>	Grass
<i>Gazania krebsiana</i>	Herb
<i>Helichrysum caespitum</i>	Herb
<i>Indigofera sp.</i>	Herb
<i>Leptochloa fusca</i>	Grass
<i>Limosella major</i>	Herb
<i>Moraea pallida</i>	Geophyte
<i>Nenax microphylla</i>	Dwarf shrub
<i>Nolletia ciliaris</i>	Dwarf shrub
<i>Platycarphella parvifolia</i>	Herb
<i>Ruschia hamata</i>	Dwarf shrub
<i>Selago densiflora</i>	Herb
<i>Senecio consanguineus</i>	Herb
<i>Trichoneura grandiglumis</i>	Grass

Appendix C: Soil Samples

Obligate wetland vegetation was utilised to determine the presence and border of wetlands. Soil samples were used to confirm the wetland conditions within depressions around the site. Soil samples were taken at approximately 10 meter intervals. Soil samples were investigated for the presence of anaerobic evidence which characterises wetland soils.

Within wetlands the hydrological regime differs due to the topography and landscape. For instance; a valley bottom wetland would have a main channel that is below the water table and consequently permanently saturated, i.e. permanent zone of wetness. As you move away from the main channel the wetland would become dependent on flooding in order to be saturated. As a result along this hydrological regime areas of permanent saturation, seasonal and temporary saturation would occur. At some point along this gradient the saturation of the soil would be insufficient to develop reduced soil conditions and therefore will not be considered as wetland.

Within wetland soils the pores between soil particles are filled with water instead of atmosphere. As a result available oxygen is consumed by microbes and plantroots and due to the slow rate of oxygen diffusion oxygen is depleted and biological activity continues in anaerobic conditions and this causes the soil to become reduced.

Reduction of wetland soils is a result of bacteria decomposing organic material. As bacteria in saturated soils deplete the dissolved oxygen they start to produce organic chemicals that reduce metals. In oxidised soils the metals in the soil give it a red, brown, yellow or orange colour. When these soils are saturated and metals reduced the soil attains a grey matrix characteristic of wetland soils.

Within this reduction taking place in the wetland soils there may be reduced matrix, redox depletions and redox concentrations. The reduced matrix is characterised by a low chroma and therefore a grey soil matrix. Redox depletions result in the grey bodies within the soil where metals have been stripped out. Redox concentrations result in mottles within the grey matrix with variable shape and are recognised as blotches or spots, red and yellow in colour.

Soil wetness indicator is used as the primary indicator of wetlands. The colour of various soil components are often the most diagnostic indicator of hydromorphic soils. Colours of these components are strongly influenced by the frequency and duration of soil saturation. Generally, the higher the duration and frequency of saturation in a soil profile, the more prominent grey colours become in the soil matrix.

Coloured mottles, another feature of hydromorphic soils, are usually absent in permanently saturated soils and are at their most prominent in seasonally saturated soils, becoming less abundant in temporarily saturated soils until they disappear altogether in dry soils (Collins 2005).


The following soil wetness indicators can be used to determine the permanent, seasonal and temporary wetness zones. The boundary of the wetland is defined as the outer edge of the temporary zone of wetness and is characterised by a minimal grey matrix (<10%), few high chroma mottles and short periods of saturation (less than three months per year). The seasonal zone of wetness is characterised by a grey matrix (>10%), many low chroma mottles and significant periods of wetness (at least three months per year). The permanent zone of wetness

is characterised by a prominent grey matrix, few to high chroma mottles, wetness all year round and sulphuric odour (rotten egg smell).

According to convention hydromorphic soil must display signs of wetness within 50 cm of the soil surface (DWAF 2005).

Table 1: Soil samples taken along transects of the site as well as depressions around the site.

	
<p>Soil sample taken on the site in an area clearly not containing wetland conditions. Soils have a high sand content, a uniform, reddish-brown colouration without any grey matrix or mottling. Wetland conditions are clearly absent.</p>	<p>Soil sample taken at the vegetable patch on the site. Aerial images indicate a greener colouration around the vegetable patch which may be confused with wetland areas. The soils sample however clearly confirms the absence of any wetland conditions.</p>
	
<p>Soil sample taken along the southern border of the site, nearest to the adjacent depression wetlands. The soil is still uniform in colouration, has a high sand content without a grey matrix or mottling</p>	<p>Soil sample taken in the depression to the south of the site. A grey matrix (>10%) is present and distinct mottling is also visible. Wetland conditions can therefore be considered to be present</p>

<p>and clearly indicate that no wetland conditions occur on the site itself.</p>	<p>but only indicates a seasonal zone of wetness.</p>
	
<p>Soil sample taken at the edge of the depression to the south of the site. A low grey matrix (<10%) is present and distinct mottling is also visible. Wetland conditions can therefore be considered to be present. This is regarded as the forming the edge of wetland conditions.</p>	

Appendix D: Buffer Zone Tool for the Determination of Aquatic Impact Buffers and Additional Setback Requirements for Wetland Ecosystems (2014)

For the complete Buffer Report please contact the author of this report.

Name of Assessor	Darius	Project Details	Wesselsbron Poultry Facility	Date of Assessment	30/07/2019
------------------	--------	-----------------	------------------------------	--------------------	------------

Step 1: Define objectives and scope of assessment and determine the most appropriate level of assessment

Level of assessment	Site-based
---------------------	------------

Step 2: Map and categorize water resources in the study area

Approach used to delineate the wetland boundary?	Site-based delineation	Wetland type	Depression
--	------------------------	--------------	------------

Step 3: Refer to the DWA management objectives for mapped water resources or develop surrogate objectives

Present Ecological State	D	Largely modified. A large loss of natural habitat, biota and basic ecosystem functions has occurred.
Ecological importance & sensitivity	Medium	Features that are considered to be ecologically important and sensitive at a local scale. The functioning and/or biodiversity of these features is not usually sensitive to anthropogenic disturbances. They typically play a small role in providing ecological services at the local scale.
Management Objective	Maintain	

Step 4: Assess the risks from proposed developments and define mitigation measures necessary for protecting mapped water resources in the study area

Assess threats of planned activities on water resources and determine desktop buffer requirements

Proposed development / activity	Sector	Agriculture	Agricultural-based land-use activities that range from the large-scale commercial production of crops and timber to small-scale subsistence crop farming and livestock rearing. May be associated with rural and/or urban contexts.
	Sub-Sector	Concentrated livestock operations	

Climatic factors	MAP Class	401 - 600mm	Rainfall intensity	Zone 4
Overall size	Size of the wetland relative to (as a percentage of) its catchment	Large (>20%)	The inherent runoff potential of the soil in the wetland's catchment	Low
Perimeter to area ratio	Vulnerability of the HGM type to sediment accumulation	Depression – endorheic, Flat	Extent of open water, particularly water that is naturally clear	Intermediate (The remaining HGM types)
Peat versus mineral soils	Inherent level of nutrients in the landscape: is the wetland and its catchment underlain by sandstone?		Sensitivity of the vegetation to toxic inputs, changes in acidity & salinization	Moderately low
Mineral	No		Sensitivity of the vegetation to burial under sediment	Natural wetness regimes
Natural salinity levels	Level of domestic use	High		Dominated by seasonally saturated soils
Naturally saline systems			Note: See the guideline document for further information on the rationale for indicator selection and how these attributes affect the sensitivity of wetlands to lateral inputs.	

Buffer attributes	Buffer Segment 1	Buffer Segment 2	Buffer Segment 3	Buffer Segment 4
Slope of the buffer	Very Gentle (0 - 2%)			
Vegetation characteristics (Construction phase)	Moderately low: Moderately low density with moderate basal cover (eg. Forests, shrub dominated vegetation / heavily grazed grassland)			
Vegetation characteristics (Operational phase)	Moderately low: Moderately low density with moderate basal cover (eg. Forests, shrub dominated vegetation / heavily grazed grassland)			
Soil permeability	High: Deep well-drained soils (eg. sand and loamy sand).			
Topography of the buffer zone	Uniform topography: Smooth topography with no concentrated flow paths anticipated.			
Site-based aquatic impact buffer requirements (without additional mitigation measures)				
Construction Phase	15	Not Assessed	Not Assessed	Not Assessed
Operational Phase	15	Not Assessed	Not Assessed	Not Assessed
	Buffer Segment 1	Buffer Segment 2	Buffer Segment 3	Buffer Segment 4
Final aquatic impact buffer requirements (including practical management considerations)				
Construction Phase	15	Not Assessed	Not Assessed	Not Assessed
Operational Phase	15	Not Assessed	Not Assessed	Not Assessed
Final aquatic impact buffer requirement	15	Not Assessed	Not Assessed	Not Assessed

Appendix E: Impact methodology

The environmental significance assessment methodology is based on the following determination:

$$\text{Environmental Significance} = \text{Overall Consequence} \times \text{Overall Likelihood}$$

Determination of Consequence

Consequence analysis is a mixture of quantitative and qualitative information and the outcome can be positive or negative. Several factors can be used to determine consequence. For the purpose of determining the environmental significance in terms of consequence, the following factors were chosen: **Severity/Intensity, Duration and Extent/Spatial Scale**. Each factor is assigned a rating of 1 to 5, as described below and in tables 6, 7, 9 and 10.

Determination of Severity

Severity relates to the nature of the event, aspect or impact to the environment and describes how severe the aspects impact on the biophysical and socio-economic environment.

Table 7 will be used to obtain an overall rating for severity, taking into consideration the various criteria.

Table 7: Rating of severity

Type of criteria	Rating				
	1	2	3	4	5
Quantitative	0-20%	21-40%	41-60%	61-80%	81-100%
Qualitative	Insignificant / Non-harmful	Small Potentially harmful	Significant / Harmful	Great / Very harmful	Disastrous Extremely harmful
Social/ Community response	Acceptable / I&AP satisfied	Slightly tolerable / Possible objections	Intolerable/ Sporadic complaints	Unacceptable / Widespread complaints	Totally unacceptable / Possible legal action
Irreversibility	Very low cost to mitigate/ High potential to mitigate impacts to level of insignificance / Easily reversible	Low cost to mitigate	Substantial cost to mitigate / Potential to mitigate impacts / Potential to reverse impact	High cost to mitigate	Prohibitive cost to mitigate / Little or no mechanism to mitigate impact Irreversible
Biophysical (Air quality, water quantity and quality, waste production, fauna and flora)	Insignificant change / deterioration or disturbance	Moderate change / deterioration or disturbance	Significant change / deterioration or disturbance	Very significant change / deterioration or disturbance	Disastrous change / deterioration or disturbance

Determination of Duration

Duration refers to the amount of time that the environment will be affected by the event, risk or impact, if no intervention e.g. remedial action takes place.

Table 8: Rating of Duration

Rating	Description
1: Low	Almost never / almost impossible
2: Low-Medium	Very seldom / highly unlikely
3: Medium	Infrequent / unlikely / seldom
4: Medium-High	Often / regularly / likely / possible
5: High	Daily / highly likely / definitely

Determination of Extent/Spatial Scale

Extent refer to the spatial influence of an impact be local (extending only as far as the activity, or will be limited to the site and its immediate surroundings), regional (will have an impact on the region), national (will have an impact on a national scale) or international (impact across international borders).

Table 9: Rating of Extent / Spatial Scale

Rating	Description
1: Low	Immediate, fully contained area
2: Low-Medium	Surrounding area
3: Medium	Within Business Unit area of responsibility
4: Medium-High	Within Mining Boundary area
5: High	Regional, National, International

Determination of Overall Consequence

Overall consequence is determined by adding the factors determined above and summarised below, and then dividing the sum by 4.

Table 10: Example of calculating Overall Consequence

Consequence	Rating
Severity	Example 4
Duration	Example 2
Extent	Example 4
SUBTOTAL	10
TOTAL CONSEQUENCE:(Subtotal divided by 4)	3.3

Likelihood

The determination of likelihood is a combination of Frequency and Probability. Each factor is assigned a rating of 1 to 5, as described below and in Table 11 and Table 12.

Determination of Frequency

Frequency refers to how often the specific activity, related to the event, aspect or impact, is undertaken.

Table 11: Rating of frequency

Rating	Description
1: Low	Once a year or once/more during operation/LOM
2: Low-Medium	Once/more in 6 Months
3: Medium	Once/more a Month
4: Medium-High	Once/more a Week
5: High	Daily

Determination of Probability

Probability refers to how often the activity/event or aspect has an impact on the environment.

Table 12: Rating of probability

Rating	Description
1: Low	Almost never / almost impossible
2: Low-Medium	Very seldom / highly unlikely
3: Medium	Infrequent / unlikely / seldom
4: Medium-High	Often / regularly / likely / possible
5: High	Daily / highly likely / definitely

Overall Likelihood

Overall likelihood is calculated by adding the factors determined above and summarised below, and then dividing the sum by 2.

Table 13: Example of calculating the overall likelihood

Consequence	Rating
Frequency	Example 4
Probability	Example 2
SUBTOTAL	6
TOTAL LIKELIHOOD (Subtotal divided by 2)	3

Determination of Overall Environmental Significance

The multiplication of overall consequence with overall likelihood will provide the environmental significance, which is a number that will then fall into a range of LOW, LOW-MEDIUM, MEDIUM, MEDIUM, MEDIUM-HIGH or HIGH, as shown in the table below.

Table 14: Determination of overall environmental significance

Significance or Risk	Low	Low-Moderate	Moderate	Moderate-High	High
Overall Consequence X Overall Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 - 19.9	20 - 25

Qualitative description or magnitude of Environmental Significance

This description is qualitative and is an indication of the nature or magnitude of the Environmental Significance. It also guides the prioritisations and decision making process associated with this event, aspect or impact.

Table 15: Description of the environmental significance and the related action required.

Significance	Low	Low-Moderate	Moderate	Moderate-High	High
Impact Magnitude	Impact is of very low order and therefore likely to have very little real effect. Acceptable.	Impact is of low order and therefore likely to have little real effect. Acceptable.	Impact is real, and potentially substantial in relation to other impacts. Can pose a risk to the company	Impact is real and substantial in relation to other impacts. Pose a risk to the company. Unacceptable	Impact is of the highest order possible. Unacceptable. Fatal flaw.
Action Required	Maintain current management measures. Where possible improve.	Maintain current management measures. Implement monitoring and evaluate to determine potential increase in risk. Where possible improve	Implement monitoring. Investigate mitigation measures and improve management measures to reduce risk, where possible.	Improve management measures to reduce risk.	Implement significant mitigation measures or implement alternatives.

Appendix D(ii): Phase 1 Heritage Assessment Report

**Phase 1 Heritage Impact Assessment of the proposed
new poultry facility on the farm Herman 236 near
Wesselsbron, Free State Province.**

Report prepared by
Palaeo Field Services, PO Box 38806 Langenhoven Park 9330.
13 August 2019

Summary

A phase 1 Heritage Impact Assessment was carried out for the proposed new poultry facility development situated 4.5 km north of Wesselsbron, Free State Province. Sedimentary bedrock strata in the region are represented by Ecca Group mudrocks, siltstones and sandstones of the Middle Permian, argillaceous Volksrust Formation. The site is capped by a well-developed aeolian sand overburden with no outcrop visibility where no fossils or potential fossil exposures were observed. The pedestrian survey also indicated a severely degraded terrain as a result of previous farming activities with no evidence of *in situ* Stone Age archaeological material, capped or distributed as surface scatters on the landscape. There are also no indications of rock art (engravings), prehistoric structures, above ground signs of graves or historically significant buildings older than 60 years within the boundaries of the study area. Several farm worker dwellings have been recorded but are not considered to be historically significant. As far as the palaeontological heritage is concerned, the site is buffered by palaeontologically insignificant aeolian sand veneer with impact on potential fossil remains from underlying and moderately significant Ecca Group strata, considered to be low. The terrain is also regarded as of low archaeological significance and is assigned a rating of Generally Protected C (GP.C). As far as the palaeontological and archaeological heritage is concerned, the proposed development may proceed with no additional heritage assessments necessary, provided that all excavation activities are restricted to within the boundaries of the development footprint.

Introduction

A phase 1 Heritage Impact Assessment was carried out for the proposed new poultry facility development situated 4.5 km north of Wesselsbron, Free State Province. The assessment is required as a prerequisite for new development in terms of the National Environmental Management Act and is also called for in terms of the National Heritage Resources Act (NHRA) 25 of 1999. The region's unique and non-renewable archaeological heritage sites are 'Generally' protected in terms of the National Heritage Resources Act (Act No 25 of 1999, section 35) and may not be disturbed at all without a permit from the relevant heritage resources authority. As many such heritage sites are threatened daily by development, both the environmental and heritage legislation require impact assessment reports that identify all heritage resources in the area to be developed, and that make recommendations for protection or mitigation of the impact of such sites.

The NHRA identifies what is defined as a heritage resource, the criteria for establishing its significance and lists specific activities for which a heritage specialist study may be required. In this regard, categories relevant to the proposed development are listed in Section 34 (1), Section 35 (4), Section 36 (3) and Section 38 (1) of the NHR Act and are as follows:

34. (1) No person may alter or demolish any structure or part of a structure which is older than 60 years without a permit issued by the relevant provincial heritage resources authority.

