

Appendix J:

Environmental Management
Programme (EMPr)

36 Lebombo Street, Ashlea Gardens
PO Box 11375, Maroelana, 0161
012 346 3810
086 570 5659
reception@bokamoso.net
www.bokamoso.net

BOKAMOS
Landscape Architects & Environmental Consultants CC



ENVIRONMENTAL MANAGEMENT PROGRAMME FOR THE PROPOSED KROON'S GOURMET CHICKENS HATCHERY

To be situated on Portion 322 of the Farm Hartebeesfontein
445 JQ

August 2019

Prepared by:

Bokamoso Landscape Architects and
Environmental Consultants CC

Tel: (012) 346 3810

Fax: 086 570 5659

E-mail: reception@bokamoso.net

Website: www.bokamoso.net

PO BOX 11375

MAROELANA

0161

Prepared for:

**Kroon's Gourmet Chickens (Pty) Ltd
Hatchery**

Jacques Kroon

Tel: 012 504 2117

E-mail: jacques@kroonchickens.co.za

PO Box 48657

Hercules

0030

BOKAMOS
Landscape Architects & Environmental Consultants CC



Compliance with Appendix 4 of 2014 NEMA EIA Regulations, as amended

Section	Requirement	Location addressed in EMPr
1 (1)	An EMPr must comply with section 24N of the Act and include—	
(a)	details of—	Refer Report details, page 3
(i)	the EAP who prepared the EMPr; and	
(ii)	the expertise of that EAP to prepare an EMPr, including a curriculum vitae;	
(b)	a detailed description of the aspects of the activity that are covered by the EMPr as identified by the project description;	Refer to Section 1.2
(c)	a map at an appropriate scale which superimposes the proposed activity, its associated structures, and infrastructure on the environmental sensitivities of the preferred site, indicating any areas that should be avoided, including buffers;	Refer to Section 1.4 and Figure 3
(d)	a description of the impact management outcomes, including management statements, identifying the impacts and risks that need to be avoided, managed and mitigated as identified through the environmental impact assessment process for all phases of the development including—	Refer to Section 1.3 and 4
(i)	planning and design;	
(ii)	Pre-construction activities;	
(iii)	construction activities;	
(iv)	rehabilitation of the environment after construction and where applicable post closure; and	
(v)	where relevant, operation activities;	
(f)	A description of proposed impact management actions, identifying the manner in which the impact management outcomes contemplated in paragraph (d) will be achieved, and must, where applicable, include actions to —	Refer to Section 4
(i)	avoid, modify, remedy, control or stop any action, activity or process which causes pollution or environmental degradation;	
(ii)	comply with any prescribed environmental management standards or practices;	
(iii)	comply with any applicable provisions of the Act regarding closure, where applicable; and	
(iv)	comply with any provisions of the Act regarding financial provision for rehabilitation, where applicable;	
(g)	the method of monitoring the implementation of the impact management actions contemplated in paragraph (f);	Refer Section 3 and 4
(h)	the frequency of monitoring the implementation of the impact management actions contemplated in paragraph (f);	Refer to Section 4
(i)	an indication of the persons who will be responsible for the implementation of the impact management actions;	Refer to Section 3 and 4
(j)	the time periods within which the impact management actions contemplated in paragraph (f) must be implemented;	Refer to Section 3 and 4
(k)	the mechanism for monitoring compliance with the impact management actions contemplated in paragraph (f);	Refer to Section 4
(l)	a program for reporting on compliance, taking into account the requirements as prescribed by the Regulations;	Refer to Section 5
(m)	an environmental awareness plan describing the manner in which—	Refer to Appendix A
(i)	the applicant intends to inform his or her employees of any environmental risk which may result from their work; and	
(ii)	risks must be dealt with in order to avoid pollution or the degradation of the environment; and	
(n)	any specific information that may be required by the competent authority.	NA
(2)	Where a government notice gazetted by the Minister provides for a generic EMPr, such generic EMPr as indicated in such notice will apply.	NA

Report details

Status	Rev 0
Report Title	Environmental Management Programme for the proposed Kroon's Gourmet Chickens Hatchery
Date Submitted	August 2019
Project Consultant	Bokamoso Landscape Architects and Environmental Consultants CC
Prepared by	Adèle Drake, BA. (University of Pretoria), NQF Level 7 Air Quality Management (University of Johannesburg) Adèle has 15 years' experience in the field of environmental management within the following industries; mining, forestry, renewables and consulting.
Reviewed by	Lizelle Gregory, (BLArch) Lizelle has 25 years' experience in the field of environmental management and is a member of the South African Council of the Landscape Architects Profession (SACLAP Professional Practice Number: 97078
Declaration	I, Adèle Drake, as authorised representative of Bokamoso Landscape Architects and Environmental Consultants CC hereby confirm my independence in terms of Section 13.(1)(a) of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended 2014 EIA Regulations as amended.
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1 Project description

1.1 Background

Kroon's Chickens appointed Bokamoso Landscape Architects and Environmental Consultants CC to conduct an Environmental Impact Assessment (EIA) process and Environmental Management Programme (EMPr) in terms of the National Environmental Management Act (NEMA), 1998 (Act No. 107 of 1998, as amended) for the proposed Kroon's Chickens Hatchery Development on one of three properties situated within Madibeng Local Municipality, Bonjanala Platinum District Municipality, North West Province.

The applicant is a well-known chicken farmer and urgently requires a new hatchery in close proximity of their current chicken broiler's and abattoir. Even though the hatchery needs to be in close proximity of the current facility for logistical purposes, it cannot be located on the same property than the broilers and abattoir based on **The South African Poultry Association Code of Practice: Chick Hatchery**. In terms of the Code of Practice a hatchery facility should be established in an isolated geographical location far away from other poultry and livestock due to facility hygiene and disease control.

Note Regarding Report format

This application for environmental authorisation was initially completed on the North West Department of Rural, Environment and Agricultural Development (NWREAD) Template for a Basic Assessment Report, December 2014. NWREAD officials however advised during June 2019 that the Basic Assessment Report should not be completed on the former NWREAD Template, but must conform to Appendix 1 of the National Environmental Management Act (NEMA), 1998 (Act No. 107 of 1998, as amended) 2014 Environmental Impact Assessment (EIA) Regulations, as amended April 2017.

Environmental Management Programme (EMPr) for the proposed Kroon's Gourmet Chickens Hatchery

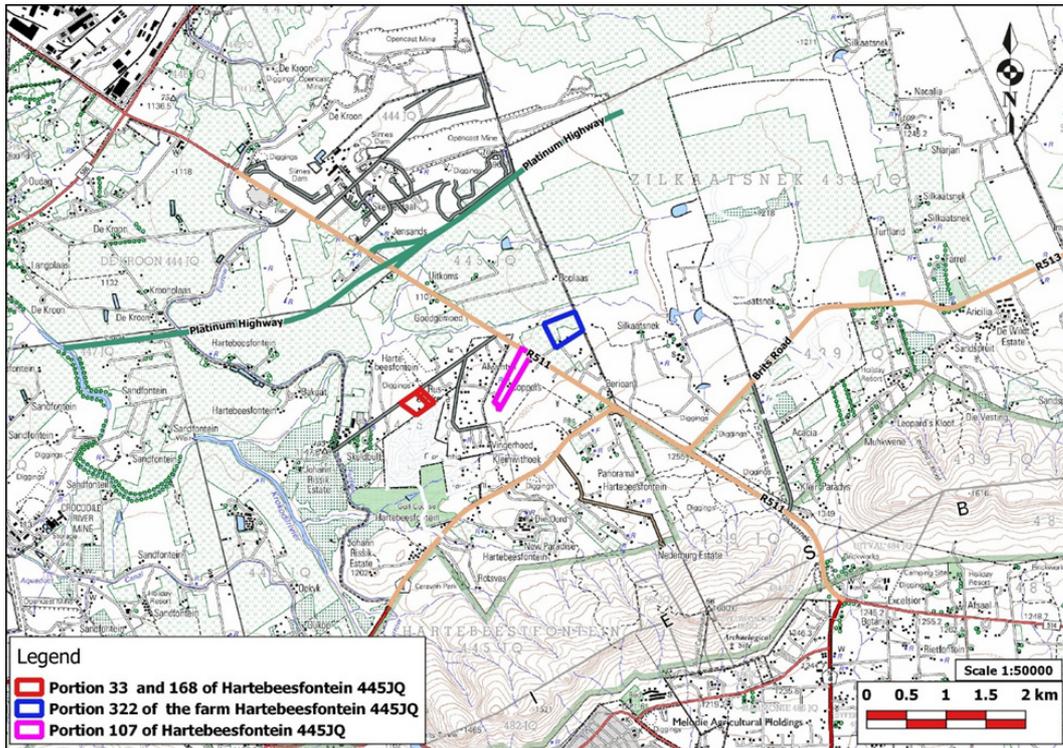


Figure 1: Locality map

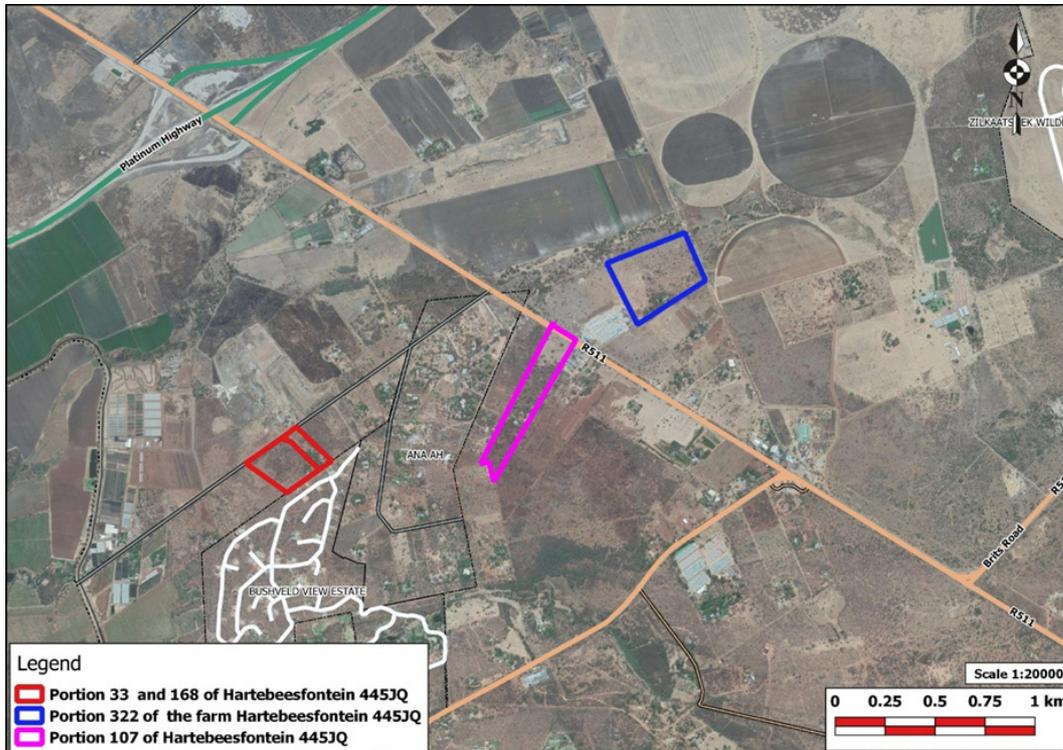


Figure 2: Aerial map

1.2 Description of aspects of the (activity) listed activities associated with the proposed development

The proposed Kroon's Chickens Hatchery facility to be constructed over five phases, will eventually cover a surface area of 4 100m² capable of hatching approximately 600 000 chicks per week. A "Hatchery" is a facility where poultry eggs are hatched under artificial conditions. The eggs usually hatch within 21 days and an egg incubator is required to assist with the controlling of temperature, humidity and egg turning. Chicks are dispatched from the hatchery site as soon as possible after hatching to ensure that they receive food and water within 48 hours. Refer to Section 1.3.1 for a description of the hatchery facility structures and associated infrastructure.