35 (4) No person may, without a permit issued by the responsible heritage resources authority—

- destroy, damage, excavate, alter, deface or otherwise disturb any archaeological or palaeontological site or any meteorite;
- *b)* destroy, damage, excavate, remove from its original position, collect or own any archaeological or palaeontological material or object or any meteorite;

36 (3) No person may, without a permit issued by SAHRA or a provincial heritage resources authority—

- (a) destroy, damage, alter, exhume or remove from its original position or otherwise disturb the grave of a victim of conflict, or any burial ground or part thereof which contains such graves;
- (b) destroy, damage, alter, exhume, remove from its original position or otherwise disturb any grave or burial ground older than 60 years which is situated outside a formal cemetery administered by a local authority; or
- (c) bring onto or use at a burial ground or grave referred to in paragraph (a) or (b) any excavation equipment, or any equipment which assists in the detection or recovery of metals.

38 (1) Subject to the provisions of subsections (7), (8) and (9), any person who intends to undertake a development categorised as—

- The construction of a road, wall, power line, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length;
- The construction of a bridge or similar structure exceeding 50m in length;
- Any development or other activity which will change the character of the site
 - a) exceeding 5000 m² in extent; or
 - b) involving three or more existing erven or subdivisions thereof; or
 - c) involving three or more subdivisions thereof which have been consolidated within the past five years;
- The rezoning of a site exceeding 10 000 m²; or
- Any other category of development provided for in regulations by the South African Heritage Resources Agency (SAHRA).

Terms of Reference

The task involved the following:

- Identify and map possible heritage sites and occurrences using available resources.
- Determine and assess the potential impacts of the proposed development on potential heritage resources;
- Recommend mitigation measures to minimize potential impacts associated with the proposed development.

Methodology

The heritage significance of the affected area was evaluated on the basis of existing field data, database information and published literature. This was followed by a field assessment by means of a pedestrian survey. A Garmin Etrex Vista GPS hand model (set to the WGS 84 map datum) and a digital camera were used for recording purposes. Maps and aerial photographs (incl. Google Earth) were consulted and integrated with data acquired during the on-site inspection.

Field Rating

Site significance classification standards prescribed by SAHRA (2005) were used to indicate overall significance and mitigation procedures where relevant (**Table 1**).

Locality Data

The affected area covers 2.5 ha of open grassland near the Monyakeng Township about 4.5 km north of the Wesselsbron CBD (**Fig. 3 - 5**). Proposed land use includes the establishment of a poultry facility on the farm Herman 236.

Maps: 1:50 000 topographical map 2726CC Wesselsbron

1:250 000 geological map 2726 Kroonstad

General Site Coordinates: 27°48'46.47"S 26°21'30.60"E

Geology

Sedimentary bedrock strata in the region are represented by Ecca Group mudrocks, siltstones and sandstones of the Middle Permian, argillaceous Volksrust Formation (*Pvo*) (Schutte 1994; Johnson *et al.* 2006) (**Fig. 6**). The underlying sedimentary rocks are capped by thick Quaternary deposits comprising unconsolidated soils (derived from the *in situ* weathering of the parent rocks) and aeolian sands (*Qs*).

Background

Palaeontology

Although there are no records of fossil occurrences from the Volksrust Formation in the vicinity of the study area, the formation is characterized by the presence of plant fossils, with six genera, representing the glossopterids, cordaitaleans and possibly other seed fern groups (Anderson and Anderson 1985; Bamford 2003). It has also yielded rare temnospondyl amphibian remains, invertebrates including bivalves and insects. A pelecypod bivalve have been described from the distal sediments of a prograding delta, at the Beaufort Group–Ecca Group boundary (Cairncross *et al.*

2005) and beetles (Coleoptera) have been recorded from the formation in Kwazulu-Natal (Ponomarenko & Mostovski 2005). Reptile fossils are absent in the formation. The alluvial deposits of the Vaal and a number of its ancient tributaries, including the Vet, Doring and Sand Rivers, are well known for their unique record of the Pliocene and the Pleistocene, and numerous Late Neogene fossil localities are known from the region. Pliocene, river-deposited fossil occurrences located 10 and 30 km south of Odendaalsrus respectively, have been identified in terrace gravels along the Vet River and the Sand River. More recent exploratory surveys along the Doring, Sand and Vet Rivers indicate moderately fossiliferous overbank sediments and erosional gullies that frequently contain fossil remains of a variety of Quaternary-aged mammals (Brink *et al.* 1999; De Ruiter *et al.* 2010). Ancient pan sites at Mahemspan near the Vaal River and Whites near Hennenman have equally produced abundant Quaternary-aged mammal fossil remains.

Archaeology

The Stone Age archaeological footprint in the region is largely represented by the occurrence of open-site, Middle Stone Age (MSA) and Later Stone Age (LSA) assemblages that are mainly located near river drainages. Historical records indicate that a capped MSA artefact assemblage was recovered from the Allanridge railway siding north of Odendaalsrus. Unfortunately, the context of the assemblage is unknown. MSA as well as LSA artefacts, in association with mammal fossil remains, are also found in a series of erosional gullies along the Sand and Doring Rivers between Virginia and Theunissen (De Ruiter *et al.* 2011).

Gravel terraces of the Vaal River near Bloemhof which is located about 70 km west of Wesselsbron, are well known for their unique record of the Pleistocene. Numerous Early Stone Age handaxes, Middle Stone Age flake blades as well as the remains of Pleistocene mammalian fossils have been recovered in the region from gravel deposits 20 m to 50 m above riverbed. Early to Middle Stone Age artifacts derived from the Vaal River gravels include an abundance of Acheulian (Early Stone Age) handaxes, cleavers and core-axes, primarily made from quartzite. In addition, the gravel deposits are largely mantled by undifferentiated deposits of unconsolidated to semi-consolidated sediments, including calcrete, aeolianite, clay and Kalahari/Hutton Sands, of which the lower levels have shown evidence of high densities of Fauresmith blades - artifacts regarded as an important transitional stone tool industry at the beginning of the Middle Stone Age. Later Stone Age artifacts preserved in open-site

scatters have been recorded on the modern land surfaces flanking the river and its tributaries.

There are no records of rock engravings or Late Iron Age settlement complex known from the area. The study area is essentially situated outside the western periphery of distribution of Late Iron Age settlements below the Vals River in the Free State (Maggs 1976).

Field Assessment

The site is capped by a well-developed aeolian sand overburden with no outcrop visibility where no fossils or potential fossil exposures were observed. The pedestrian survey also indicated a severely degraded terrain as a result of previous farming activities with no evidence of *in situ* Stone Age archaeological material, capped or distributed as surface scatters on the landscape. There are also no indications of rock art (engravings), prehistoric structures, above ground signs of graves or historically significant buildings older than 60 years within the boundaries of the study area. Several farm worker dwellings have been recorded but are not considered to be historically significant (**Fig. 7**).

Impact Statement & Recommendation

As far as the palaeontological heritage is concerned, the site is buffered by palaeontologically insignificant aeolian sand veneer with impact on potential fossil remains from underlying and moderately significant Ecca Group strata, considered to be low.

The terrain is also regarded as of low archaeological significance and is assigned a rating of Generally Protected C (GP.C). As far as the palaeontological and archaeological heritage is concerned, the proposed development may proceed with no additional heritage assessments necessary, provided that all excavation activities are restricted to within the boundaries of the development footprint.

References

Anderson, J.M. and Anderson, H.M., 1985. Palaeoflora of Southern Africa: *Prodromus of South African megaflores, Devonian to Lower Cretaceous*. A.A. Balkema, Rotterdam. 423 pp.

- Bamford, M. 2003 Diversity of the Woody Vegetation of Gondwanan Southern Africa. *Gondwana Research* 7(1): 153 – 164.
- Brink, J. S., Berger, L. R., & Churchill, S. E. 1999. Mammalian fossils from erosional gullies (dongas) in the Doring River drainage, central Free State Province, South Africa. *Palaeontologia Africana* 34: 23 – 26.
- Cairncross *et al.* 2005. The Bivalve *Megadesmus* from the Permian Volksrust Shale Formation (Karoo Supergroup), northeastern Karoo Basin, South Africa. *South African Journal of Geology* 108 (4) 547-556
- De Ruiter, D. J., Brophy, J. K., Lewis, P. J., Kennedy, A. M., Stidham, T. A., Carlson, K. B., & Hancox, P. J. 2010. Preliminary investigation of the Matjhabeng, a Pliocene fossil locality in the Free State of South Africa. *Palaeontologia Africana* 45: 11 – 22.
- De Ruiter, D.J. Churchill, S.E., Brophy, J.K. & Berger, L.R. 2011. Regional survey of MSA fossil vertebrate deposits in the Virginia-Theunissen area of the Free State, South Africa. *Navorsing van die Nasionale Museum Bloemfontein* 27 (1): 1 – 20.
- Humphreys 1976. Note on the Southern Limits of Iron Age Settlement in the Northern Cape. *South African Archaeological Bulletin* 31(121/122): 54-57.
- Johnson *et al.* 2006. Sedimentary rocks of the Karoo Supergroup. In: M.R. Johnson, *et al.* (eds). *The Geology of South Africa*. Geological Society of South Africa.
- Kuneriath, M. and Gaillard, C. 2010. Techno-typological analysis of lithic collections from Sheppard Island and Pniel, Vaal River Valley, South Africa. *Annali dell'Università di Ferrara Museologia Scientifica e Naturalistica* 6: 111 – 116.
- Maggs T. M. O'C 1976. *Iron Age Communities of the Southern Highveld*. Occasional Publications of the Natal Museum No. 2. Natal Museum, Pietermaritzburg.
- Ponomarenko, A.G. & Mostovski, M.B. 2005. New beetles (Insecta: Coleoptera) from the Late Permian of South Africa. *African Invertebrates* 46. The Council of Natal Museum.
- Schutte, I.C. 1994. Geologie van die gebied Kroonstad. Explanation to 1: 250 000 scale geological sheet 2726 Kroonstad, 84 pp. Council for Geoscience, Pretoria.

DECLARATION OF INDEPENDENCE

I, Lloyd Rossouw, declare that I act as an independent specialist consultant. I do not have or will not have any financial interest in the undertaking of the activity other than remuneration for work as stipulated in the terms of reference. I have no interest in secondary or downstream developments as a result of the authorization of this project and have no conflicting interests in the undertaking of the activity.

A handwritten signature in black ink, appearing to read 'L Rossouw', written in a cursive style.

13 / 08 / 2019

Tables & Figures

Table 1. Field rating categories as prescribed by SAHRA.

Field Rating	Grade	Significance	Mitigation
National Significance (NS)	Grade 1	-	Conservation; national site nomination
Provincial Significance (PS)	Grade 2	-	Conservation; provincial site nomination
Local Significance (LS)	Grade 3A	High significance	Conservation; mitigation not advised
Local Significance (LS)	Grade 3B	High significance	Mitigation (part of site should be retained)
Generally Protected A (GP.A)	-	High/medium significance	Mitigation before destruction
Generally Protected B (GP.B)	-	Medium significance	Recording before destruction
Generally Protected C (GP.C)	-	Low significance	Destruction



Figure 1. Aerial view of the study area.



Figure 2. Position of the site in relation to Wesselsbron.



Figure 3. General view of the site, looking west.



Figure 4. General view of the site, looking north. Scale 1 = 10 cm



Figure 5. The site is capped by a well-developed aeolian sand overburden. Scale 1 = 10 cm.



Figure 6. Sedimentary bedrock strata in the region are represented by Ecca Group mudrocks, siltstones and sandstones of the Middle Permian, argillaceous Volksrust Formation (*Pvo*) that is capped by thick Quaternary deposits comprising unconsolidated soils (derived from the *in situ* weathering of the parent rocks) and aeolian sands (*Qs*). Site marked by white star.



Figure 7. Dilapidated farm workers' dwellings.

Appendix E: Public Participation Report



ENVIRONMENTAL
MANAGEMENT
GROUP

PUBLIC
PARTICIPATION
REPORT

PROPOSED
DEVELOPMENT OF
RELEBOHILE POULTRY
FACILITY IN
WESSELSBRON

**PROPOSED CHICKEN BROILER FACILITY DEVELOPMENT IN WESSELSBRON
PUBLIC PARTICIPATION REPORT**

Table of Contents

1.	INTRODUCTION	3
2.	APPROACH AND METHODOLOGY	3
3.	PUBLIC PARTICIPATION PROCESS CONDUCTED	3
3.1.	NEWSPAPER ADVERTISEMENT	3
3.2.	SITE NOTICES.....	1
3.2.1.	Site notices were placed on the site	2
3.2.2.	Site notices were placed in surrounding area	2
3.2.3.	Site notices were placed at the local library	3
3.3.	DISTRIBUTION OF BACKGROUND INFORMATION DOCUMENT	4
3.3.1.	Free State Department of Public Works & Infrastructure.....	7
3.3.2.	Lejweleputswa District Municipality - Manager Environmental Assessment	8
3.3.3.	Nala Local Municipality – Executive Mayor.....	9
3.3.4.	Department of Agriculture & Rural Development.....	10
3.3.5.	Department of Water & Sanitation	11
3.3.6.	Department of Rural Development & Land Reform - DRDLR.....	12
3.3.7.	Ward Counsellor – Ward 4	13
3.3.8.	Nala Local Municipality – Municipal Manager.....	14
3.3.9.	Department of Agriculture Forestry and Fisheries (DAFF)	15
3.3.10.	Landowner	16
3.4.	LIST OF STAKEHOLDERS	17
4.	CONCLUSION	18

ABBREVIATIONS

BID	Background Information Document
DWS	Department of Water and Sanitation
RI&APS	Registered Interested & Affected Parties
PPP	Public Participation Process

**PROPOSED CHICKEN BROILER FACILITY DEVELOPMENT IN WESSELSBRON
PUBLIC PARTICIPATION REPORT**

1. INTRODUCTION

The Public Participation Process (PPP) forms an integral part of the rectification application process. It provides people with the opportunity to raise their issues and concerns about the proposed development of the chicken broiler facility in Wesselsbron. A comprehensive public participation process was conducted by EMG Consultants, to ensure that all identified Interested and Affected Parties (I&APs) were informed of the proposed project and their input is able to influence decision-making process with regards to the development.

2. APPROACH AND METHODOLOGY

The Public Participation Process was conducted as per Regulation 39, 40, 41, 42, 43 & 44 of the Environmental Impact Assessment Regulations 2014 (as amended 07 April 2017) and the Public Participation Guidelines, 2017 were considered. Steps, which were taken to inform the identified I&APs and surrounding community of the proposed development included:

- ♣ Newspaper advertisement;
- ♣ On site Notice and Posters;
- ♣ Notifications, i.e. Distribution of Background Information Document (BID) to neighbouring property Owners & Stakeholders.

3. PUBLIC PARTICIPATION PROCESS CONDUCTED

The methods that were undertaken during conducting of the public participation process as discussed in detail below.

3.1. NEWSPAPER ADVERTISEMENT

The project was advertised in a local newspaper, The Vista on the 25 July 2019 to inform the I&APs of the proposed chicken broiler facility development.

3.2. SITE NOTICES

On site notices was placed in the surrounding area to bring the proposed development to the attention of I&APs including surrounding land users.

NOTICE OF APPLICATION FOR ENVIRONMENTAL IMPACT ASSESSMENT AND INTEGRATED WATER USE LICENSING

Notice is hereby given in terms of regulation 41 of Government Notice No. R326 under the National Environmental Management Act (Act 107 of 1998) as amended 7 April 2017, as well as in terms of the National Water Act (Act 36 of 1998) Section 21 of intent to carry out the following project:

APPLICATION FOR WESSELSBRON POULTRY FARM

NEMA: Listing Notice 1 & 3: (GN R 327 & 324, 7 April 2017)

GN R327 07 April 2017	40	The expansion of and related operation of facilities for the concentration of poultry, excluding chicks younger than 20 days, where the capacity of the facility will be increased by - (ii) more than 5 000 poultry per facility situated outside an urban area.
GN R324 07 April 2017	12	The clearance of an area of 300 square metres or more of indigenous vegetation except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan— b. Free State (iv) Areas within a watercourse or wetland or within 100 metres from the edge of a watercourse or wetland

NWA: Section 21 (ACT NO. 36 of 1998) as amended

- (c) impeding or diverting the flow of water in a watercourse;
- (i) altering the bed, banks, course or characteristics of a watercourse;

National Heritage Resources Act: Section 38 (ACT NO. 25 of 1996)

The development of infrastructure with a physical footprint greater than 5000m²

LOCATION: Wesselsbron, situated on remaining extent of the Farm Herman 236, Nala Local Municipality

PROPONENT: Department of Rural Development and Land Reform

CONSULTANT: ENVIRONMENTAL MANAGEMENT GROUP
PO BOX 37473
LANGENHOVEN PARK, 9330
TEL: 051 412 6350
FAX: 051 412 6351
Email: svr@envmgp.com



In order to ensure that you are identified as an interested and/or affected party, please submit your name, contact information and interest in the matter to the consultant given above within 30 days of publication of this notice.
Registration and Response Forms will be available at the Local Library for I&AP Parties for your comments.