It must be emphasized that a hatchery is very different from a broiler as the facility is enclosed and live chicks are dispatched off site within 48 hours. The potential nuisance impacts of a hatchery thus differ significantly from that of a broiler farm. Biosecurity is of utmost importance to ensure healthy chicks.

The hatchery facility will comprise of egg receiving areas, egg storage rooms, incubation rooms, hatching rooms, chick handling rooms and hatchery debris removal and storage. It is estimated that approximately 9.7 tons of solid waste will be generated per week (38.8t per month) which includes, office waste and biological waste in the form of infertile eggs, mortalities and egg shells. Biological waste will go through a macerator situated inside the facility before being transferred into steel drums situated outside the facility via a screw conveyor. The biological waste will then be transported to the Kroon's Chickens Abattoir's rendering plant.

Ancillary activities associated with the hatchery facility will include the upgrading of an existing access road which falls within a registered 9.44m wide servitude, construction of an on-site sewage package plant and waste water pond, irrigation with wastewater and groundwater abstraction. Effluent (waste water) from the

hatchery facility in the form of wash water containing soap, detergent and fluff of approximately 160m³ per week (640m³ per month), as well as treated effluent from the on-site package plant, will be discharged into the waste water pond for the purpose of irrigation.

1.3 Impacts on and risks identified to the receiving environment (proposed development site) and management actions

Geology:

- The subject site falls within an area known for pyroxinite, harzburgite and norite soils.

Hydrology & Wetlands:

- The study site occurs within the quaternary catchment A21J, Upper Crocodile Sub-catchment in the Limpopo Water Management Area. A non-perennial tributary of the Crocodile River flows from east to west past the site outside the northern boundary.
- A Wetland Delineation and Risk Assessment Report dated March 2019 concluded that no wetlands occur within a 500m radius from the proposed Hatchery site, however a 100m buffer was recommended for the non-perennial watercourse due to the study site occurring outside the urban edge. No development is planned within this buffer area as part of the proposed Hatchery. The Ecological Importance and Sensitivity of the watercourse is regarded as being Moderate due to high vegetation cover.

Topography

- In terms of the topography of the study site, the site slopes from south to north towards the Crocodile River tributary with an elevation difference of 5 to 10m occurring over the 300m width of the site.

Climate

- Should the construction phase be scheduled for the summer months, appropriate erosion and siltation measures must be implemented.

Fauna and flora:

- The preferred site alternative occurs within a Savannah Biome within the Central Bushveld Bioregion and the Moot Plains Bushveld Vegetation Unit.
- The north-eastern corner of the site occurs within a Threatened Ecosystem in the form of the Marikana Thornveld, carrying the status Vulnerable.
- According to the North West Biodiversity Sector Plan, the proposed development site has moderate to high hyperdiversity and is classified as Critical Important Area in terms of Flora. According to the South African National Biodiversity Institute (SANBI) Geographical Information System, the proposed Hatchery site occurs within an Important Bird and Biodiversity Area (IBA) which is in a natural state.

Agricultural:

- The study site falls within an area that is earmarked as arable.

Cultural /Historical:

- A Phase 1 Heritage Impact Assessment Report was conducted by A Pelsers Archaeological Consulting (APAC). No sites of cultural significance were identified on the preferred site (Site Alternative 2).

Social:

- The proposed chicken hatchery is viewed as a societal priority due to the contribution to food production, as egg production is not conducted on a large scale within the Madibeng Local Municipality, therefore, the proposed hatchery will indirectly contribute to

expanding the commercial farming sector, specifically egg production.

- The hatchery is also in line with the Integrated Development Plan (IDP) and the Spatial Development Plan (SDP) as the development will be contributing towards food production and employment creation.

Visual

- Portion 322 is separated from Road R511 by the concrete brick factory known as Horizon Bricks. No visual impact is foreseen.
- Site Alternative 3 is situated on Portions 33 and 168 of the Farm Hartebeestfontein 445 JQ, and a residential estate namely Bushveld View Estate is located to the immediate south of the study site and the Multi Plant Seedling Nursery is located to the north-west of the study site. Should this site Alternative be chosen, there could be a potential visual impact.

Air Pollution (dust and noise):

- The study site of Portion 322 is located the furthest from the residential areas (specifically Bushveld View Estate and Ana Agricultural Holdings), and is therefore very unlikely to pose an air pollution issue in terms of odour which would cause continuous complaints by the residents.
- The wind direction is easterly during winter and westerly during summer. Any probable odour emanating from the hatchery would affect the Horizon Brick factory.

Erosion and loss of topsoil:

- Ensure sloped rehabilitated areas do not erode by using appropriate erosion control such as berms and stakes.
- Rehabilitate slope areas to 1:3 and cover with topsoil, revegetate and water regularly.

- Ensure that Storm water is properly managed and diverted around the site to avoid erosion.
- Rehabilitation with stockpiled topsoil to occur as soon as possible.

Service provision:

- A 24-hour yield test is required to confirm availability of water for all five phases of the hatchery development.
- Bulk water tanks maybe required for the storage of the abstracted water.
- The construction of an on-site sewage package plant and waste water pond will be required for the treatment of sewage generated by the proposed hatchery. This is due to no current municipal connection available.
- In terms of road infrastructure, the proposed hatchery will include the upgrade of an existing access road which falls within registered 9.44m wide servitude.
- The proposed service infrastructure such as the proposed on-site sewage package plant, abstraction of water from the existing borehole and due to the non-perennial tributary of the Crocodile River flowing from the east to the west passed the site along the northern boundary; a Section 21 WULA will need to be applied for.
- Regarding the electrical supply to the proposed hatchery, the site has an existing dwelling unit which is supplied with electricity. The electricity is supplied from an existing 25kVA transformer situated on Pole BL14/2 located at the entrance to Portion 322. Eskom confirmed in e-mail correspondence dated 12 October 2018 that they will be able to upgrade the transformer to a 500kVA transformer immediately subsequent to the property transferring to Kroon Chickens.