**PROPOSED CHICKEN BROILER FACILITY DEVELOPMENT IN WESSELSBRON
PUBLIC PARTICIPATION REPORT**

3.2.1. Site notices were placed on the site

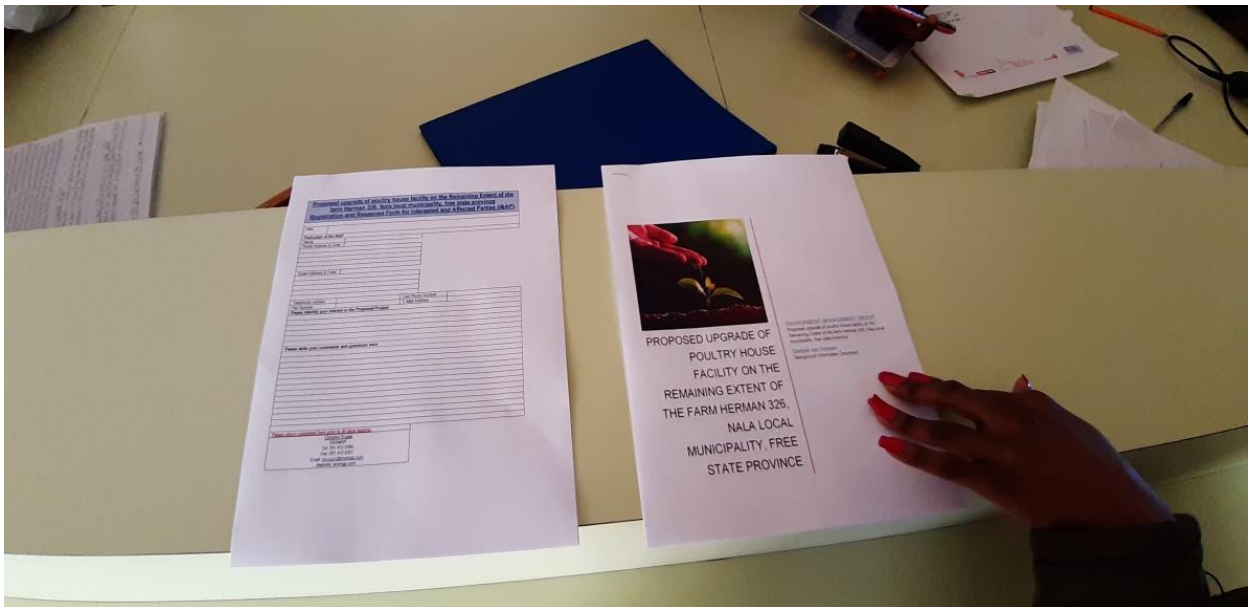


3.2.2. Site notices were placed in surrounding area



**PROPOSED CHICKEN BROILER FACILITY DEVELOPMENT IN WESSELSBRON
PUBLIC PARTICIPATION REPORT**

3.2.3. Site notices were placed at the local library



3.3. DISTRIBUTION OF BACKGROUND INFORMATION DOCUMENT

For notification of I&APs and stakeholders about the proposed project, a BID, was compiled, and it was sent to the identified stakeholders.



PROPOSED UPGRADE
OF POULTRY HOUSE
FACILITY ON THE
REMAINING EXTENT OF
THE FARM HERMAN 236,
NALA LOCAL
MUNICIPALITY, FREE
STATE PROVINCE

ENVIRONMENT MANAGEMENT GROUP
PROPOSED UPGRADE OF POULTRY HOUSE
FACILITY ON THE REMAINING EXTENT OF THE
FARM HERMAN 236, NALA LOCAL MUNICIPALITY,
FREE STATE PROVINCE

Christien Kruger
Background Information Document

BACKGROUND INFORMATION DOCUMENT FOR THE PROPOSED UPGRADE OF
POULTRY HOUSE FACILITY ON THE REMAINING EXTENT OF THE FARM
HERMAN 236, NALA LOCAL MUNICIPALITY, FREE STATE PROVINCE

06 JUNE 2019

INTRODUCTION

Environmental Management Group is applying for Environmental Authorisation and water-use licences on behalf of Department of Rural Development and Land Reform for the above-mentioned development.

The development will take place to the North-West of Wesselsbron, Free State, which falls under the Nala Local Municipality. The proposed development will entail an upgrade of the existing poultry house to cater for a total number exceeding 5000 poultry, situated outside an urban area.

LOCALITY

The proposed development will take place on the RE of farm Herman 326 located North-West from Wesselsbron, Nala Local Municipality, in the Free State Province.

ENVIRONMENTAL AUTHORISATION

Prior to the commencement of the proposed activities, Environmental Authorisation in terms of the National Environmental Management Act (NEMA), 107 of 1998, as amended 7 April 2017 is required from the competent authority (DESTEA). The Environmental Assessment Process will be conducted in terms of the 2014 NEMA environmental impact assessment (EIA) Regulations, GNR 326 as amended.

. According to the National Environmental Management Act (Act 107 of 1998) as amended 7 April 2017, Listing Notice 1 (NO. 327, 07 APRIL 2017) – R 327 and 324 for the following activity applicable to this project:

- ♣ **Activity 40 (ii):** The expansion and related operation of facilities for the concentration of poultry, excluding chicks younger than 20 days, where the capacity of the facility will be increased by-
 - (ii) more than 5 000 poultry per facility situated outside an urban area

- ♣ **Activity 12 (b) (iv):** The clearance of an area of 300 square metres or more of indigenous vegetation except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan—
 - (ii) more than 5 000 poultry per facility situated outside an urban
 - b. Free State
 - (iv) Areas within a watercourse or wetland or within 100 metres from the edge of a watercourse or wetland

In addition to this, the proposed project will also require authorisation in terms of the National Water Act (NWA), 36 of 1998, with the Department of Water and Sanitation as the competent authority.

According to the National Water Act (ACT NO. 36 of 1998), Section 21 have been identified for this project:

- ♣ **Section 21(c)** impeding or diverting the flow of water in a watercourse;
- ♣ **Section 21(i)** altering the bed, banks, course or characteristics of a watercourse.

PURPOSE OF THIS DOCUMENT

EMG has prepared this document to inform you about:

- ♣ The proposed project
- ♣ The current understanding of the baseline environmental and social conditions
- ♣ The required environmental assessment processes
- ♣ Possible environmental impacts and proposed specialist studies
- ♣ How you can have input into the Environmental Authorization
- ♣ Impact Assessment and Basic Assessment processes

YOU'RE ROLE

You have been identified as an interested and/or affected party (I&AP) who may want to be informed about the proposed project and have input into the environmental assessment processes and environmental reports.

You have an opportunity to review this document and provide your initial comments to us for incorporation in the environmental assessment process. You will also be given the opportunity to provide input at the public meeting, if the need arises. And to review and comment on some reports:

- ♣ Basic Assessment Report

Comments will be recorded and included in the reports submitted to the relevant authorities for decision-making.

HOW TO RESPOND

If you are interested in receiving further information on the project please register your details with the persons listed below. Responses to this document can be submitted by means of the attached comments sheet and/or through communication with the persons listed below.

Christien Kruger

Tel: 051 412 6350 or Fax: 051 412 6351

mail: ckruger@envmgrp.com

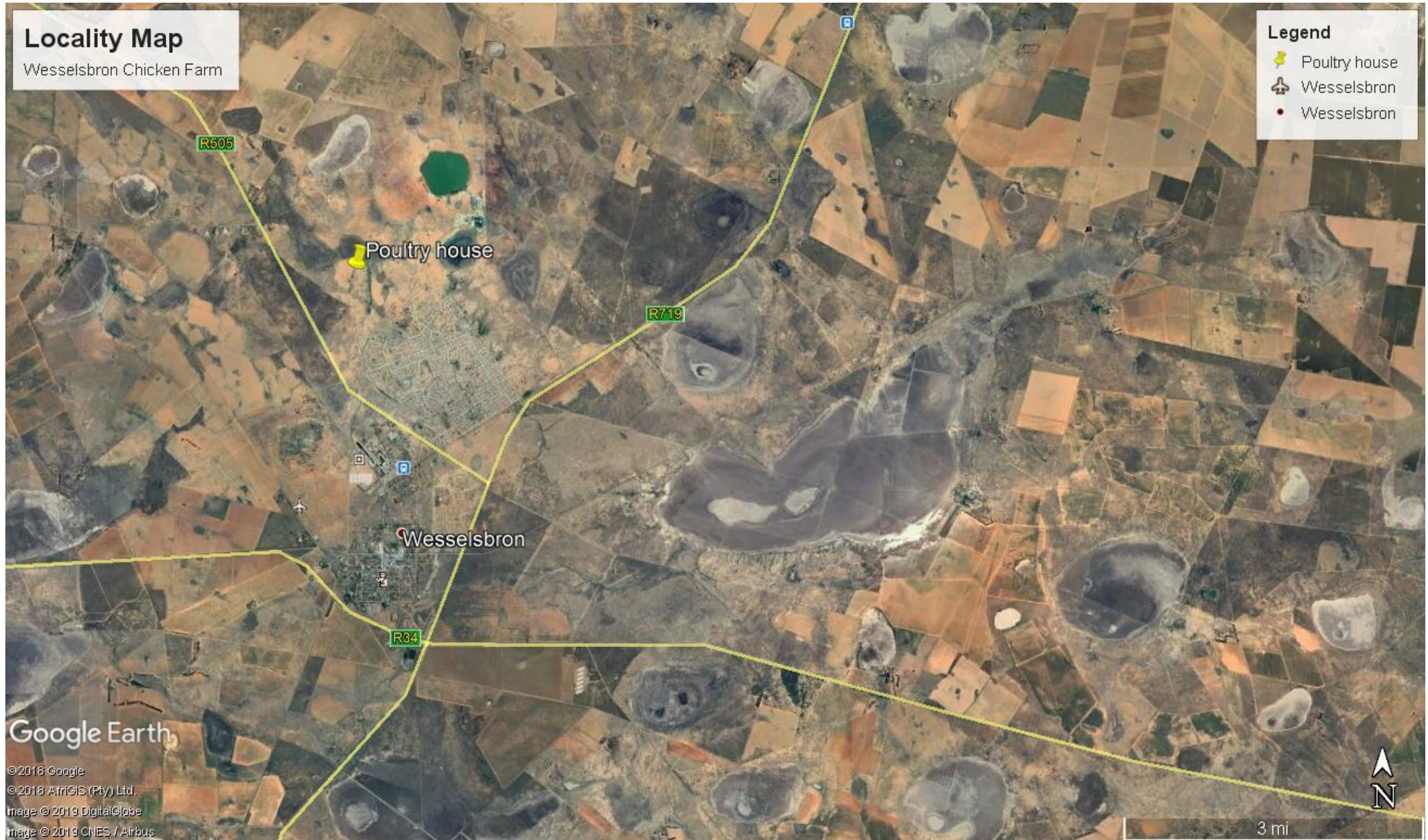
E-

**PROPOSED CHICKEN BROILER FACILITY DEVELOPMENT IN WESSELSBRON
PUBLIC PARTICIPATION REPORT**

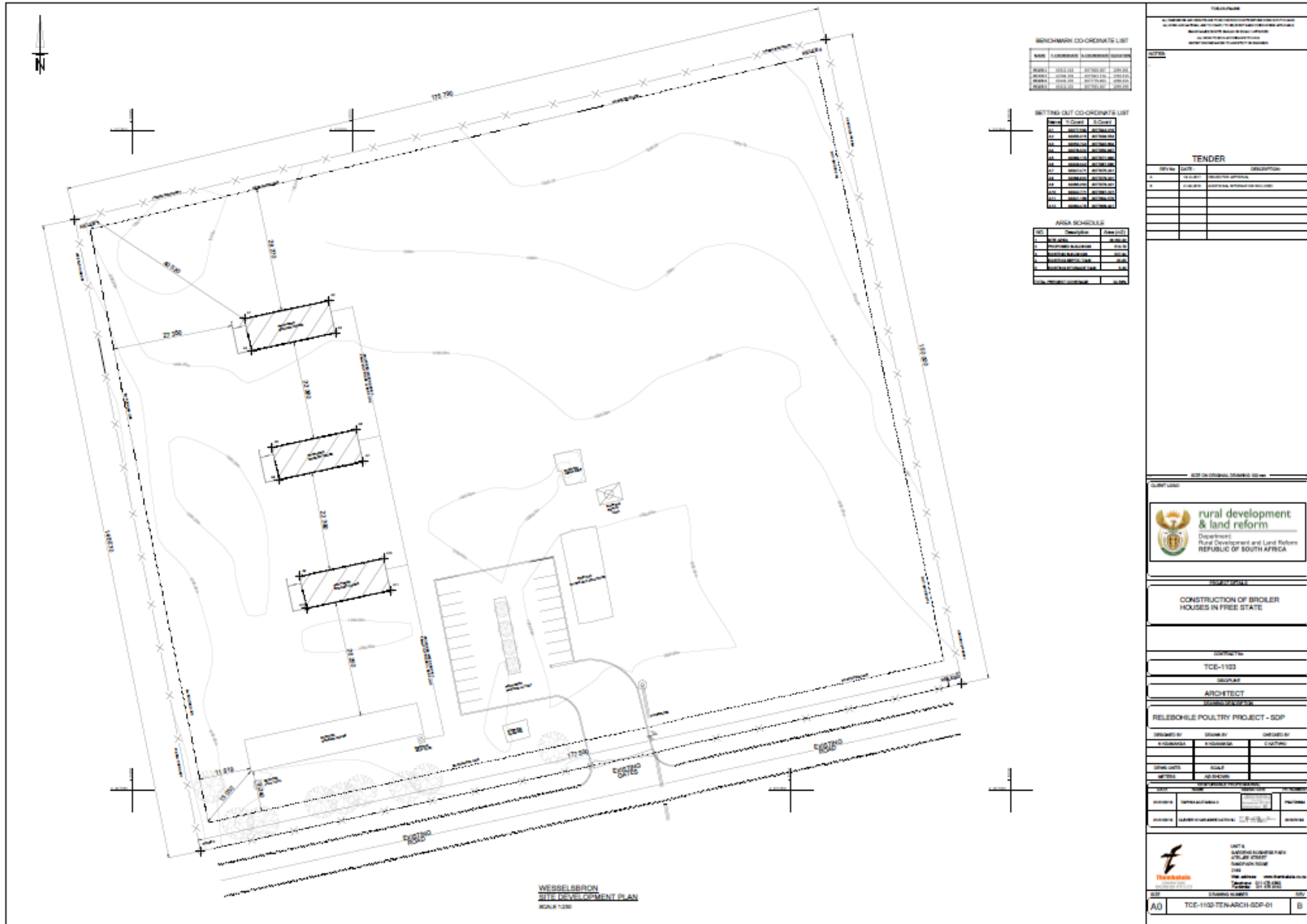
According to National Heritage Resources Act : Section 38 (ACT NO. 25 of 1996)

- ♣ The development of infrastructure with a physical footprint greater than 5000m²

PROPOSED CHICKEN BROILER FACILITY DEVELOPMENT IN WESSELSBRON
PUBLIC PARTICIPATION REPORT



PROPOSED CHICKEN BROILER FACILITY DEVELOPMENT IN WESSELSBRON PUBLIC PARTICIPATION REPORT



PROJECT DESCRIPTION

POTENTIAL ENVIRONMENTAL IMPACTS

Below is a preliminary list of potential impacts identified at this stage of the process and will be investigated as part of the environmental assessment process. The list will be refined during the course of the basic assessment process.

- ♣ Safety
- ♣ Biodiversity
- ♣ Surface water
- ♣ Groundwater
- ♣ Heritage/cultural and paleontological resources
- ♣ Land use

**PROPOSED CHICKEN BROILER FACILITY DEVELOPMENT IN WESSELSBRON
PUBLIC PARTICIPATION REPORT**

ENVIRONMENTAL AUTHORISATION AND WULA PROCESS

The environmental assessment processes will be conducted to inform the competent authorities in their decision-making. These processes are conducted simultaneously.

STEPS IN THE ENVIRONMENTAL AUTHORIZATION PROCESSES

The environmental authorisation processes provides information on the project and environment in which it is being undertaken; identifies, in consultation with registered interested & affected parties (RI&APs), the potential negative as well as positive impacts of the project; and reports on management measures required to mitigate impacts to an acceptable level. The likely process steps and timeframes are provided below. RI&APs and other stakeholders on the project’s database will receive notification of public participation opportunities in advance.

PUBLIC PARTICIPATION

Public Participation provides Stakeholders and I&APs the opportunity to raise issues of concern and comment on the proposed activity. Notify other regulatory authorities and I&APs of project and environmental assessment (via newspaper advertisements, site notices and this BID document)

- Public meeting with I&APs and regulatory authorities (if required)
- Submit application to the DESTEA (14 days)
- Submit draft BAR to the DESTEA
- Public & authority review of draft BAR (30 calendar days) Update the draft BAR with comments received during the review period
- Submit updated Final BAR to the DESTEA
- Review of the Final BAR by the DESTEA (107 calendar days)
- Submit WUL technical report and application forms to DWS
- Circulate decision to RI&APs on the project database.

PROCESS STEPS (in accordance with GN R543)	RESPONSIBLE PARTY	TIMEFRAME
Initial communication to clarify the application with the Provincial Department. Submission of an application form in order to inform the Department of the application to apply for Basic Assessment	EAP/DESTEA	1 day
If in order, the Department to acknowledge the application	DETEA	10 days
EAP to advertise (including placing of site notices) of the application in order to identify and register I&APs	EAP	14 days
EAP to prepare draft Basic Assessment Report (BAR)	EAP	14 days (commencing parallel with identifying I&APs 21-day period)
EAP to notify I&APs (including State departments) of the availability of the draft BAR	EAP	30 days (Mandatory)
EAP to consider the comments received and complete the final BAR	EAP	2 days
EAP to submit the final BAR to the Authorising Authority	EAP	1 days
Department to notify the applicant of its decision.	DETEA	107 days (DESTEA maximum allowed time)

PARTIES INVOLVED IN THE ENVIRONMENTAL APPLICATION PROCESSES

IAPs

- ♣ Surrounding landowners, land users and communities
- ♣ Parastatals

KEY STAKEHOLDERS

- ♣ Department of Rural Development and Land Reform
- ♣ Department Of Agriculture and Rural Development
- ♣ Department of Water and Sanitation (DWS)
- ♣ Department of Heritage (SAHRA)
- ♣ Free State Department of Public Works and Infrastructure

LOCAL AUTHORITIES

- ♣ Department of Economic Development, Tourism, Environmental Affairs & Small Business- DESTEA
- ♣ Lejweleputswa District Municipality- Environmental Management
- ♣ Nala Local Municipality
- ♣ Ward 4 Councillor

Please let us know if there are any additional parties that should be involved.

PROCESS STEPS	RESPONSIBLE PARTY	TIMEFRAME (Cumulative)
1. Application submitted	EAP	1 day
2. Responsible authority acknowledges receipt of the application	DWS	11 days
3. Applicant confirms arrangements for site inspection with an allocated case officer	EAP	16 days
4. Site inspection to confirm water uses, determine information requirements and the need for public participation.	DWS	36 days
5. Confirm requirements for water use licence application technical report based on site visit meeting	DWS	41 days
6. Compilation, consultation and submission of water use license application technical report by applicant	EAP	146 days
7. Reject / Accept water use licence application technical report	DWS	156 days
8. Assessment	DWS	295 days
9. Decision and communication to applicant	DWS	300 days

**PROPOSED CHICKEN BROILER FACILITY DEVELOPMENT IN WESSELSBRON
PUBLIC PARTICIPATION REPORT**

**PROPOSED UPGRADE OF POULTRY HOUSE FACILITY ON THE
REMAINING EXTENT OF THE FARM HERMAN 236, NALA LOCAL
MUNICIPALITY, FREE STATE PROVINCE**

Registration and Response Form for Interested and Affected Parties (I&AP)

Date			
Particulars of the I&AP			
Name			
Postal Address & Code			
Street Address & Code			
Telephone number		Cell Phone Number	
Fax Number		E-Mail Address	
Please Identify your Interest in the Proposed Project:			
Please write your comments and questions here:			
Please return completed form prior to 30 days lapsing:			
<p>Christien Kruger ENVMGP Tel: 051 412 6350 Fax: 051 412 6251 Email: ckruger@envmgp.com Website: envmgp.com</p>			

**PROPOSED CHICKEN BROILER FACILITY DEVELOPMENT IN WESSELSBRON
PUBLIC PARTICIPATION REPORT**

3.3.1. Free State Department of Public Works & Infrastructure



ENVIRONMENTAL MANAGEMENT GROUP

Specialists in Environmental Management
Integrating Industry and Infrastructure with the Environment

Tel: +27 51 412 6350
Fax: +27 51 412 6351
Email: cknuger@envmgrp.com
Postal Address:
P.O.Box 37473,
Langenhoven Park 9330

03 September 2019

Ms G Brown – hodoffice@fsworks.gov.za - 051 492 3909
Free State Department of Public Works and Infrastructure
Cnr Markgraaf & St Andrew's Streets
Bloemfontein
9301

Dear Sir

Re: Notice is given in terms of Government Notice No. 326 in Government Gazette No. 40772 of 7 April 2017 issued under the National Environmental Management Act 1998, (Act 107 of 1998) and The National Water Act (NWA), 1998 (Act 36 of 1998) of intent to carry out the following activity:

We have been appointed by Department of Rural Development and Land Reform regarding the application for a Poultry facility upgrading, located on remaining extent of the Farm Herman 236 north west of Wesselsbron, in the Free State Province.

Please find attached a copy of the Draft BAR for your comments. Thirty days are allowed as per GN R 326 of the Act starting from the date of this notice for the comments to reach us.

Your comments on the project will be appreciated.

Should you have any project related queries, please do not hesitate to contact the undersigned.

Sincerely

S.E. van Rooyen
Director Managing & Environmental Assessment Practitioner & Ecologist
(MSc. Cand.Sci.Nat.116554; IAIA Reg No. 5901)
Cell: 083 678 3032
E- mail: svr@envmgrp.com

Environmental Management Group Pty (Ltd) Reg. No. 2017/077689/07 VAT Reg No: 4350278778
Managing Director: S. van Rooyen | 083 678 3032 | svr@envmgrp.com
Director: C.W. Vermeulen | 082 824 9308 | cwv@envmgrp.com

**PROPOSED CHICKEN BROILER FACILITY DEVELOPMENT IN WESSELSBRON
PUBLIC PARTICIPATION REPORT**

3.3.2. Lejweleputswa District Municipality - Manager Environmental Assessment



ENVIRONMENTAL MANAGEMENT GROUP

Specialists in Environmental Management
Integrating Industry and Infrastructure with the Environment

Tel: +27 51 412 6350
Fax: +27 51 412 6351
Email: ckruger@envmgrp.com
Postal Address:
P.O.Box 37473,
Langenhoven Park 9330

03 September 2019

Lejweleputswa District Municipality jane@lejwe.co.za
Environmental Management
Mr. G. Nkosi
Cnr Tempest & Jan Hofmeyer Road
Welkom,
9460

Dear Sir

Re: Notice is given in terms of Government Notice No. 326 in Government Gazette No. 40772 of 7 April 2017 issued under the National Environmental Management Act 1998, (Act 107 of 1998) and The National Water Act (NWA), 1998 (Act 36 of 1998) of intent to carry out the following activity:

We have been appointed by Department of Rural Development and Land Reform regarding the application for a Poultry facility upgrading, located on remaining extent of the Fam Herman 236 north west of Wesselsbron, in the Free State Province.

Please find attached a copy of the Draft BAR for your comments. Thirty days are allowed as per GN R 326 of the Act starting from the date of this notice for the comments to reach us.

Your comments on the project will be appreciated.

Should you have any project related queries, please do not hesitate to contact the undersigned.

Sincerely

S.E. van Rooyen
Director Managing & Environmental Assessment Practitioner & Ecologist
(MSc. Cand.Sci.Nat.116554; IAIA Reg No. 5901)
Cell: 083 678 3032
E- mail: svr@envmgrp.com

Environmental Management Group Pty (Ltd) Reg. No. 2017/077689/07 VAT Reg No: 4350278778

Managing Director: S. van Rooyen | 083 678 3032 | svr@envmgrp.com

Director: C.W. Vermeulen | 082 824 9308 | cwv@envmgrp.com

**PROPOSED CHICKEN BROILER FACILITY DEVELOPMENT IN WESSELSBRON
PUBLIC PARTICIPATION REPORT**

3.3.3. Nala Local Municipality – Executive Mayor



ENVIRONMENTAL MANAGEMENT GROUP

Specialists in Environmental Management
Integrating Industry and Infrastructure with the Environment

Tel: +27 51 412 6350
Fax: +27 51 412 6351
Email: ckruger@envmgrp.com
Postal Address:
P.O.Box 37473,
Langenhoven Park 9330

03 September 2019

Mr. Theko Mogoje – 056 514 9200 – tsibonalane@nala.org.za
Nala Local Municipality Executive Mayor
8 Preller Street
Bothaville
9600

Dear Sir

Re: Notice is given in terms of Government Notice No. 326 in Government Gazette No. 40772 of 7 April 2017 issued under the National Environmental Management Act 1998, (Act 107 of 1998) and The National Water Act (NWA), 1998 (Act 36 of 1998) of intent to carry out the following activity:

We have been appointed by Department of Rural Development and Land Reform regarding the application for a Poultry facility upgrading, located on remaining extent of the Farm Herman 236 north west of Wesselsbron, in the Free State Province.

Please find attached a copy of the Draft BAR for your comments. Thirty days are allowed as per GN R 326 of the Act starting from the date of this notice for the comments to reach us.

Your comments on the project will be appreciated.

Should you have any project related queries, please do not hesitate to contact the undersigned.

Sincerely

S.E. van Rooyen
Director Managing & Environmental Assessment Practitioner & Ecologist
(MSc. Cand.Sci.Nat.116554; IAIA Reg No. 5901)
Cell: 083 678 3032
E- mail: svr@envmgrp.com

Environmental Management Group Pty (Ltd) Reg. No. 2017/077689/07 VAT Reg No: 4350278778
Managing Director: S. van Rooyen | 083 678 3032 | svr@envmgrp.com
Director: C.W. Vermeulen | 082 824 9308 | cwv@envmgrp.com

**PROPOSED CHICKEN BROILER FACILITY DEVELOPMENT IN WESSELSBRON
PUBLIC PARTICIPATION REPORT**

3.3.4. Department of Agriculture & Rural Development



ENVIRONMENTAL MANAGEMENT GROUP

Specialists in Environmental Management
Integrating Industry and Infrastructure with the Environment

Tel: +27 51 412 6350
Fax: +27 51 412 6351
Email: ckruger@envmgrp.com
Postal Address:
P.O.Box 37473,
Langenhoven Park 9330

03 September 2019

Dr Masiteng - pa.hodagric@fs.agric.za, degracia@fs.agric.za, tandiswa@fs.agric.za
Department of Agriculture and Rural Development
Gielie Joubert Street
Glen
Bloemfontein
9360

Re: Notice is given in terms of Government Notice No. 326 in Government Gazette No. 40772 of 7 April 2017 issued under the National Environmental Management Act 1998, (Act 107 of 1998) and The National Water Act (NWA), 1998 (Act 36 of 1998) of intent to carry out the following activity:

We have been appointed by Department of Rural Development and Land Reform regarding the application for a Poultry facility upgrading, located on remaining extent of the Farm Herman 236 north west of Wesselsbron, in the Free State Province.

Please find attached a copy of the Draft BAR for your comments. Thirty days are allowed as per GN R 326 of the Act starting from the date of this notice for the comments to reach us.

Your comments on the project will be appreciated.

Should you have any project related queries, please do not hesitate to contact the undersigned.

Sincerely

S.E. van Rooyen
Director Managing & Environmental Assessment Practitioner & Ecologist
(MSc. Cand.Sci.Nat.116554; IAIA Reg No. 5901)
Cell: 083 678 3032
E- mail: svr@envmgrp.com

Environmental Management Group Pty (Ltd) Reg. No. 2017/077689/07 VAT Reg No: 4350278778
Managing Director: S. van Rooyen | 083 678 3032 | svr@envmgrp.com
Director: C.W. Vermeulen | 082 824 9308 | cwv@envmgrp.com

**PROPOSED CHICKEN BROILER FACILITY DEVELOPMENT IN WESSELSBRON
PUBLIC PARTICIPATION REPORT**

3.3.5. Department of Water & Sanitation



ENVIRONMENTAL MANAGEMENT GROUP

Specialists in Environmental Management
Integrating Industry and Infrastructure with the Environment

Tel: +27 51 412 6350
Fax: +27 51 412 6351
Email: ckruger@envmgrp.com
Postal Address:
P.O.Box 37473,
Langenhoven Park 9330

03 September 2019

Mr. George Nel - nelg@dws.gov.za - 051 405 900
Department of Water and Sanitation
Bloem Plaza 2nd Floor
C/O Charlotte Maxeke & East Burger Streets
Bloemfontein
9300

Dear Sir

Re: Notice is given in terms of Government Notice No. 326 in Government Gazette No. 40772 of 7 April 2017 issued under the National Environmental Management Act 1998, (Act 107 of 1998) and The National Water Act (NWA), 1998 (Act 36 of 1998) of intent to carry out the following activity:

We have been appointed by Department of Rural Development and Land Reform regarding the application for a Poultry facility upgrading, located on remaining extent of the Farm Herman 236 north west of Wesselsbron, in the Free State Province.

Please find attached a copy of the Draft BAR for your comments. Thirty days are allowed as per GN R 326 of the Act starting from the date of this notice for the comments to reach us.

Your comments on the project will be appreciated.

Should you have any project related queries, please do not hesitate to contact the undersigned.

Sincerely

S.E. van Rooyen
Director Managing & Environmental Assessment Practitioner & Ecologist
(MSc. Cand.Sci.Nat.116554; IAIA Reg No. 5901)
Cell: 083 678 3032
E- mail: svr@envmgrp.com

Environmental Management Group Pty (Ltd) Reg. No. 2017/077689/07 VAT Reg No: 4350278778
Managing Director: S. van Rooyen | 083 678 3032 | svr@envmgrp.com
Director: C.W. Vermeulen | 082 824 9308 | cwv@envmgrp.com

PROPOSED CHICKEN BROILER FACILITY DEVELOPMENT IN WESSELSBRON
PUBLIC PARTICIPATION REPORT

3.3.6. Department of Rural Development & Land Reform - DRDLR



ENVIRONMENTAL MANAGEMENT GROUP

Specialists in Environmental Management
Integrating Industry and Infrastructure with the Environment

Tel: +27 51 412 6350
Fax: +27 51 412 6351
Email: ckruger@envmgrp.com
Postal Address:
P.O.Box 37473,
Langenhoven Park 9330

03 September 2019

Mr. Mbulelo Kelly mbulelo.kelly@drdlr.gov.za – 514004200
Department of Rural Development and Land Reform
136 CharlotteMaxeke Street
Bloemfontein
9301

Dear Sir

Re: Notice is given in terms of Government Notice No. 326 in Government Gazette No. 40772 of 7 April 2017 issued under the National Environmental Management Act 1998, (Act 107 of 1998) and The National Water Act (NWA), 1998 (Act 36 of 1998) of intent to carry out the following activity:

We have been appointed by Department of Rural Development and Land Reform regarding the application for a Poultry facility upgrading, located on remaining extent of the Farm Herman 236 north west of Wesselsbron, in the Free State Province.

Please find attached a copy of the Draft BAR for your comments. Thirty days are allowed as per GN R 326 of the Act starting from the date of this notice for the comments to reach us.

Your comments on the project will be appreciated.

Should you have any project related queries, please do not hesitate to contact the undersigned.

Sincerely

S.E. van Rooyen
Director Managing & Environmental Assessment Practitioner & Ecologist
(MSc. Cand.Sci.Nat.116554; IAIA Reg No. 5901)
Cell: 083 678 3032
E- mail: svr@envmgrp.com

Environmental Management Group Pty (Ltd) Reg. No. 2017/077689/07 VAT Reg No: 4350278778
Managing Director: S. van Rooyen | 083 678 3032 | svr@envmgrp.com
Director: C.W. Vermeulen | 082 824 9308 | cwv@envmgrp.com

**PROPOSED CHICKEN BROILER FACILITY DEVELOPMENT IN WESSELSBRON
PUBLIC PARTICIPATION REPORT**

3.3.7. Ward Counsellor – Ward 4



ENVIRONMENTAL MANAGEMENT GROUP

Specialists in Environmental Management
Integrating Industry and Infrastructure with the Environment

Tel: +27 51 412 6350
Fax: +27 51 412 6351
Email: ckruger@envmgrp.com
Postal Address:
P.O.Box 37473,
Langenhoven Park 9330

03 September 2019

Ward 4 Councilor - mleeto@nala.org.za
Mr. Moleleki Ngece
8 Preller Street
Bothaville
9600

Dear Sir

Re: Notice is given in terms of Government Notice No. 326 in Government Gazette No. 40772 of 7 April 2017 issued under the National Environmental Management Act 1998, (Act 107 of 1998) and The National Water Act (NWA), 1998 (Act 36 of 1998) of intent to carry out the following activity:

We have been appointed by Department of Rural Development and Land Reform regarding the application for a Poultry facility upgrading, located on remaining extent of the Farm Herman 236 north west of Wesselsbron, in the Free State Province.

Please find attached a copy of the Draft BAR for your comments. Thirty days are allowed as per GN R 326 of the Act starting from the date of this notice for the comments to reach us.

Your comments on the project will be appreciated.

Should you have any project related queries, please do not hesitate to contact the undersigned.

Sincerely

S.E. van Rooyen
Director Managing & Environmental Assessment Practitioner & Ecologist
(MSc. Cand.Sci.Nat.116554; IAIA Reg No. 5901)
Cell: 083 678 3032
E- mail: svr@envmgrp.com

Environmental Management Group Pty (Ltd) Reg. No. 2017/077689/07 VAT Reg No: 4350278778
Managing Director: S. van Rooyen | 083 678 3032 | svr@envmgrp.com
Director: C.W. Vermeulen | 082 824 9308 | cwv@envmgrp.com

**PROPOSED CHICKEN BROILER FACILITY DEVELOPMENT IN WESSELSBRON
PUBLIC PARTICIPATION REPORT**

3.3.8. Nala Local Municipality – Municipal Manager



ENVIRONMENTAL MANAGEMENT GROUP

Specialists in Environmental Management
Integrating Industry and Infrastructure with the Environment

Tel: +27 51 412 6350
Fax: +27 51 412 6351
Email: cknuger@envmgrp.com
Postal Address:
P.O.Box 37473,
Langenhoven Park 9330

03 September 2019

Mr. Chris Mokomela – 056 514 9200 – tsibonalane@nala.org.za
Nala Local Municipality Municipal Manager
8 Preller Street
Bothaville
9600

Dear Sir

Re: Notice is given in terms of Government Notice No. 326 in Government Gazette No. 40772 of 7 April 2017 issued under the National Environmental Management Act 1998, (Act 107 of 1998) and The National Water Act (NWA), 1998 (Act 36 of 1998) of intent to carry out the following activity:

We have been appointed by Department of Rural Development and Land Reform regarding the application for a Poultry facility upgrading, located on remaining extent of the Farm Herman 236 north west of Wesselsbron, in the Free State Province.