1.4 Environmental sensitivities

The most significant environmental sensitivities associated with the proposed chicken hatchery site development and associated infrastructure are listed below and presented in **Figure 3**:

- A non-perennial tributary of the Crocodile River which flows from east to west passed the site outside the northern boundary. A 100m buffer is recommended for the non-perennial watercourse due to the study site occurring outside of the urban edge.
- The North West Biodiversity Sector Plan (NW BSP) 2015 denotes the non-perennial tributary of the Crocodile River flowing from east to west past the northern boundary of the proposed development site as an Instream Wetland classed as Ecological Support Area 1 (ESA1).
- Approximately 60% (eastern part) of Portion 322 is classified as Critical Biodiversity Area 2 (CBA2) and the remaining 40% (western part) is classified as Ecological Support Area 2 (ESA2) due to occurring within the 5km buffer of a Protected Area in the form of the Hartbeespoort Nature Reserve and the Magaliesberg Nature Reserve and due to occurring within an Important Bird Area and within a Freshwater Ecosystem Protected Area (FEPA) Catchment.

The proposed development site occurs within the 5km buffer of a Protected Area, thus certain NEMA listed activities apply to the proposed hatchery development.

2 Environmental Management Programme (EMPr) objectives

The objective of this programme is to comply with Section 24N of NEMA as well as Appendix 4 of the NEMA 2014 EIA Regulations as amended.

In accordance with Section 24N(2) of the National Environmental Management Act, Act No. 107 of 1998, as amended, this EMPr contains management, mitigation, protection or remedial measures that will be undertaken to address the environmental impacts that have been identified for the following phases of the proposed project:

- Planning and design phase;
- Pre-construction phase;
- Construction phase;
- Rehabilitation phase; and
- Operational phase.

3 Roles and responsibility in terms of monitoring and implementation

In order for the EMPr to be successfully implemented all role players involved from planning through to operation, must have a clear understanding of their roles and responsibilities in terms of monitoring and implementing the impacts management actions tabulated in **Section 4**.

3.1 Roles and responsibilities

Holder of Environmental Authorisation (EA)

The holder of the EA is ultimately accountable for ensuring compliance with the EMPr and conditions contained in the Environmental Authorisation. The holder of the EA must appoint an independent Environmental Control Officer (ECO), for the duration of the pre-construction and construction phases, to ensure compliance with the requirements of this EMPr. The holder must ensure that the ECO is integrated as part of the project team. The responsibility of compliance will be carried across to the individual property owners/lessees upon completion of construction. A copy of this document must be supplied to all contractors and subcontractors appointed, as well as C.

Project Manager

The project manager appointed by the holder of the EA is responsible to ensure compliance with this EMPr through delegation of the EMPr to the contractors and monitoring of performance as per the Environmental Control Officer's monthly reports.

Environmental Control Officer (ECO)

An independent Environmental Control Officer (ECO) shall be appointed by the holder of the EA, for the duration of all phases of the proposed project, to ensure compliance with the requirements of this EMPr.

- The Environmental Control Officer shall ensure that the contractor is aware of all the specifications pertaining to the project;
- Any damage to the environment must be repaired as soon as possible after consultation between the Environmental Control Officer, Project Engineer and Contractor;
- The Environmental Control Officer shall ensure that the project staff and/or contractor(s) adhere to all measures stipulated in the EMPr;
- The Environmental Control Officer shall be responsible for monitoring the EMPr throughout the project phases by means of site visits and meetings. This should be documented as part of the site meeting minutes;
- The Environmental Control Officer shall be responsible for the environmental awareness training program;
- The Environmental Control Officer shall ensure that all clean up and rehabilitation or any remedial action required, are completed prior to transfer of properties; and
- A post construction environmental audit is to be conducted to ensure that all conditions in the EMPr have been adhered to.

Contractor (C):

The contractors shall be responsible for ensuring that all activities on site are undertaken in accordance with the environmental measures stipulated in this EMPr and that sub-contractor(s) and labourers are duly informed of their roles and responsibilities in this regard.

The contractor will be required, where specified to provide Method Statements setting out in detail how the management actions contained in the EMPr will be implemented.

The contractors will be responsible for the cost of rehabilitation of any environmental damage that may result from non-compliance with the environmental legislation, regulations, the EA issued, and this EMPr.

Environmental Site Officer (ESO):

The ESO is appointed by the Contractor to monitor, review, and verify compliance with the EMPr by the Contractor. 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 clearance to rehabilitation.

Competent Authority:

The Competent Authority is the relevant environmental department that issued the Environmental Authorisation. The authorities are responsible for ensuring that monitoring is carried out in accordance with the EA and EMPr and other authorisations issued, by means of reviewing audit reports submitted by the ECO and conducting regular site visits.

Other Authorities:

Other authorities associated with this project include the Madibeng Local Municipality, the Bonjanala Platinum District Municipality and the North West Department of Water and Sanitation (DWS).

Parastatals

Parastatals associated with this project include Eskom.

Environmental Assessment Practitioner (EAP):

According to section 1 of NEMA the definition of an environmental assessment practitioner is "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 through regulations".

The EAP must comply with general requirements listed under Section 13(1) of the EIA Regulations, 2014 as amended.

3.2 Reporting Procedures

3.2.1 Reporting of EMPr non-compliance

The ECO should immediately report any breach of the EMPr to the Project Manager in writing. 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 EA holder should be notified immediately before any additional steps are taken. The Environmental Control Officer shall report to the EA holder regarding EMPr compliance during monthly site meetings.

3.2.2 Reporting of environmental pollution incidents

All environmental pollution incidents occurring on site must be reported by the ESO to the Environmental Control Officer immediately, in order for the ECO to inform the competent authority, as stipulated in the EA.