Please find attached a copy of the Draft BAR for your comments. Thirty days are allowed as per GN R 326 of the Act starting from the date of this notice for the comments to reach us.

Your comments on the project will be appreciated.

Should you have any project related queries, please do not hesitate to contact the undersigned.

Sincerely

S.E. van Rooyen
Director Managing & Environmental Assessment Practitioner & Ecologist
(MSc. Cand.Sci.Nat.116554; IAIA Reg No. 5901)
Cell: 083 678 3032
E- mail: svr@envmgrp.com

Environmental Management Group Pty (Ltd) Reg. No. 2017/077689/07 VAT Reg No: 4350278778
Managing Director: S. van Rooyen | 083 678 3032 | svr@envmgrp.com
Director: C.W. Vermeulen | 082 824 9308 | cwv@envmgrp.com

PROPOSED CHICKEN BROILER FACILITY DEVELOPMENT IN WESSELSBRON
PUBLIC PARTICIPATION REPORT

3.3.9. Department of Agriculture Forestry and Fisheries (DAFF)



ENVIRONMENTAL MANAGEMENT GROUP

Specialists in Environmental Management
Integrating Industry and Infrastructure with the Environment

Tel: +27 51 412 6350
Fax: +27 51 412 6351
Email: ckruger@envmgrp.com
Postal Address:
P.O.Box 37473,
Langenhoven Park 9330

03 September 2019

Mr O E Kumang – oratilek@daff.gov.za - zilungilem@daff.gov.za – 051 409 2619
Department of Agriculture Forestry and Fisheries
Omni Building 1st floor
73 Aliwal Street
Bloemfontein
9301

Dear Sir

Re: Notice is given in terms of Government Notice No. 326 in Government Gazette No. 40772 of 7 April 2017 issued under the National Environmental Management Act 1998, (Act 107 of 1998) and The National Water Act (NWA), 1998 (Act 36 of 1998) of intent to carry out the following activity:

We have been appointed by Department of Rural Development and Land Reform regarding the application for a Poultry facility upgrading, located on remaining extent of the Farm Herman 236 north west of Wesselsbron, in the Free State Province.

Please find attached a copy of the Draft BAR for your comments. Thirty days are allowed as per GN R 326 of the Act starting from the date of this notice for the comments to reach us.

Your comments on the project will be appreciated.

Should you have any project related queries, please do not hesitate to contact the undersigned.

Sincerely

S.E. van Rooyen
Director Managing & Environmental Assessment Practitioner & Ecologist
(MSc. Cand.Sci.Nat.116554; IAIA Reg No. 5901)
Cell: 083 678 3032
E- mail: svr@envmgrp.com

Environmental Management Group Pty (Ltd) Reg. No. 2017/077689/07 VAT Reg No: 4350278778
Managing Director: S. van Rooyen | 083 678 3032 | svr@envmgrp.com
Director: C.W. Vermeulen | 082 824 9308 | cwv@envmgrp.com

**PROPOSED CHICKEN BROILER FACILITY DEVELOPMENT IN WESSELSBRON
PUBLIC PARTICIPATION REPORT**

3.3.10. Landowner



ENVIRONMENTAL MANAGEMENT GROUP

Specialists in Environmental Management
Integrating Industry and Infrastructure with the Environment

Tel: +27 51 412 6350
Fax: +27 51 412 6351
Email: ckruger@envmgrp.com
Postal Address:
P.O.Box 37473,
Langenhoven Park 9330

03 September 2019

Dear Landowner

Re: Notice is given in terms of Government Notice No. 326 in Government Gazette No. 40772 of 7 April 2017 issued under the National Environmental Management Act 1998, (Act 107 of 1998) and The National Water Act (NWA), 1998 (Act 36 of 1998) of intent to carry out the following activity:

We have been appointed by Department of Rural Development and Land Reform regarding the application for a Poultry facility upgrading, located on remaining extent of the Farm Herman 236 north west of Wesselsbron, in the Free State Province.

Please find attached a copy of the Draft BAR for your comments. Thirty days are allowed as per GN R 326 of the Act starting from the date of this notice for the comments to reach us.

Your comments on the project will be appreciated.

Should you have any project related queries, please do not hesitate to contact the undersigned.

Sincerely

S.E. van Rooyen
Director Managing & Environmental Assessment Practitioner & Ecologist
(MSc. Cand.Sci.Nat.116554; IAIA Reg No. 5901)
Cell: 083 678 3032
E- mail: svr@envmgrp.com

Environmental Management Group Pty (Ltd) Reg. No. 2017/077689/07 VAT Reg No: 4350278778
Managing Director: S. van Rooyen | 083 678 3032 | svr@envmgrp.com
Director: C.W. Vermeulen | 082 824 9308 | cwv@envmgrp.com

**PROPOSED CHICKEN BROILER FACILITY DEVELOPMENT IN WESSELSBRON
PUBLIC PARTICIPATION REPORT**

3.4. LIST OF STAKEHOLDERS

<u>Department/ Organisation</u>	<u>Contact Person</u>	<u>Contact Nr</u>	<u>e-Mail Address</u>	<u>Address</u>
Department of Rural Development and Land Reform- DRDLR	Mr. Mbulelo Kelly	0514004200	mbulelo.kelly@drdlr.gov.za	136 Charlotte Maxeke Street, Bloemfontein, 9300
Department of Agriculture and Rural Development	Dr. Masiteng	0518618509	pa.hodagric@fs.agric.za schultzjq@gmail.com	Gielie Joubert St Glen, BFN, 9360
Department of Water & Sanitation	Mr George Nel	0514059000 0828073552	nelg@dws.gov.za	Bloem Plaza 2nd Floor c/o Charlotte Maxeke & East Burger Streets, BFN, 9360
Free State Department of Public Works and Infrastructure	Ms G Brown	0514923909	hodoffice@fsworks.gov.za degracia@fs.agric.za tandiswa@fs.agric.za	Cnr Markgraaff & St Andrew's Streets Bloemfontein 9301
Department of Heritage	Ms. Loudine Philip	0514104750/ 4738/4829	loudine.philip@nasmus.co.za	C/O Henry & East Burger Str, 2 Floor , Bloemfontein, 9301
Department of Agriculture Forestry and Fisheries (DAFF)	Ms. Zilungile	051400 3517	zilungilem@daff.gov.za	Allied Building 3rd Floor C/O Maitland & West Burger Streets, BFN, 9300
Lejweleputswa District Municipality Manager Environmental Assessment	Mr. G. Nkosi	0573533098 0573533094/ 5/8/9	mm@lejwe.co.za jane@lejwe.co.za	Cnr Tempest & Jan Hofmeyer Road Welkom, 9460
Nala Local Municipality – MM	Mr. Boitumelo Chris Mokomela	056 514 9200	tсібоналане@на:а.орг.за	8 Preller Street, Bothaville, 9600
Nala Local Municipality - Executive Mayor	Mr. Theko Mogoje	056 514 9200	rtсібоналане@нала.орг.за	8 Preller Street, Bothaville, 9600
Ward Councillor - Ward 4	Mr. Moleleki Ngece	056 514 9200	mleeto@nala.org.za	8 Preller Street, Bothaville, 9600
Surrounding Landowner	Mr. I. Mothabane	0727281601 0573971006 0833825194		15 Herening Street, Wesselsbron, 9680

4. CONCLUSION

It is concluded that the methods incorporated in the public participation process to inform the surrounding landowners, users, organs of state and identified government authorities was adequate. All the identified I&APs were given with an opportunity to give input regarding the proposed development and no objections were received.

Appendix F: Impact Assessment

SIGNIFICANCE RATING

The impacts that may result from the planning and design phase, construction phase, operation phase and decommissioning phase of the project was assessed according to a number of criteria to arrive at an overall significance rating. The criteria used were as follows:

Spatial Scale

Site	(S)	Immediate area of impact
Local	(L)	Area within 20km of the development
Regional	(R)	Entire Municipality

Duration

Short Term	(ST)	Less than the duration of the activity
Medium Term	(MT)	Impact persists until activity ceases
Long Term	(LT)	Impact persists well beyond the cessation of the activity
Permanent	(P)	Impact is permanent

Probability

Low	(L)	Unlikely
Medium	(M)	Possible
High	(H)	Likely

Intensity

Low	(L)	Ecological functions may continue undisturbed. No rare or endangered species affected. No objection from I&APs.
Medium endangered	(M)	Ecological functioning temporary affected. No rare or species affected. Some concern from I&APs.
High endangered	(H)	Ecological functioning permanently altered. Rare or species impacted. Major concern from I&APs.

Significance

Impacts can be Low, Medium or High and can be positive (+ve) or negative (-ve).

IMPACT	IMPACT TYPE Positive (+) or Negative (-)	ACTIVITY	ALTERNATIVE 1				
			SPATIAL SCALE	DURATION	PROBABILITY	INTENSITY	POST MITIGATED SIGNIFICANCE
PLANNING AND DESIGN PHASE							
Environmental Legal and Policy Compliance	(-)	Failure to adhere to legal obligations could result in overall project failure.	L	LT	M	H	M
Bulk Services	(-)	Insufficient capacity of municipal sewage works to treat sewage from the development.	L	MT	L	H	M
CONSTRUCTION PHASE							
DIRECT IMPACTS							
Construction camp and activities	(-)	Siting of construction camp could lead to negative environmental impacts including dust, noise, soil contamination and erosion, and visual pollution.	L	ST	H	M	L
Impacts on indigenous vegetation	(-)	Loss of indigenous vegetation.	S	ST	H	M	L
Hydrological, stormwater system and water supply	(-)	The construction of roads associated compacting of soils and land transformation will result in higher levels of storm water runoff, with the possibility of increased erosion and decline in water quality.	S	LT	H	M	L
Waste – Sewage / Effluent	(-)	Improper or insufficient ablution facilities for personnel during construction phase.	S	ST	L	L	L
Waste – Building rubble and littering		Littering may occur by personnel during construction phase.	S	ST	M	L	L
Land transformation – Dust Levels	(-)	Increased levels of noise due to earthmoving & construction activities. Associated noise may potentially impact on nearby residential neighbourhoods.	S	ST	M	L	L
Land transformation	(-)	Increased levels of noise due to earthmoving & construction activities. Associated noise may	S	ST	M	L	L

- Noise levels		potentially impact on nearby residential neighbourhoods.						
Land transformation – Veldfires		Machinery and human activity will increase veldfire risk levels.	L	ST	M	L	M	
Increased levels of traffic	(-)	The transportation of construction and road material will increase heavy traffic. The additional trips will have negligible impact on the current traffic flows.	L	MT	M	M	M	
Socio-Economic	(-)	Casual labour taking advantage of the job opportunities created by the construction phase may increase the number of people loitering, levels of vagrancy and possibly petty crime.	S	ST	M	M	L	
OPERATIONAL PHASE								
DIRECT IMPACTS								
Ecological impacts on Fauna and Flora	(-)	Loss of species and or habitat due to transformation.	S	LT	H	M	L	
Hydrological – Storm water	(-)	Land transformation due to the establishment of the proposed structures may result in higher levels of storm water runoff.	S	LT	H	M	M	
Waste – Domestic	(-)	It is estimated that domestic waste will be generated by the new proposed development.	S	LT	H	M	M	
Traffic Impact	(-)	The proposed development will generate additional traffic in the area.	L	LT	H	M	M	
Disease outbreaks	(-)	Poor hygienic conditions in the chicken Broiler facility will result in disease outbreaks.	R	MT	M	H	L	
Odours created throughout the operational phase of the Chicken Broiler facility	(-)	Odours is generated by the chicken facility might have a negative impact on the surrounding environment.	L	MT	M	M	L	
Pollution of surface or groundwater by contaminated water from the Chicken Broiler facility	(-)	Waste water from the Chicken Broiler facility will be generated and will contain manure, as well as other waste by-products. This will be disposed of through formal systems (Sceptic tank).	L	MT	M	M	L	
Rodents	(-)	Rodents will be attracted to the Chicken Broiler due to extensive food availability	S	ST	H	M	L	
Socio-Economic	(+)	Job opportunities will be created throughout the lifetime of the project. The standard of the livelihoods of the local community will be enhanced.	R	LT	H	H	H	

Educational	(+)	The proposed facilities to be constructed at the Chicken Broiler facility can be used as training facilities.	R	LT	H	H	H
Food Security	(+)	Food security and the lack of knowledge are two of the main concerns under the local farmer and general communities of the Free State Province. The Chicken Broiler facility provides essential and efficient farmer support services in the Wesselsbron local area.	R	LT	H	H	H

Appendix G: Environmental Management Programme (EMPr)

ENVIRONMENTAL MANAGEMENT PLAN:
Relebohile Poultry Facility, Wesselsbron

For
Department of Rural Development and Land Reform
(DRDLR)

Table of Contents

1. Definitions	4
2. Introduction and background	5
Scope	5
3. Site Specific Information	5
4. Interpretations	6
5. Role Players and Responsibility Matrix	6
6. Lines of Communication	7
7. Objectives of the EMP	7
8. Activities Covered by the EMP	8
8.1 Planning Stage	8
8.2 Construction Stage	8
8.3 Rehabilitation of the disturbed areas through:	8
9. Identification of Environmental Aspects and Impacts	8
10. Legal Requirements	9
10.1 General	9
10.2 Statutory and other applicable legislation	9
11. Administration of Environmental Obligations	9
11.1 Appointment of an Environmental Site Officer (ESO)	9
11.2 Administration	9
12. Record Keeping	9
13. Compliance and Penalties	10
14. Report Availability	10
15. Environmental Mitigation Specifications for Impacts	10
15.1 Social and Environmental Issues	10
15.2 Establishing Office / Camp Sites	10
15.3 Air Quality	11
15.4 Noise and Vibrations	11
15.5 Erosion Control	11
15.6 Contamination of Land	12
15.7 Surface Water and groundwater Quality	12
15.8 Water Usage	12
15.9 Fauna and Flora	13
15.10 Safety	13
15.11 Historical, Archaeological and Heritage Impacts	13
15.12 Wetland management	13
16. Rehabilitation	14
17. Handling of Emergencies	14
18. Method Statements	14

1. Definitions

Alien Vegetation: alien vegetation is defined as undesirable plant growth which shall include, but not be limited to; all declared category 1 and 2 listed invader species as set out in the Conservation of Agricultural Resources Act (CARA) regulations. Other vegetation deemed to be alien shall be those plant species that show the potential to occupy in number, any area within the defined construction area and which are declared to be undesirable.

Aspect: Element of an organisation's activities, products or services that can interact with the environment.

Auditing: A systematic, documented, periodic and objective evaluation of how well the environmental management plan is being implemented and is performing with the aim of helping to safeguard the environment by: facilitating management control which would include meeting regulatory requirements. Results of the audit help the organisation to improve its environmental policies and management systems.

Built Environment: Physical surroundings created by human activity, e.g. buildings, houses, roads, bridges and harbours.

Contamination: Polluting or making something impure.

Corrective (or remedial) action: Response required addressing an environmental problem that is in conflict with the requirements of the EMP. The need for corrective action may be determined through monitoring, audits or management review.

Degradation: The lowering of the quality of the environment through human activities, e.g. river degradation, soil degradation.

Ecology: The scientific study of the relationship between living things (animals, plants and humans) and their environment.

Ecosystem: The relationship and interaction between plants, animals and the non-living environment.

Environment: environment means the surroundings within which humans exist and that could be made up of -

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

Environmental aspect: an environmental aspect is any component of a contractor's construction activity that is likely to interact with the environment.

Environmental impact: an impact or environmental impact is the change to the environment, whether desirable or undesirable, that will result from the effect of a construction activity. An impact may be the direct or indirect consequence of a construction activity.

Environmental Authorisation: an environmental authorisation is a written statement from the National Department of Environmental Affairs and Tourism, (N.DEAT) that records its approval of a planned undertaking to improve, upgrade or rehabilitate a section of road and the mitigating measures required to prevent or reduce the effects of environmental impacts during the life of a contract.

Hazardous waste: Waste, even in small amounts that can cause damage to plants, animals, their habitat and the well-being of human beings, e.g. waste from factories, detergents, pesticides, hydrocarbons, etc.

Land use: The use of land for human activities, e.g. residential, commercial, industrial use.

Mitigation: Measures designed to avoid, reduce or remedy adverse impacts

2. Introduction and background

Scope

Environmental Management Group, as independent environmental managers and impact assessors, has been appointed by the Department of Rural Development and Land Reform to compile and submit an Environmental Management Programme (EMP), in support of the EIA Process for an EA (Environmental Authorisation under the National Environmental Management Act No 107 of 1998, to the decision making authority namely the DESTEA; for the development of a chicken-broiler facility on RE Farm Herman 236 in Wesselsbron, Free State.