“pollution” means any change in the environment caused by

- (i) substances;
- (ii) radioactive or other waves; or
- (iii) noise, odours, dust or heat.

emitted from any activity, including the storage or treatment of waste or substances, construction and the provision of services, whether engaged in by any person or an organ of state, where that change has an adverse effect on human health or well-being or on the composition, resilience and productivity of natural or managed ecosystems, or on materials useful to people, or will have such an effect in the future.

3.3 Site Instruction Book

The site instruction book will be used for the recording of general site instructions as they relate to the activities on site. Stop work orders will be issued with the purpose of immediately halting any contractor activities that may pose environmental risk.

3.4 ESO (Environmental Site Officer) Diary Entries

The appointed ESO should keep diary in book form. Each of entries must be available in duplicate, with copies for the Engineer and ESO. These books should be available to the authorities for inspection upon request. All environmental incidents are to be recorded in the ESO diary.

3.5 Methods Statements

The contractor will be required to compile Methods Statements for specific sensitive tasks on request of authorities or ESO. All method statements compiled are subject to measures contained within this EMPr. For each instance wherein it is requested that the contractor submit a method statement to the satisfaction of ESO, the format should clearly indicate the following:

- Why – reason for method statement required;
- What - a brief description of the actions required as part of the task to be undertaken;
- How - a detailed description of the process of actions, methods and materials to be used;
- Where - a description / sketch map of the locality of task; and
- When - the sequencing of actions associated with the task with commencement dates and estimated completion date.

The contractor must submit the method statement before any particular construction activity is due to start. Work may not commence until the method statement has been approved by the ESO.

3.6 Record Keeping

All records related to the implementation of this EMPr e.g. site instruction book, ESO diary, methods statements etc. must be kept in a central location at the site office where it is safe and can be retrieved easily. These records should be kept for the duration of construction and operation of the development for scrutiny by any relevant authority.

3.7 Programmes and Plans

Over and above the Method Statements required under Section 3.5 of this EMPr, to be compiled as part of the impacts and mitigation measures listed in the table under Section 4, an **Environmental Awareness Plan** appended as Appendix A to this EMPr must be implemented.

A **Waste Management Programme** which is site specific and covers all phases of the integrated human settlement development, types of waste to be generated, storage methods, storage locations, disposal methods, disposal locations, responsibilities in terms of storage, disposal and removal, frequency of removal and record keeping, must be compiled and implemented.

An **Alien Vegetation Management Programme** applicable to all phases of the integrated human settlement developments stipulating alien vegetation to be removed, methods of removal, disposal locations, responsibilities, frequency of removal etc. must be compiled and implemented.

4 Impact identification, management, mitigation and responsibility per project phase

Environmental Attribute	Environmental impact and risk	Management objective/ outcome/ statement	Impact management actions and mitigation measures	Method of monitoring	Responsibility	Frequency of monitoring
Planning and design phase						
Geology and Soils	<p>Excavation of soils for foundations</p> <p>Vegetation clearing for site camp/s, parking areas and stockpile areas</p>	To prevent the loss of soil and siltation of the watercourses	<p>Site 2 is not located near any geological structural defects.</p> <p>It is critical that all civil design and construction must be in accordance with prevalent soil conditions. Designs of storage tanks for water must be appropriate to site layout. Determine the ground water levels on the site before designing of the structures and the tank installation.</p> <p>Designs of on-site sewage package plant to cater for leak detection system and underground containment tank in the case of a power failure.</p> <p>Waste water pond where the waste water (wash water, detergent and fluff) effluent from the hatchery and on-site package plant will be discharged into must be appropriately lined (SANS approved) to counteract leakage.</p> <p>Include dust pollution control measures.</p> <p>Paved areas to be impermeable surfaces and such surface must also be lined in order to prevent leachate/ soil pollution and ground water pollution.</p> <p>Make provision for ground water quality in monitoring boreholes to assist with the monitoring of ground water levels and quality.</p> <p>- Pyroxinite, harzburgite and norite soils are the soils of the study site. Such soils do not present any collapse potential.</p> <p>-Mark all excavations clearly and make workers aware of possible soils collapse in and around excavations.</p> <p>-Trucks and equipment should be kept away from the unstable areas in order to avoid collapse.</p>	Civil designs cater for geology issues identified	Developer	Once-off
Agriculture	Site occurs in an area denoted as arable	To prevent loss of arable land	Although the site is denoted as arable, according to the Due Diligence Report: Land Use Matters, the property is zoned as 'Undetermined, and as per the Madibeng Spatial Development Framework (SDF), the area within the subject site is allocated for future residential, however, the operation of a hatchery is not	Reports compiled	Developer/ EAP	Once-off

Environmental Management Programme (EMPr) for the proposed Kroon's Gourmet Chickens Hatchery

Environmental Attribute	Environmental impact and risk	Management objective/ outcome/ statement	Impact management actions and mitigation measures	Method of monitoring	Responsibility	Frequency of monitoring
Planning and design phase						
			eliminated.			
Hydrology	Subject site occurs with the quaternary catchment A21J, upper Crocodile Sub-catchment in the Limpopo Water Management Area. A non-perennial tributary of the Crocodile River flows from east to west past the site outside the northern boundary.	Protect the non-perennial tributary of the Crocodile River	Although no wetlands were identified on site during the Wetland Assessment conducted, the wetland specialist recommended that a 100m buffer must be applied around the non-perennial watercourse due to the site occurring outside the urban edge (due to connectivity that still exists upstream and downstream of the watercourse).	Implementation of the EMPr	EA holder/EAP	Once-off
	Leakage of on-site package plant and waste pond (that will receive effluent from the hatchery and package plant) can cause ground water pollution. Spillages on the surface can cause surface water pollution potentially pollute the non-perennial tributary of the Crocodile River that flows from east to west along the northern boundary of the Site Alternative 2	Prevent surface and groundwater pollution	Although no wetlands were identified on site during the Wetland Assessment conducted, the wetland specialist recommended that a 100m buffer must be applied around the non-perennial watercourse due to the site occurring outside the urban edge (due to connectivity that still exists upstream and downstream of the watercourse). -Design the on-site package plant to prevent surface water and ground water contamination. -Design the waste pond to include an appropriate lining (SABS approved) to prevent any leakage. -Compile an emergency and response plan for pollution and other incidents. -Take the necessary SANS standards for poultry facilities, into consideration. -Take the contaminated land provisions as set out in the National Environmental Management: Waste Act into consideration. -Paved areas to be impermeable. -Confirm water discharge standards with the local authority. -Prevent the mixing of cleaning/process water with	Implementation of the EMPr, ground and surface water monitoring.	Developer/ Engineers/ EAP	Once-off