This document is compiled in accordance with the Integrated Environmental Management (IEM) philosophy which aims to achieve a desirable balance between conservation and development (DEAT, 1992). IEM is a key instrument of the National Environmental Management Act [NEMA] (Act No. 107 of 1998). NEMA promotes the integrated environmental management of activities that may have a significant effect on the environment, while IEM prescribes a methodology for ensuring that environmental management principles are fully integrated into all stages of the development process. It advocates the use of several environmental management tools that are appropriate for the various levels of decision-making. One such tool is an EMP. The IEM guidelines encourage a pro-active approach to sourcing, collating and presenting information in a manner that can be interpreted at all levels. The basic principles underpinning IEM are that there be:

- informed decision-making;
- accountability for information on which decisions are taken;
- accountability for decisions taken;
- a broad meaning given to the term environment (i.e. one that includes physical, biological, Social, economic, cultural, historical and political components);
- an open, participatory approach in the planning of proposals;
- consultation with interested and affected parties;
- due consideration of alternative options;
- an attempt to mitigate negative impacts and enhance positive aspects of proposals;
- an attempt to ensure that the 'social costs' of development proposals (those borne by society, rather than the developers) be outweighed by the 'social benefits' (benefits to society as a result of the actions of the developers);
- democratic regard for individual rights and obligations;
- compliance with these principles during all stages of the planning, implementation and decommissioning of the proposals (i.e. from 'cradle to grave'); and
- the opportunity for public and specialist input in the decision-making process.

The Environmental Impact Assessment Regulations that took effect in December 2014 regulate the procedures and criteria for the submission, processing, consideration and decision on applications for environmental authorisation of listed activities.

The general principles contained within this document apply to all **PLANNING PHASE, CONSTRUCTION PHASE, and OPERATIONAL PHASE** activities with regard to the development of the poultry facility.

3. Site Specific Information

Environmental Management Group has been appointed by Department of Rural Development and Land Reform to conduct the Basic Assessment process of the development of the chicken-broiler facility in Wesselsbron.

The proposed poultry facility site is located on RE Farm Herman 236 in Wesselsbron, situated north-west of Wesselsbron. The facility will comprise of Three chicken houses of where a total of 5000 birds will be kept and later increased to 6300 birds.

4. Interpretations

The implementation of the EMP is not an additional or “add on” requirement. The EMP is legally binding through NEMA. The proponent is to ensure that through the project tender process the EMP forms part of the Project Contract Document for the proposed poultry facility development to be incorporated in line with:

- a) General project specifications; and
- b) SANS 1200 A or SANS 1200 AA, as applicable.

5. Role Players and Responsibility Matrix

In order for the EMP to be successfully implemented, all the role players involved in the project need to co-operate. For this to happen, role players must clearly understand their roles and responsibilities in the project, must be professional, form respectful and transparent relationships, and maintain open lines of communication.

Table 1: Functions and Responsibilities of Project Team

KEY	FUNCTION	RESPONSIBILITY
P	Proponent/Developer	<p>Proponent is ultimately accountable for ensuring compliance to the EMP. The ECO must be contracted by the Proponent (full time or part time depending on the size of the project) as an independent appointment to objectively monitor implementation of relevant environmental legislation, conditions of the EMP for the project.</p> <p>The Proponent is further responsible for providing and giving mandate to enable the ECO to perform responsibilities. The developer must ensure that the ECO is integrated as part of the project team.</p>
PM	Project Manager	<p>The Project Manager has over-all responsibility for managing the project, contractors, and consultants and for ensuring that the environmental management requirements are met.</p> <p>The CE may also act as the PM. All decisions regarding environmental procedures must be approved by the PM. The PM has the authority to stop any decommissioning activity in contravention of the EMP in accordance with an agreed warning procedure.</p>
ECO	Environmental Control Officer	<p>An independent Environmental Control Officer (ECO) shall be appointed, for the duration of the pre-construction and construction phase of the services and bulk Infrastructure, by the developer to ensure compliance with the requirements of this EMP. Thereafter, the individual property owners will be responsible for the further appointment of the ECO).</p> <p>The Environmental Control Officer shall ensure that the contractor is aware of all the specifications pertaining to the project.</p> <p>Any damage to the environment must be repaired as soon as possible after consultation between the Environmental Control Officer, Consulting Engineer and Contractor.</p> <p>The Environmental Control Officer shall ensure that the developer staff and/or contractor are adhering to all stipulations of the EMP.</p> <p>The Environmental Control Officer shall be responsible for monitoring the EMP throughout the project by means of site visits and meetings. This should be documented as part of the site meeting minutes.</p> <p>The Environmental Control Officer shall be responsible for the environmental training program.</p> <p>The Environmental Control Officer shall ensure that all clean up and rehabilitation or any remedial action required, are completed prior to transfer of properties.</p> <p>A post construction environmental audit is to be conducted to ensure that all conditions in the EMP have been adhered to</p>
C	Contractor	<p>The contractors shall be responsible for ensuring that all activities on site are undertaken in accordance with the environmental provisions detailed in this document and that sub-contractor and labourers are duly informed of their roles and responsibilities in this regard.</p> <p>The contractor will be required, where specified to provide Method Statements</p>

		<p>setting out in detail how the management actions contained in the EMP will be implemented.</p> <p>The contractors will be responsible for the cost of rehabilitation of any environmental damage that may result from non-compliance with the environmental regulations</p>
ESO	Environmental Site Officer	<p>The ESO is employed by the Contractor as his/her environmental representative to monitor, review and verify compliance with the EMP by the contractor. This is not an independent appointment; rather the ESO must be a respected member of the contractor's management team.</p> <p>Dependent on the size of the development the ESO must be on site one week prior to the commencement of construction. The ESO must ensure that he/she is involved at all phases of the construction (from site clearance to rehabilitation).</p>
A	Lead Authority	<p>The authorities are the relevant environmental department that has issued the Environmental Authorisation. The authorities are responsible for ensuring that the monitoring of the EMP and other authorisation documentation is carried out, this will be achieved by reviewing audit reports submitted by the ECO and conducting regular site visits.</p>
OA	Other Authorities	<p>Other authorities are those that may be involved in the approval process of an EMP. Their involvement may include reviewing EMP's to ensure the accuracy of the information relevant to their specific mandate.</p> <p>Other authorities may be involved in the development, review or implementation of an EMP.</p> <p>For example if a specific development requires a water use licence for the relevant national authority then that authority should review and comment on the content of the particular section pertaining to that mandate.</p>
EAP	Environmental Assessment Practitioner	<p>The definition of an environmental assessment practitioner in Section 1 of NEMA is <i>"the individual responsible for the planning, management and coordination of environmental impact assessments, strategic environmental assessments, environmental management plans or any other appropriate environmental instruments introduced through regulations"</i>.</p>

6. Lines of Communication

The Environmental Control Officer in writing should immediately report any breach of the EMP to the Project Manager. The Project Manager should then be responsible for rectifying the problem on-site after discussion with the contractor. Should this require additional cost, then the developer should be notified immediately before any additional steps are taken.

7. Objectives of the EMP

The specific objectives of this EMP are to:

- To provide explicit operational guidelines and environmental monitoring requirements during the construction phases so that activities are done in environmentally responsible and sustainable manner.
- To benefit the host communities, minimise the impacts on the environment and to ensure the health and safety of the community by creating a development that eliminates unacceptable health hazards and ensures public and animal safety.
- To ensure that social and environmental impacts, risks and liability identified during the process are effectively managed during the construction, operations and closure of the project.
- To leave areas disturbed by construction in a rehabilitated, stable, non-polluting and tidy condition.

8. Activities Covered by the EMP

8.1 Planning Stage

The project planning stage consists that all plans and required contracts, permits/licenses and agreements are in place.

8.2 Construction Stage

The construction phase will start after the relevant authorizations are granted. The construction phase will start after the relevant authorizations are granted. This phase includes:

- Establishment of construction camp and equipment yards
- Transportation of construction material and other resource inputs,
- Use of heavy construction equipment on site.
- Storage of input materials and disposal of waste generated
- Construction of building structures
- Provision on ancillary service such as parking bays, connections to municipal water and sewer

8.3 Rehabilitation of the disturbed areas through:

- Demolition/Removal of any unwanted construction fences and infrastructure
- Top-soiling and re-vegetation of areas disturbed by construction

9. Identification of Environmental Aspects and Impacts

The contractor shall identify likely aspects before commencing with any construction activity. Examples of environment aspects include:

- waste generation
- stormwater discharge
- emission of pollutants into the atmosphere
- chemical use operations
- energy use operations
- water use operations
- use of natural resources
- noise generation

Thereafter the contractor shall programme his work in such a way that each cause and effect of a construction activity is also identified and the activity planned so as to prevent any impact from happening. If prevention is not practicable, or in the event of mishap or misapplication, the contractor shall provide plans and measures for the engineer's approval, which will limit and contain the magnitude, duration and intensity of the impact. The contractor shall demonstrate that he is capable of carrying out any repair and reinstatement of the damaged environment.

Listed below are some environmental impacts that could adversely alter an aspect of the environment through usual construction activities:

- Pollution of atmosphere, soil or water
- Destruction or removal of fauna and flora and effect on biological diversity
- Deformation of the landscape
- Soil erosion
- Effect on the built environment

10. Legal Requirements

10.1 General

Construction activities will be according to the best industry practices, as identified in the project documents. This EMP, which forms an integral part of the contract documents, informs the contractor as to his duties in the fulfilment of the project objectives, with particular reference to the prevention and mitigation of environmental impacts caused by Construction activities associated with the project. The contractor should note that obligations imposed by the EMP are legally binding in terms of environmental statutory legislation and in terms of the additional conditions to the general conditions of contract that pertain to this project. In the event that any rights and obligations contained in this document contradict those specified in the standard or project specifications then the latter shall prevail.

10.2 Statutory and other applicable legislation

The contractor is deemed to have made themselves conversant with all legislation pertaining to the environment, including provincial and local government ordinances, which may be applicable to the contract.

11. Administration of Environmental Obligations

11.1 Appointment of an Environmental Site Officer (ESO)

The ESO is not an independent appointment but must be a member of the contractor's management team. The ESO must ensure that he/she is involved at all phases of the construction (from site construction to rehabilitation).

11.2 Administration

Before the contractor begins each construction activities the ESO shall give a written statement setting out the following:

- The type of construction activity.
- Locality where the activity will take place.
- Identification of the environmental aspects and impacts that might result from the activity.
- Methodology for impact prevention for each activity or aspect.
- Methodology for impact containment for each activity or aspect.
- Emergency/disaster incident and reaction procedures.
- Treatment and continued maintenance of impacted environment.

The contractor may provide such information in advance of any or all construction activities provided that new submissions shall be given to the engineer whenever there is a change or variation to the original.

The engineer may provide comment on the methodology and procedures proposed by the ESO, but he shall not be responsible for the contractor's chosen measures of impact mitigation and emergency/disaster management systems. However, the contractor shall demonstrate at inception and at least once during the contract that the approved measures and procedures function properly.

12. Record Keeping

All records related to the implementation of this management plan (e.g. site instruction book, ESA/ESO dairy, methods statements etc.) must be kept together in an office where it is safe and can be retrieved easily. These records should be kept for two years at any time be available for scrutiny by any relevant authorities.

13. Compliance and Penalties

The contractor shall act immediately when a notice of non-compliance is received and correct whatever is the cause for the issuing of the notice. Complaints received regarding activities on the construction site pertaining to the environment shall be recorded in a dedicated register and the response noted with the date and action taken. This record shall be submitted with the monthly reports and an oral report given at the monthly site meetings.

Any non-compliance with the agreed procedures of the EMP is a transgression of the various statutes and laws that define the manner by which the environment is managed therefore any avoidable non-compliance, dependant on severity, shall be considered sufficient grounds for contact to be made with relevant provincial or national authorities.

The responsible provincial or national authorities shall ensure compliance and impose penalties relevant to the transgression as allowed for within its statutory powers.

14. Report Availability

Copies of this EMP shall be kept at the construction site office and will be accessible to all senior contract personnel. All senior personnel working on the project shall be required to familiarise themselves with the contents of this document.

15. Environmental Mitigation Specifications for Impacts

15.1 Social and Environmental Issues

It is important to minimize any negative perception, by taking proactive measures to prevent any social conflicts or social gaps and to develop a positive attitude within the community of the project. The following management strategies are to be implemented:

- Transparent fair recruitment and procurement practices. The contractor chosen should maximize the involvement of local communities in construction and support activities, to the extent possible, based on available skill levels. Whenever possible, training programmes that will benefit both construction stage skills requirements and long-term employment demand should be developed.
- The recruitment selection process should seek to promote gender equality and the employment of women wherever possible.
- Priority should be given to the local suppliers of goods and services, which meet requirements of project procurement as far as is possible. In order to optimize the opportunities for local businesses to supply goods and services to the project, the contractor will do a survey of the capabilities of the goods and services that are locally available that are of an acceptable standard and quality and a survey of the capabilities of local construction companies and identify opportunities for local suppliers.
- A public complaint register and system to ensure that community complaints clearly investigated and adequate remedial taken should be instituted.
- Adequate notification should be done to people residing close to where construction activities are taking place especially if they are to be affected by them. In addition, there should be a system of compensation for any damages to infrastructure that may occur.
- Each worker should be required to abide by a Code of Conduct which will limit unsavoury activities in local towns and communities and restrict certain behaviours in the work sites and accommodation.

15.2 Establishing Office / Camp Sites

- The area chosen for these purposes shall be the minimum reasonably required and which will involve the least disturbance to vegetation. No trees or shrubs will be felled or damaged for the purpose of obtaining firewood, unless agreed to by the landowner/tenant.
- Fires will only be allowed in facilities or equipment specially constructed for this purpose. If required by applicable legislation, a fire-break shall be cleared around the perimeter of the camp and office sites.

- Lighting and noise disturbance or any other form of disturbance that may have an effect on the landowner/tenant/persons lawfully living in the vicinity shall be kept to a minimum.
- Chemical toilet facilities or other approved toilet facilities should be sited in such a way that they do not cause water or other pollution. The use of existing facilities (if any) must take place in consultation with the landowner/tenant.
- In cases where facilities are linked to existing sewerage structures, all necessary regulatory requirements concerning construction and maintenance should be adhered to. The facilities must comply with water act requirements.
- Adequate signage must be provided and the area must be appropriated secured.
- Adequate parking and security should be provided at the campsites.

15.3 Air Quality

The main sources of impact on air quality are mobilization of equipment, and earthworks. To ensure air quality characteristics of the project area are maintained near the baseline conditions during of the construction stage, the following measures shall be done:

- Regular inspection and scheduled maintenance of all equipment to ensure that construction vehicles are in good condition, are utilising fuel efficiently and do not smoke.
- Periodically watering the bare surfaces and excavations during construction to keep the dust level down.
- Slowing down the vehicles carrying the construction materials to reduce dust generation.
- Properly wrapping the material truck containers with cover to avoid dust spreads on windy days and prohibiting transport of over loaded trucks.
- Providing and using the safety equipment such as dust mask, noise cover for employees who work near the dusty location such as the heavy equipment operators
- Optimization of working schedule and work to help to minimize several material vehicle mobilization trips.

15.4 Noise and Vibrations

The primary noise sources will be vehicles and equipment utilized during the construction stage including graders, bulldozers, general purpose vehicles, etc. To manage the impact the following will be done:

- Working schedule for the activities with high noise level will be arranged between 08:00 AM to 17:00 PM.
- Only well-maintained vehicles and equipment should be operated onsite and all machinery should be serviced regularly during the construction stage.
- Avoiding unnecessary simultaneous noisy activities.
- No amplified music shall be allowed at the site.
- Selecting 'quiet' construction equipment and working method and avoiding unnecessary revving and hooting.
- Providing ear protection for activities that are likely to create noise in order to protect worker's health and safety.

15.5 Erosion Control

Construction activities will require the removal of vegetation cover, potentially resulting in soil erosion and subsequent impacts on surface water quality due to uncontrolled rainwater run-off or mechanical/wind action.

The following measures are necessary to minimise impacts.

- Clearance of vegetation should be restricted to the absolute minimum required to facilitate construction activities to proceed. No protected plant species shall be removed without a permit. Disturbance of topsoil and vegetation rootstock must be minimized as far as possible.
- Appropriate drainage systems will be built to accommodate the surface water movement from the rain and wind.
- Construction activities shall take place only within the approved demarcated area. Appropriate drainage facilities must be constructed to make sure water runs smoothly downstream.

- Top soil layer will be kept to rehabilitate and will be adequately stored to protect it from erosion.
- Areas where construction has been finished should immediately be re-vegetated.

15.6 Contamination of Land

Land contamination may occur as a result of fuel and oil leaks or spills and/or poor fuel, chemical and waste storage.

- The storage areas shall be securely fenced and secured and appropriately marked to indicate the goods in the storage. Material Safety Data Sheets should be kept for all hazardous materials on site.
- All hazardous substances and stocks such as diesel, oils, detergents, etc., shall be stored in areas with impervious flooring such as concrete and properly bunded. Drip pans, other impervious surface, shall be installed in such storage areas with a view to prevent soil and water pollution.
- Dedicated impervious areas should be designated for concrete mixing and the spillage from concrete mixed should be cleaned immediately.
- The waste management strategy on the construction site should be hinged on the waste hierarchy model of 'reduce, reuse and recycle' waste in order to reduce the ultimate impact on the environment.
- All used oils, grease or hydraulic fluids shall be placed in appropriate impervious containers and these receptacles will be removed from the site on a regular basis for disposal at a licensed disposal facility or sent for recycling/reuse with a registered facility.
- Residues from machinery maintenance and other sources contaminated with hazardous waste should be stored in proper containers that avoid seepage to ground.
- Spills should be cleaned up immediately by removing the spillage together with the polluted soil and by disposing of them at a recognised facility. In areas where the spills are some, an absorbent agent can be used and the area treated in situ
- Adequate waste receptacles shall be made available and all waste shall be adequately stored so that it does not pose a pollution risk. General waste is to be disposed of through the municipal service. Any other waste will be disposed of through only licensed waste disposal facilities.