Environmental Management Programme (EMPr) for the proposed Kroon's Gourmet Chickens Hatchery

Environmental Attribute	Environmental impact and risk	Management objective/ outcome/ statement	Impact management actions and mitigation measures	Method of monitoring	Responsibility	Frequency of monitoring
Planning and design phase						
	(Portion 322 of the Farm Hartebeestfontein 445 JQ)		<p>storm water and roof water.</p> <p>-A proper storm water management system should be designed or in place for implementation during construction to manage all surface water flows in a sustainable manner. Provision should in addition be made for an oil-water separator to remove all hydrocarbons, greases etc. as a result of waste items that may be contaminated, prior to be discharged into the municipal storm water system.</p> <p>- This separator must be compliant with SANS.</p> <p>- Proper provision should be made for a designated area on site for the duration of the operational phase for the storage of hazardous and/ or flammable items, including oils, greases, fuel etc. The said area should be lined with secondary containment and bunded to contain at least 110% of the spilled substance.</p>			
	The proposed development triggers a section 21 (a), (b), (c), (e), (g) and (i) WULA	Legal compliance	Apply for Water Use Licence (WUL) for all water uses triggered by the proposed development.	WULA submitted	EAP	Once-off
	Availability of groundwater to sustain the proposed development is required	Groundwater resource availability	<p>A Section 21 (a) Water Use Licence Application will need to be applied for the abstraction of water from existing borehole on the site.</p> <p>-The water needs of the hatchery at 10 950m³, far exceed the abstraction allowed in terms of the GA and that a non-perennial tributary of the Crocodile River flows from east to west past the site outside the northern boundary of the site, a full Water Use Licence Application is triggered. No development is allowed within the 100m buffer associated with the non-perennial stream flowing past the site outside its northern boundary.</p> <p>-A 24-hour yield test is required to confirm availability of water for all five phases of the hatchery development.</p> <p>-Borehole water quality tests must also be carried out to ascertain whether the borehole water quality meets the hatchery standards or whether water treatment will be required.</p> <p>-The quality of groundwater supply must be monitored</p>	<p>Studies conducted</p> <p>Yield testing is still required to confirm water availability for all five phases.</p>	EAP	Once-off

Environmental Management Programme (EMPr) for the proposed Kroon's Gourmet Chickens Hatchery

Environmental Attribute	Environmental impact and risk	Management objective/ outcome/ statement	Impact management actions and mitigation measures	Method of monitoring	Responsibility	Frequency of monitoring
Planning and design phase						
			<p>frequently for parameters as stipulated in the EMPr.</p> <p>–Monitoring boreholes downstream of the hatchery to detect any groundwater contamination which emanate from this activity.</p> <p>–Regular water quality tests of the watercourse should be performed at regular intervals during the operational phase to ensure no pollution of surface water has occurred.</p> <p>Water quality in the hatchery must consider the following water quality parameters:</p> <p>Acidity/alkalinity (pH): A pH of 7 is neutral. Below 7, the water becomes acid (can cause corrosion) while above 7 means the water is alkaline (can indicate hard water due to high levels of calcium). Generally a pH of 6-8 is acceptable - and pH can be corrected by adding chemicals.</p> <p>Total hardness is an indication of hard water, which can cause limescale build-up, resulting in inefficiencies or the breakdown of equipment. The most common unit used is °dH (German degree) or mg CaCO₃/l. Generally, 2-6°dH (35-107 mg CaCO₃/l) is advised, with a maximum of 2°dH recommended for nozzle/spray humidification. Water softeners are used to reduce water hardness.</p> <p>Suspended particles should be absent, as these will block pipes, nozzles etc. Suspended solids are removed by filters.</p> <p>Microbial contamination should be absent. If water is contaminated, another source should be used. Disinfection can reduce contamination, but for example, using water contaminated with Pseudomonas, Acentobacter, Proteus, yeasts or molds - even after disinfection - for humidification is not advised.</p> <p>Some elements in water are known for aggressive reactions which cause the discolouration of equipment. Commonly, the following thresholds are used: the total sum of chloride and sulphate (Cl & SO₄) max 200mg/l, Magnesium (Mg) max 50mg/l, Iron (Fe)</p>			

Environmental Management Programme (EMPr) for the proposed Kroon's Gourmet Chickens Hatchery

Environmental Attribute	Environmental impact and risk	Management objective/ outcome/ statement	Impact management actions and mitigation measures	Method of monitoring	Responsibility	Frequency of monitoring
Planning and design phase						
			max 0.02mg/l. These elements require specific treatments. Extremely pure water (for example distilled or Reverse Osmosis water) is also known to be aggressive. It is therefore advisable to build a small bypass into the system.			
	Potential for surface and groundwater pollution due to Leakage of on-site package plant and waste pond (that will receive effluent from the hatchery and package plant) can cause ground water pollution. Spillages on the surface can cause surface water pollution potentially pollute the non-perennial tributary of the Crocodile River that flows from east to west along the northern boundary of the Site Alternative 2 (Portion 322 of the Farm Hartebeesfontein 445 JQ)	Prevent impact on the non-perennial drainage line	No development is allowed within the 100m buffer associated with the non-perennial stream flowing past the site outside its northern boundary. Designs of on-site sewage package plant to cater for leak detection system and underground containment tank in the case of a power failure. -Waste water pond where the waste water (wash water, detergent and fluff) effluent from the hatchery and on-site package plant will be discharged into must be appropriately lined (SANS approved) to counteract leakage. -Paved areas to be impermeable surfaces and such surface must also be lined in order to prevent leachate/ soil pollution and ground water pollution.	Service Report compiled Ground and surface water monitoring programme in place Leak detection system in place	Developer/ Engineers	Daily/Weekly
	Potential groundwater pollution from the	Install monitoring boreholes	Make provision for ground water quality in monitoring boreholes to assist with the monitoring of ground water levels and quality.	Boreholes installed	Developer	Once off

Environmental Management Programme (EMPr) for the proposed Kroon's Gourmet Chickens Hatchery

Environmental Attribute	Environmental impact and risk	Management objective/ outcome/ statement	Impact management actions and mitigation measures	Method of monitoring	Responsibility	Frequency of monitoring
Planning and design phase						
	on-site package plant					
Topography	Topography is generally flat	Prevent and alteration of topography- cut and fill exercises- low gradient -Loose soils cause siltation	Engineering designs must cater for the topography and associated surface drainage. The impact on the environment is expected to be Low. Topography is generally flat. Temporary construction phase storm water management measures to be implemented (i.e. sand bags and hay bales) in order to prevent siltation. Take environmental features (water bodies, environmentally sensitive areas, heavy traffic) into consideration during site foundation. -Avoid drainage lines, -Avoid large indigenous trees or include them in the landscaping. -Ensure sloped rehabilitated areas do not erode by using appropriate erosion control such as berms and stakes. -Rehabilitate slope areas to 1:3 and cover with topsoil, revegetate and water regularly. -Ensure that Storm water is properly managed and diverted around the site to avoid erosion. -Rehabilitation with stockpiled topsoil to occur as soon as possible.	Stormwater Management Plan compiled.	EA holder/ EAP	Once-off
Climate	Should the construction phase be scheduled for the summer months, erosion could be an issue due to soil type	Prevent erosion	Construction should be planned to take place during winter months only.	Gantt chart	Developer	Once-off
Flora	The study area has a low ecological sensitivity. Removal of	Protect sensitive species	Approximately 60% (eastern part) of Portion 322 is classified as a Critical Biodiversity Area 2 (CBA 2) and the remaining 40% (western part) is classified as Ecological Support Area (ESA2) due to occurrence within the 5km buffer of a Protected Area in the form of	Ecological Management Plan Implemented Indigenous trees	Developer/ ECO	Once-off

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Environmental Attribute	Environmental impact and risk	Management objective/ outcome/ statement	Impact management actions and mitigation measures	Method of monitoring	Responsibility	Frequency of monitoring
Planning and design phase						
	indigenous vegetation.		<p>the Hartebeespoort Nature Reserve and the Magaliesberg Protected Natural Environment, and due to occurring within an Important Bird Area and within a Freshwater Ecosystem Protected Area (FEPA) Catchment.</p> <p>-Due to the proposed development site occurring within the 5km buffer of a Protected Area, specific NEMA listed activities apply to the proposed hatchery.</p> <p>-The study site of Portion 322 has been classified as having a low ecological sensitivity.</p> <p>-Prior to construction commencing with any construction works, the development area should be fenced off from the areas that are to be retained as an open space system. The construction related impacts must be contained within the fenced-off development area.</p> <p>-An Ecological Management Plan (EMP) must be developed for the construction and the operational phase of the hatchery.</p> <p>- The indigenous plants that naturally grow on the study site (that would otherwise be destroyed) should be incorporated into the landscaped area.</p> <p>-The area must be properly managed throughout the construction phase in terms of fire, eradication of exotics etc. to ensure continuous biodiversity. It is proposed that as little of the vegetation cover to be cleared to prevent erosion on the application site. Only sections that are intended for the development must be cleared from vegetation. Each section must be rehabilitated as soon as construction is done.</p>	removed/stripped must be conserved for rehabilitation/landscaping purposes		
Flora and Fauna	Spread of invasive and alien vegetation	To prevent invasion and spread of the area with alien invaders	Alien eradication programme must be compiled to satisfaction of the ECO.	Programme compiled	EAP/ECO	Continuous
Fauna	Fauna and Flora Comparative Assessment conducted, Portion 322 of the Farm	Preserve sensitive environments	According to the South African National Biodiversity Institute (SANBI) Geographical Information System, the proposed hatchery site occurs within an Important Bird and Biodiversity Area (IBA) which is in a natural state.	Ecological Management Plan implemented	Developer/ EAP/ECO	Once off

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Environmental Attribute	Environmental impact and risk	Management objective/ outcome/ statement	Impact management actions and mitigation measures	Method of monitoring	Responsibility	Frequency of monitoring
Planning and design phase						
	Hartebeesfontein 445 JQ is deemed to be the most suitable site from an environmental perspective as it is categorised to be a low sensitivity site, with no protective species having been observed on site		<p>Important Bird and Biodiversity Areas (IBAs), as defined by Bird Life International, constitute a global network of over 13 500 sites, of which 112 sites are found in South Africa. IBAs are sites of global significance for bird conservation.</p> <p>Should any fauna species be discovered during the construction phase of the proposed development, construction workers must not trap or kill any species, however must relocate the species to an area of conservation.</p>			
Archaeology	No heritage site on Portion 322 of the Farm Hartebeesfontein 445 JQ	Preserve site	<p>Site Alternative 2 is the preferred site due to no impacts that will be posed on archaeological or historical sites, features or material.</p> <p>During the construction phase, should the construction workers identify any cultural heritage features, all construction work must cease and this must be reported to the appointed Environmental Control Officer (ECO) or site officer in charge, and the relevant Heritage Authority and in this context the North West Provincial Heritage Authority.</p>	HIA compiled	Developer /EAP	Once-off
Social and economic	No financial provision for the decommissioning phase and for rehabilitation. Must be included as part of the EMP. -Peruse all the mitigation measures as supplied by all the specialists and ensure that there are sufficient funds available for rehabilitation purposes and	Sufficient financial provision	<p>Make provision for the decommissioning phase and for rehabilitation and emergency incidents prior to the construction of the proposed hatchery.</p> <p>If required obtain the necessary insurance to cover pollution incidents, contaminated land queries and reports as well as any other health, safety or environmental incidents that could arise during the construction, operation and decommissioning phases of the hatchery.</p>	Pertinent paperwork in place	Developer	Once-off

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Environmental Attribute	Environmental impact and risk	Management objective/ outcome/ statement	Impact management actions and mitigation measures	Method of monitoring	Responsibility	Frequency of monitoring
Planning and design phase						
	decommissioning Need for economic opportunities	Provide economic opportunities	The proposed hatchery is in line with the IDP and the SDF plans as the development will be contributing towards food production and employment creation. -Proposed hatchery viewed as a societal priority due to contribution to food production egg production is not conducted on a large scale within the Madibeng Local Municipality and therefore the hatchery will indirectly contribute to expanding the commercial farming sector, specifically egg production.	Economic opportunities	Developer	Once-off
Visual	Visual impact	No negative visual impact	The visual impact of construction activities will be low-medium term. Bollards and protective barriers as well as safety tape may be utilized around the site. -A specific location must be designated for the stockpiling of builders rubble and associated construction material. -Prior to construction commencing on the site, an area on site must be demarcated for a site camp. -The selected site should not impair views (line of sight) of drivers utilising roads, nor should it be a distraction.	Structures aesthetically pleasing	Developer	Once-off
Air quality	Generation of dust and noise pollution as well as odours	Dust and noise generated during construction	-The study site of Portion 322 is located the furthest from the residential areas (specifically Bushveld View Estate and Ana Agricultural Holdings), and is therefore very unlikely to pose an air pollution issue in terms of odour which would cause continuous complaints by the residents. -The wind direction is easterly during winter and westerly during summer. Any probable odour emanating from the hatchery would affect the Horizon Brick factory. Construction activities may only be carried out from 07:00 to 17:00 daily as to prevent potential impact on the surrounding and adjacent properties (Horizon Brick Factory). Construction activities should comply with Municipal By-laws and conform to NHBRC Standards.	No community complaints received	Contractor/ ECO	Continuous

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Environmental Attribute	Environmental impact and risk	Management objective/ outcome/ statement	Impact management actions and mitigation measures	Method of monitoring	Responsibility	Frequency of monitoring
Planning and design phase						
			<p>Address dust pollution and specify damping down of exposed surfaces during the dry and windy seasons.</p> <p>Noise could become a factor to the Hartebeespoort Nature Reserve and the Magaliesberg Protected Natural Environment situated south-west within 3kms and south-south east within 2kms of the proposed hatchery site.</p> <p>-Construction operations shall not occur before or after normal working hours. Noise monitoring should be undertaken as spot checks.</p> <p>-When required noise mufflers should be utilized to reduce noise. It is important to keep an open channel of communication between all stakeholders and keep record of any concerns raised i.e. Complaints Register to be kept on site.</p> <p>-All construction activities must be restricted to normal working hours as depicted in the NBR document for site operations.</p> <p>-No construction may take place on Sundays and public holidays.</p> <p>-If any construction activities are required to take place on the aforementioned days, the surrounding neighbours must be informed of such planned works at least 48 hours prior to the relevant Sunday or public holiday.</p>			
Services	Water required for the main users/processes in the hatchery	Ensure services available	A 24-hour yield test is to be carried out in order to confirm availability of water for all five phases of the hatchery development. Borehole water quality tests, in terms of the parameters listed above, must also be carried out to ascertain whether the borehole water quality meets hatchery standards or whether water treatment will be required.	Yield test carried out WULA commenced	Developer/ ECO	Once off
	An on-site sewage package plant to be constructed	Ensure services available	The on-site sewage package plant triggers water uses in terms of the National Water Act, 1998, as amended and thus requires a WUL.	WULA commenced for on-site package plant	Developer/ ECO	Once off

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Planning and design phase						
	Impacts on provincial and local roads and on adjacent properties	Legal compliance	-The existing gravel road that falls within an existing servitude, leading off the R551 will need to be widened to cater for deliveries and collections to and from the hatchery. -Identify surrounding properties that could potentially be affected by road widening (i.e. accesses temporarily affected) and prepare notices to distribute to such affected parties.	In-principal approval obtained Authorisations applied for	Developer/ Engineers/ ECO	Once off
	WULA triggered by service infrastructure	Protect watercourse	A WULA covering all water uses triggered by proposed on-site service infrastructure as well as the proposed hatchery development.	WULA submitted	Developer/ ECO	Once off
	Electrical supply line required to cater for the proposed development	Ensure services available	The proposed hatchery development site has an existing dwelling unit which is supplied with electricity. The electricity is supplied from an existing 25kVA transformer situated on Pole BL14/2 located at the entrance to Portion 322. Eskom confirmed in e-mail correspondence dated 12 October 2018 that they will be able to upgrade the transformer to a 500kVA transformer immediately subsequent to the property transferring to Kroon Chickens		Developer/ ECO	Once off
Waste management	Pollution of sensitive environments	Prevent impact on sensitive environments	Waste management during construction phase to be budgeted for e.g. supply of enclosed containers and skips as well as removal cost.	Budget includes waste management	Developer/ ECO	Once off
			Madibeng Local Municipality to confirm responsibility for waste removal during operational phase.	Madibeng commitment received	Developer/ ECO	Once off
			Waste Management system catering for construction phase to be compiled to the satisfaction of the ECO.	Waste management system	Developer/ ECO	Prior to construction commencing
Fire Management	Damage to ecologically sensitive environments	Prevent impact on sensitive environments	Plan and discuss fire prevention measures and allow for the installation of the required fire equipment and health and safety signage for the operational phase.	Fire prevention measures in place.	Developer/ ECO	Prior to construction commencing
			Fire breaks will have to be