15.7 Surface Water and groundwater Quality

Poor chemical storage and poor waste management practices may lead to the contamination of water sources. Sewage and sanitary effluent has the potential to adversely affect the quality of receiving water bodies unless properly managed. To eliminate the risk of contamination, the following measures have to be instituted.

- Chemical toilets shall be used during the construction stage and a registered service provider shall be contracted to service the toilets regularly.
- Suitable covered receptacles for waste shall be available at all times and conveniently placed for the disposal of waste.
- Warehouse floors and workshop areas should be of concrete. Drainage from warehouse is collected separately with trap for oil or fuels oil. Trap containers when full will be removed, properly stored and sent out to oil waste management company.
- Refuelling, fuel loading/unloading, oil change-outs, waste storage and disposal activities must be carefully managed to prevent spillages.
- Adequate toilets must be available on site for use by construction staff at all times. The digging of pit latrines for this purpose is not allowed under any circumstances. Should chemical toilets be used, an appropriate contractor must be employed to service these facilities on an ongoing basis.
- Spills or overflows from chemical or other toilets used by construction staff must be dealt with by a sanitation expert immediately.
- Any effluents containing oil, grease or other industrial substances must be collected in a suitable receptacle and treated prior to discharge or removed from the site for appropriate disposal at a recognised facility.

15.8 Water Usage

- Any water that is used which does not emanate from Municipality supplies must be registered and authorised by the Department of Water Affairs prior to usage commencement.

- The contractor shall promote responsible water use by all personnel.

15.9 Fauna and Flora

Fauna and flora are negatively impacted by noise from construction activities (disturbance) and gathering/hunting of flora and fauna by workers. The following measures are necessary to mitigate impacts.

- Topsoil shall be removed and kept for use during rehabilitation.
- The Contractor shall be responsible for the removal of alien vegetation within areas affected by the construction activities including cleared ground and topsoil stockpiles. Equipment used should be regularly washed down to avoid transporting seeds (invasive species) or plant diseases.
- No protected or endangered plant species shall be removed without a permit or license.
- No trees or shrubs will be felled or damaged for the purpose of obtaining firewood, unless agreed to by the landowner/tenant.
- The rehabilitation activities require the re-planting of vegetation in any areas cleared for the construction activities. This will promote soil stability, improve the visual environment and provide faunal habitat.
- Hunting/gathering by construction workers must not be permitted.
- Localized habitat features such as nests, dens or burrow sites should be avoided as much as possible. In addition, care should be taken in working in areas of active nesting, spawning, and feeding areas.

15.10 Safety

- The Contractor shall be responsible for the protection of the public and public property from any dangers associated with the construction and operation of the road activities,
- All work should be handled in accordance with the Occupational Health and Safety Act and adequate safety precautions taken and suitable sanitation facilities provided in line with the requirements of the act. It is the duty of the contractor to ensure that the all protective measures against accidents are done.
- Any works/activities which may pose a hazard to humans and/or domestic animals are to be protected or cordoned off and, if appropriate, warning signage erected
- Appropriate security is to be provided at the site to protect equipment and provide for a safe construction site and works areas.
- Any damage caused as a result of the construction activities shall be repaired to the satisfaction of the project manager and owner.

15.11 Historical, Archaeological and Heritage Impacts

- Should any cultural or archaeological artefacts be found during operational activities, operations must cease immediately and the area secured and SAPS, and the South African Heritage Resources Agency and other relevant authorities informed immediately.
- No site of archaeological or historical significance maybe moved without a permit from the SAHRA. Any permitted removal of any archaeological or historical matter must be done under the strict supervision of a qualified registered archaeologist.

15.12 Wetland management

- The development should be contained in its entirety within the fenced area with no activities allowed outside this area. This should include all construction materials, laydown area and waste.
- The development should maintain the recommended buffer zone of 15 meters from the border of the depression wetlands around the site, as determined by the Buffer Zone Tool for the Determination of Aquatic Impact Buffers and Additional Setback Requirements for Wetland Ecosystems (2014).
- Poultry houses should be built on an impenetrable, preferably concrete, surface and implement an adequate storm water management system which will contain any effluent generated on the site.

- The depression wetlands should be treated as no-go areas as far as possible and no construction activities, material or waste should occur or be placed in these areas or the buffer zone. This is also applicable to the operational phase.
- The exotic species occurring on the site must be eradicated prior to construction. It is also recommended that the eradication of exotic species be maintained and form part of the management of the poultry facility throughout the lifetime of the development.
- Monitoring of construction including weed establishment and erosion should take place and should also specifically include any impacts or alterations to the surrounding depression wetlands.

16. Rehabilitation

- On completion of operations, all buildings, structures or objects on the camp/office site shall be demolished and removed.
- Where office/camp sites have been rendered devoid of vegetation/grass or where soils have been compacted owing to traffic, the surface shall be scarified or ripped.
- On completion of operations, the areas shall be cleared of any contaminated soil, which must be dumped as per the waste management plan.
- All the infrastructure, equipment, plant, temporary housing and roads and other items used during the construction period will be removed from the site.
- Waste material of any description, including receptacles, scrap, rubble and tyres, will be removed entirely from the area and disposed of at a registered waste disposal facility. It will not be permitted to be buried or burned on the site.
- Disturbed areas should be left in a safe and stable manner. Preventative measures may be necessary to construct adequate drainage structures including ditches and other structures to facilitate the movement of surface water.
- Photographs of the camp and office sites, before and during the construction and after rehabilitation, shall be taken at selected fixed points and kept on record.
- The disturbed surfaces shall then be ripped or ploughed and the topsoil previously stored shall be spread evenly to its original depth over the whole area. The area shall then be fertilised if necessary (based on a soil analysis).
- If a reasonable assessment indicates that the re-establishment of vegetation is unacceptably slow, there might be need that the soil be analysed and any deleterious effects on the soil arising from the construction operation be corrected and the area be seeded with a seed mix to his or her specification.

17. Handling of Emergencies

- The contractor should identify all situations that can lead to emergency situations and provide response strategies. The situations should include fire and major chemical spill.
- Contact details of all departments/service providers to be contacted in case of an emergency shall be made available to employees.
- Equipment for dealing with emergencies such as spill kits, firefighting equipment, first aid boxes etc. shall be made available and personnel properly trained in its use.
- All staff on site should be trained on how to handle emergency situations and emergency drills/ rehearsals should be conducted periodically to ensure that staff prepared.

18. Method Statements

The Contractor shall submit written Method Statements for all environmentally sensitive aspects of the work. It should be noted that Method Statements must contain sufficient information and detail to mitigate the potential impacts of the works on the environment. The Contractor will also need to thoroughly understand what is required of him / her in order to undertake the works. Work shall not commence until Method Statements have been put in place.

REPORT PREPARED BY: C.W. Vermeulen

CONTACT DETAILS: Email: cw@envmgrp.com
Cell: 082 824 9308

**ENVIRONMENTAL CONSULTING
COMPANY:**

Environmental Management Group

P.O. Box 37473

Langenhovenpark

9330

Tel: 051 412 6350

Fax: 051 412 6351

QUALIFICATIONS OF EAP:

CW Vermeulen has a BSc in Environmental and Biological Sciences and over 5 years' experience in the environmental industry.

He is also registered with SACNASP

CO- AUTHOR DETAILS

NAME: Cassia Mlangeni

CONTACT DETAILS: Email: cassia@envmgrp.com
Cell: 051 412 6350

CO-AUTHOUR

QUALIFICATIONS:

Cassia Mlangeni has a BSc Hons degree in Agrometeorology. She has 2 years' experience in environmental-related projects.

Appendix H: Details of EAP and expertise



ENVIRONMENTAL MANAGEMENT GROUP

Specialists in Environmental Management
Integrating Industry and Infrastructure with the Environment

Tel: +27 51 412 6350
Fax: +27 51 412 6351
Email: ckruger@envmgp.com
Postal Address:
P.O.Box 37473,
Langenhoven Park 9330

CURRICULUM VITAE

Salmon E. van Rooyen (Sampie)

*Director Managing & Environmental Assessment Practitioner & Ecologist
(MSc. Cand.Sci.Nat.116554; IAIA Reg No. 5901)*

Personal Information

ID: 9205095047086
Nationality: South African
Gender: Male
Health: Excellent
Vehicle License: Code A&B
Language: English/Afrikaans
Contact number: 083 678 3032
Email: svr@envmgp.com

Skills and Responsibilities

- Use of Geographical Information Systems;
- Conduct Environmental Impact Assessments and other Environmental Technical Investigations;
- Apply and obtain, water licenses, mining permits and environmental authorisations for clients;
- Use different GIS datasets in order to create new information or investigate patterns for projects;
- Conduct environmental compliance and other environmental audits;
- Microsoft Office and Planet GIS;
- Project Management;
- Biodiversity Assessments;
- Agricultural advisory.

Professional Experience

Date	5/2017 - Present
Organisation	Environmental Management Group
Position	Director; EAP; Ecologist

Date	8/ 2016 - 5/2017
Organisation	Terra Works Environmental
Position	Environmental scientist/ Office Manager

Date	1/2016 - 8/2016
Organisation	Bokamoso Environmental
Position	Environmental Specialist (Fauna and Flora), Water Use License Application Consultant, General Environmental Consultant.
Responsibilities	Conducting specialist Faunal and Flora assessments. Applying for Water Use Licenses. GIS Mapping. Environmental Impact Assessments.



ENVIRONMENTAL MANAGEMENT GROUP

Specialists in Environmental Management
Integrating Industry and Infrastructure with the Environment

Tel: +27 51 412 6350
Fax: +27 51 412 6351
Email: ckruger@envmgrp.com
Postal Address:
P.O.Box 37473,
Langenhoven Park 9330

Date	1/2015 – 6/2015
Organisation	Agreenco
Position	Flora and Fauna Specialist
Responsibilities	Rehabilitation and Alien eradication on game farm in the Magaliesburg region, Rustenburg.

Date	2014 - 2015
Organisation	NWU Potchefstroom
Position	Practical demonstrator
Responsibilities	Responsible for laboratory preparation for NWU and UNISA Botany practical sessions, assistant facilitator of the practical syllabus, invigilating practical exams.

Date	1/2015 – 11/2015
Organisation	NWU Potchefstroom
Position	Practical Post-Graduate Student Assistant
Responsibilities	Assisting Post-Graduate students in veld surveying methods and technologies.

Date	1/2014 – 6/2014
Organisation	E-Tek Consultants
Position	Contract, Monitoring specialist on De Beers Mining, Kimberley.
Responsibilities	Monitoring rehabilitated tailings on De Beers mines.

Date	2008 - 2016
Organisation	Monswario Boerdery
Position	Assistant Farm Manager
Responsibilities	Farming experience of Bonsmara cattle and Meat-master sheep, as well as veld management practices.

Education

Institution	Degree(s) or Diploma(s) obtained
North West University Potchefstroom 2011 – 2013	BSc. Environmental and Biological Sciences and Tourism
North West University Potchefstroom 2014 – 2015	Hons BSc. Environmental Sciences (<i>Ecology: Ecological Remediation & Sustainable development</i>)
North West University Potchefstroom 2015 – 2016	MSc BSc. Environmental Sciences (<i>Ecological Remediation & Sustainable Management</i>)
North West University Potchefstroom 2015	Short Course at CEM (Centre for Environmental Management) in Basic Principles of Ecological Rehabilitation and Mine closure.



ENVIRONMENTAL MANAGEMENT GROUP

Specialists in Environmental Management
Integrating Industry and Infrastructure with the Environment

Tel: +27 51 412 6350
Fax: +27 51 412 6351
Email: ckruger@envmgp.com
Postal Address:
P.O.Box 37473,
Langenhoven Park 9330

Research and Conferences

Masters degree research project (2015 January-2016 November)

Ecological Remediation and Sustainable Management

Supervisors: Prof. Klaus Kellner and Dr. Niels Dreber

Title: Composition and structure of woody vegetation in thickened and controlled bushveld savanna in the Molopo, South Africa

Honours degree research project (2014 January-2014 November)

Ecological Remediation and Sustainable Management

Supervisors: Prof. Klaus Kellner and Dr. Niels Dreber

Title: Comparison of plant diversity of shrub thickened and chemically controlled savannas in the Molopo district, North-West Province, South Africa

Conference presentations (2014-2015)

- Comparison of plant diversity of shrub thickened and chemically controlled savannas in the Molopo district, North-West Province, South Africa. Biological Sciences Symposium, Potchefstroom, 2014. Presentation.
- Comparison of plant diversity of shrub thickened and chemically controlled savannas in the Molopo district, North-West Province, South Africa. Poster presentation: Arid-Zone Ecology and Thicket Fusion Form in 2014.
- Attending the Third Annual LaRSSA Conference (Land Rehabilitation Society of Southern Africa) (2015).

Experience of Academic Introductory Modules

Introduction to Environmental Management

Introduction to Landscape Ecology

Conservation Ecology

Introduction to GIS Applications

Restoration of degraded ecosystems

Microbial Ecology

Short Course at CEM (Centre for Environmental Management) in Basic Principles of Ecological Rehabilitation and Mine closure 28 September – 2 October 2015

Publications

DREBER, N., VAN ROOYEN, S.E. AND KELLNER, K. 2017. Relationship of plant diversity and bush cover in rangelands of a semi-arid Kalahari savannah, South Africa. John Wiley & Sons *African Journal of Ecology*



ENVIRONMENTAL MANAGEMENT GROUP

Specialists in Environmental Management
Integrating Industry and Infrastructure with the Environment

Tel: +27 51 412 6350
Fax: +27 51 412 6351
Email: ckruger@envmgrp.com
Postal Address:
P.O.Box 37473,
Langenhoven Park 9330

Environmental Impact Assessment Projects

Type	Client	Project	Role
Waste	Metsimaholo Local Municipality	Scoping/EIA; WULA application for the development of a new landfill site in Sasolburg	Lead EAP
	Joe Morolong Local Municipality	Scoping/EIA application for the development of a new landfill site in Hotazel	Lead EAP
Mining Permits or Rights	Danoher Contracting (PTY) Ltd	Mining Right application for a gravel BP in Bloemfontein	
	Michael Gutter	Mining Permit in Theunissen, Free State Province	Lead EAP
	Department of Rural Development and Land Reform	Mining Permit application for a sandstone Quarry in Zastron	Lead EAP
Road Construction	Free State Department of Police, Roads and Transport	BAR/IWUL/Mining Permit applications/ECO for the Deneysville - Jim Fouché road rehabilitation	Review of reports
	Free State Department of Police, Roads and Transport	BAR/IWUL/Mining Permit applications/ECO for the Deneysville - Heilbron road upgrading	Review of reports
	Free State Department of Police, Roads and Transport	BAR/IWUL applications/ECO for the Schonkenville - Koppies road upgrading	Review of reports
	SANRAL	BAR/IWUL/ECO applications for the N1 Section 16 road upgrade	Assistant EAP
	SANRAL	ECO Periodic Maintenance on National Route N6 Sec 8 from Reddersburg (km 0.00) to Rustfontein (km37.8)	Lead EAP
	Department of Roads and Public Works, Northern Cape	BAR/IWUL/Mining Permit applications for the MR 938 Mamatwan road upgrade	Assistant EAP
	Free State Department of Police, Roads and Transport	ECO for the internal road upgrades in Thumahole, Free State Province.	Review of reports



ENVIRONMENTAL MANAGEMENT GROUP

Specialists in Environmental Management
Integrating Industry and Infrastructure with the Environment

Tel: +27 51 412 6350
Fax: +27 51 412 6351
Email: ckruger@envmgrp.com
Postal Address:
P.O.Box 37473,
Langenhoven Park 9330

	Department of Roads and Public Works, Northern Cape	Environmental Screening/BAR/IWUL/ DAFF Permit applications/ECO for the BK126 Magobing to Bathlaros road upgrade.	Lead EAP
	Department of Roads and Public Works, Northern Cape	Environmental Screening/BAR/IWUL/ DAFF Permit applications/ECO for the Tsineng to Washington road upgrade.	Lead EAP
	Department of Roads and Public Works, Northern Cape	BAR/IWUL/ DAFF Permit applications/ECO for the Hotazel to Maipeng road upgrade.	Lead EAP
Infrastructure Developments	Amatola Water	IWUL application/ECO for the installation of a bulk water pipeline, Herschel	Assistant EAP
	Maluti A Phofung Local Municipality	IWUL application/ECO for the installation of a bulk water pipeline, Kestell to Qwa Qwa	Assistant EAP
	Dr. Ruth Segomotsi Mompoti District Municipality	BAR and IWUL applications for the upgrading of the Waste Water Treatment Works in Stella	Lead EAP
	Dr. Ruth Segomotsi Mompoti District Municipality	Environmental Screening/EMP/IWULA/ECO for the construction of a water provision project for the village of Reivilo, Shaleng, Madipelesa, Karelstad, Mothlako, Molelema, Lykso, Pitsong and Kameelputs, North-West Province.	Lead EAP
	Dr. Ruth Segomotsi Mompoti District Municipality	Environmental Screening/ EMP/IWULA/ECO for the construction of a water provision project for the village of Schweizer-reneke, Piet Plessis, Konke, Broedersput, Geduldspan, Louwna, Mabone and Maeng, North-West Province.	Lead EAP
	Department of Rural Development and Land Reform	Scoping EIA, WULA and Air Emission License for the development of a Brick factory in Thaba-Nchu	Lead EAP
	Dr. Ruth Segomotsi Mompoti District Municipality	Section 24G for the development of a pump station in the Wentzel Dam, Schweizer-reneke, North-West Province.	Lead EAP
	AURECON	ECO for the upgrading of 12 Bridges in the De Aar and Upington Areas,	Lead EAP



ENVIRONMENTAL MANAGEMENT GROUP

Specialists in Environmental Management
Integrating Industry and Infrastructure with the Environment

Tel: +27 51 412 6350
Fax: +27 51 412 6351
Email: ckruger@envmgp.com
Postal Address:
P.O.Box 37473,
Langenhoven Park 9330

	EUROMID AFRICA Development	EIA/Scoping/IWULA and ECO for MATJHABENG PRECINCT IDP PROJECT 201621, Free State Province.	Lead EAP
	Umfundu Professional Services CC.	IWULA and EIA/Scoping for the Mmamahabane cemetery establishment, Free State	Review of reports
	LMV (PTY) LTD.	Environmental Screening for the school development in Maokeng (Kroonstad) - Erwe 1500 & 24628, Free State Province	Lead EAP
	AURECON	Environmental Screening/BAR/WULA/ECO for Lindley Water Treatment Works and Pipeline route, Free State Province	Lead EAP
Residential Developments	Greater Taung Local Municipality	BAR application for Boipela Residential Development Extension in Reivilo	Lead EAP
Agriculture	VS Kunsmis	Scoping/EIA application for expansion of storage of a dangerous good at Vrede	Assistant EAP
	Linheim	BAR/ECO for the expansion of the Linheim Sheep Feedlot, Free State Province	Lead EAP
	Wildeklawer	BAR application for the expansion of pivot systems near Barkley West	Assistant EAP
	Department of Rural Development and Land Reform	Environmental Screening/BAR and WULA application for the development of an Agri-Park in Parys, Free State	Lead EAP
	Department of Rural Development and Land Reform	Environmental Screening/S24G and WULA application for the development of an Agri-Park in Springfontein, Free State	Lead EAP
	Department of Rural Development and Land Reform	S24G and WULA application for the development of an Agri-Park in Thaba-Nchu, Free State	Lead EAP
	Department of Rural Development and Land Reform	Environmental Screening for the development of an Agri-Park in Tsiame, Free State	Lead EAP
	Department of Rural Development and Land Reform	Environmental Screening/BAR and WULA application for the development of an Agri-Park in Wesselsbron, Free State	Lead EAP



ENVIRONMENTAL MANAGEMENT GROUP

Specialists in Environmental Management
Integrating Industry and Infrastructure with the Environment

Tel: +27 51 412 6350
Fax: +27 51 412 6351
Email: ckruger@envmgrp.com
Postal Address:
P.O.Box 37473,
Langenhoven Park 9330

	Department of Rural Development and Land Reform	Environmental Screening/BAR and WULA application for the development of a Farmer Production Support Unit in Koffiefontein, Free State	Lead EAP
	Department of Rural Development and Land Reform	Environmental Screening/BAR and WULA application for the development of a Farmer Production Support Unit in Odendalsrus, Free State	Lead EAP
	Department of Rural Development and Land Reform	Environmental Screening for the development of a Farmer Production Support Unit in Sediba, Free State	Lead EAP
	Department of Rural Development and Land Reform	Environmental Screening/BAR application for the development of a Farmer Production Support Unit in Kroonstad, Free State	Lead EAP

- *EIA *Environmental Impact Assessment*
- *BAR *Basic Assessment Report*
- *EMP *Environmental Management Plan*
- *S24G *Section 24G (Application for rectification)*
- *IWULA *Integrated Water Use License Application*
- *ECO *Environmental Control Officer*
- *EAP *Environmental Assessment Practitioner*

EMG



ENVIRONMENTAL MANAGEMENT GROUP

Specialists in Environmental Management
Integrating Industry and Infrastructure with the Environment

Tel: +27 51 412 6350
Fax: +27 51 412 6351
Email: ckruger@envmgp.com
Postal Address:
P.O.Box 37473,
Langenhoven Park 9330

Ecological Specialist Reports

Fauna Habitat Assessment Specialist Reports:

- **Johannesburg**
 - Clubview extension 95 & 91: Mixed use Development
 - Fairlands: Road Interchange
- **Pretoria**
 - Knoppieslaagte: Industrial Development
 - Lanseria: Mixed Use Development
 - Lanseria extension 56: Mixed Use Development
 - Pretoria Gardens: Residential Development
 - Wattle Springs: Residential Development
 - PWV 17: Proposed Road Construction
 - Sunderland Ridge extension 24: Industrial Development
- **Boksburg**
 - Leeuwpoot: Residential Development
- **Randburg**
 - Land Parcel 9: Mixed Use Development
 - Land Parcel 10: Mixed Use Development
 - Waterfall Kikuyu: Mixed Use Development
- **Brits**
 - Winterveld: Residential Development

Flora Habitat Assessment Specialist Reports:

- **Johannesburg**
 - Clubview extension 95 & 91: Mixed use Development
 - Fairlands: Road Interchange
- **Pretoria**
 - Knoppieslaagte: Industrial Development
 - Lanseria extension 51 & 53: Mixed Use Development
 - Mogale extension 5: Mixed Use Development
 - Lanseria extension 56: Mixed Use Development
 - Pretoria Gardens: Residential Development
 - Wattle Springs: Residential Development
 - PWV 17: Proposed Road Development
 - Sunderland Ridge extension 24: Industrial Development
 - Randjiesfontein: Residential Development
 - Rooihuiskraal: Mixed Use Development
 - Garsfontein: Residential Development
 - Knoppieslaagte extension 73: Industrial Development
 - Knoppieslaagte extension 95: Industrial Development



ENVIRONMENTAL MANAGEMENT GROUP

Specialists in Environmental Management
Integrating Industry and Infrastructure with the Environment

Tel: +27 51 412 6350
Fax: +27 51 412 6351
Email: ckruger@envmgrp.com
Postal Address:
P.O.Box 37473,
Langenhoven Park 9330

- Swartkoppies: Mixed Use Development
- Waterfall fields: Residential Development
- Waterfall Ridge: Mixed Use Development
- **Boksburg**
 - Leeuwpoot: Residential Development
- **Randburg**
 - Land Parcel 9: Mixed Use Development
 - Land Parcel 10: Mixed Use Development
 - Waterfall Kikuyu: Mixed Use Development
 - Greystone: Mixed Use Development
- **Brits**
 - Winterveld: Residential Development
- **Vereeniging**
 - K 47: Proposed Road Development
 - K 77: Proposed Road Development
- **Limpopo**
 - Steelpoort: Industrial Development
- **Bloemfontein**
 - Section 16 N1 Road: Road Development
- **Kimberley**
 - Erf 11920: Residential Development
 - Wildeklaver: Agricultural Development
- **Parys**
 - Parys Agri-Park: Mixed Use Development
- **Springfontein**
 - Springfontein Agri-Park: Mixed Use Development

EMG

Appendix I: Specialist's declaration of interest

DETAILS OF SPECIALIST AND DECLARATION OF INTEREST

Application for authorisation in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998) amended and the Environmental Impact Assessment Regulations, 2014

PROJECT TITLE

Proposed Development of Relebohile Poultry Facility – Wesselsbron

Specialist:	Darius van Rensburg		
Company Name:	DPR Ecologists & Environmental Services		
Contact person:	Darius van Rensburg		
Postal address:	PO Box 112726 Brandhof		
Postal code:	9324	Cell:	0834100770
Telephone:		Fax:	
E-mail:	darius@dprecologists.co.za		
Professional affiliation(s) (if any)	Wetland Ecologist		

Project Consultant:	Environmental Management Group (PTY) LTD		
Contact person:	Sampie van Rooyen		
Postal address:	P.O Box 37473 Langenhoven Park		
Postal code:	37473	Fax:	051 412 6351
Telephone:	051 412 6350	Cell:	083 678 3032
E-mail:	svr@envmgrp.com		

The specialist appointed in terms of the Regulations.

I, Darius van Rensburg, declare that:

General declaration:

- I act as the independent specialist in this application
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, regulations and all other applicable legislation;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- all the particulars furnished by me in this form are true and correct; and
- I realise that a false declaration is an offence in terms of Regulation 71 and is punishable in terms of section 24F of the Act.



Signature of the specialist:

DPR Ecologists

Name of company (if applicable):

09/07/2019

Date:

DETAILS OF SPECIALIST AND DECLARATION OF INTEREST

Application for authorisation in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998) amended and the Environmental Impact Assessment Regulations, 2014

PROJECT TITLE

Proposed Development of Relebohile Poultry Facility – Wesselsbron

Specialist:	Lloyd Rossouw		
Company Name:	Palaeo Field Services		
Contact person:	Lloyd Rossouw		
Postal address:	PO Box 38806 Langenhoven Park		
Postal code:	9330	Cell:	0842505992
Telephone:	-	Fax:	0864010679
E-mail:	lloyd.rossouw@gmail.com		
Professional affiliation(s) (if any)	Archaeology and Cultural Anthropology Specialist		

Project Consultant:	Environmental Management Group (PTY) LTD		
Contact person:	Sampie van Rooyen		
Postal address:	P.O Box 37473 Langenhoven Park		
Postal code:	37473	Fax:	051 412 6351
Telephone:	051 412 6350	Cell:	083 678 3032
E-mail:	svr@envmgrp.com		

The specialist appointed in terms of the Regulations.

I, Lloyd Rossouw, declare that:

General declaration:

- I act as the independent specialist in this application
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, regulations and all other applicable legislation;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- all the particulars furnished by me in this form are true and correct; and
- I realise that a false declaration is an offence in terms of Regulation 71 and is punishable in terms of section 24F of the Act.



Signature of the specialist:

Paleo Field Services

Name of company (if applicable):

01/08/2019

Date:

Appendix J: Property Lease agreement

Handwritten scribbles and initials: a circle with diagonal lines, "M.P.S.S.", "S.H.", and "P.S.H."

MEMORANDUM OF AGREEMENT

(Herein referred to as the "LESSEE")

Herein after represented by Me Sana Aumari Rampa in his capacity as the Chairperson duly authorize thereto.

RELEBOHILE POULTRY

AND

(Herein after referred to as the "LESSOR" of the one part)

Herein represented by MR. B.C. MOKOMELA in his capacity AS MUNICIPAL MANAGER duly authorized and acting in terms of Local Government Municipal Systems Act no:32 of 2000.

NALA LOCAL MUNICIPALITY

Made and entered into by and between

MEMORANDUM OF AGREEMENT

DEED OF LEASE



Handwritten scribble and initials: S.S. M.R. P.S.H.

MEMORANDUM OF AGREEMENT

5.1. The LESSEE is entitled to use the farm to plough grain products and dairy as prescribed by the Department of Agriculture within the terms of the SOIL CONSERVATION ACT NO.83 of 1973.
5.2 The LESSEE shall not permit any activity on the premises other than the ones herein before set out and shall ensure that no activity shall be carried out on the premises in conflict with the statutory enactment ordinance, regulation or measure having the force of law on the said leased premises.

5. The rental amount shall be paid at the Finance Department at the Municipal Offices in Wesselsbron (Main Building).

4. 3.1 The rental shall be an amount of R0.00 per annum.

The annual rental payable by the LESSEE to the LESSOR shall be as follows:

3.

21. Either party may terminate the agreement by giving one year written notice to the other of such cancellation.
The lease shall commence from 1-NOVEMBER-2016 and shall be construed to continue for a period of Three years until 31 DECEMBER-2019.

2

The LESSOR hereby lets the LESSEE who hereby hires the portion of a farm measured at 2 hectares.

1.

NOW THEREFORE PRESENT WITNESSES

Situated in Wesselsbron District (hereinafter referred to as PREMISES), and subject to the following terms and conditions:

RELEBOHILE POULTRY

WHEREAS the NALA LOCAL MUNICIPALITY and the LESSEE have agreed to enter into this DEED OF LEASE in respect of the

SS M.R. SH

MEMORANDUM OF AGREEMENT

The LESSEE shall have no right of resource against the LESSOR in respect of any improvement affected by him to the premises.

11.

The LESSEE shall maintain the premises and operations in clean, tidy and hygienic order, and will also be responsible for the erection and maintenance of the fences. The LESSEE and the LESSOR shall be jointly responsible for the boundary fences between the premises and the municipal boundary.

10.

The LESSOR shall be notified in writing of the intension to make any structural alterations to any of the existing buildings on the premises.

9.

8.1.3. Assign this lease or cede any of its rights under this lease.

8.1.2. Allow any other party to occupy the premises or any other part thereof on any conditions or for any reason;

8.1.1. Sublet the premises or any part thereof;

8.1. The LESSEE shall not without the prior consent of the LESSOR:

8.

It is recorded hereto that the rights on all minerals, rocks, precious and non-precious metals, are reserved in favour of Nala Local Municipality, and may be used as deemed necessary by the municipality.

7.

It is recorded hereto that the applicable tariffs will apply in the event of Municipal Water being used. The LESSEE will ensure that no contamination of the natural water resource on the premises will be permitted and that the LESSEE shall pay for any repairs resulting from misuse.

6.

5.3 it is recoded by the parties hereto that should any of the premises or any portion thereof be required by the LESSOR for any reason whatsoever, then the required premises or portion thereof shall be made available by the LESSEE.

Handwritten notes: "S.S", "S.H", "M.R" and a scribble.

MEMORANDUM OF AGREEMENT

should the LESSEE not effect payment of the rental on/ or before the due date, or should the LESSEE suffer or permit the commission of any breach or any conditions of this lease and fails to pay rental or to remedy the breach, notwithstanding 7 (seven) days, notice to the LESSEE demanding payment or compliance, or should the LESSEE be placed in liquidation or be declared insolvent or be sequestrated, or should the LESSEE suffer a judgment to be entered against it, or should the LESSEE leave, vacate or desert the premise without notice, the LESSOR shall be entitled in its sole discretion and not withstanding any previous waiver, and without prejudice to any legal rights it may have, forthwith to cancel and terminate this lease and enter upon and take possession and occupation of the premise without any prejudice to any of its rights to claim for the payment of any unpaid rental or damages to breach of the contract, the LESSOR having the specific right to claim compensation from the LESSEE for all damages which it, the LESSOR, may suffer as a result of such termination and cancellation of the lease, and all improvements made by the LESSEE to the premises, shall immediately be forfeited in favour of the LESSOR.

18.

The LESSOR reserves the right to plan for the soil erosion or any other soil conservations projects, the LESSOR or his representatives will have free access to any portion of the premises.

17.

The LESSEE will not be entitled to cut down or remove any trees from the premises.

16.

The LESSEE will be responsible to take precautions against fire on the premises, but should the premises, during the duration of this lease or any extension thereof, be wholly destroyed, or extensively damaged by fire, this lease could be terminated with immediate effect, and the LESSEE shall not have the right to claim damages from the LESSOR.

15.

The LESSOR or its agent will be entitled at all reasonable times during the subsistence of the leased agreement to enter upon the premises for the purpose of inspection or any reason, in terms of this lease.

14.

No squatters or any other form of houses will be allowed on the premises.

13.

The LESSEE will indemnify the municipality against the claims or losses that may occur as a result of the LESSEE'S use or occupation of the leased premises.

12.

S.S. M.R. P.S. S.H.

No agreement contrary to the terms and conditions of this agreement shall be binding on the parties hereto unless endorsed on this agreement and dated and signed by the parties to this agreement.

24.

The parties hereby find themselves with the alternate dispute resolution mechanism commencing with the mediation the arbitration process in instances where any dispute arise amongst them. This shall be done in compliance with the applicable Act as governing the process in terms of the laws of the Republic of South Africa.

23. Dispute Resolution

23.

WESSELSBRON
25 P.L. Kotze Street.

22.2. The LESSOR chooses its domicilium citandi et excutandi for all purpose this agreement at:

22.1 The LESSEE choses its domicilium citandi et executandi for all purpose this agreement at: portion LED (Monyakeng) district of Wesselsbron.

22.

The parties hereto consent to the jurisdiction of the magistrate court for any action that might arise from this agreement without prejudice to any rights they might have to institute action in any other competent higher court which may have jurisdiction.

21.

The premises are leased "voetstoot" and the LESSEE receives no guarantees regarding the land or any improvements thereon.

20.

It is recorded hereto that the LESSEE shall be responsible for the removal of any noxious weeds from the premises.

19.

PPSA
M.P.
S.S.

MEMORANDUM OF AGREEMENT


On behalf of the "LESSEE"


2. 


1. 
AS WITNESSES:

THIS DONE and SIGNED IN WESSELBROON on this _____ day of _____ 2017 in the presence of the undersigned competent witnesses:



On behalf of Nala Local Municipality


2. _____

1. 
AS WITNESS

THIS DONE and SIGNED IN WESSELBROON on this 26 day of May 2017 in the presence of the undersigned competent witnesses: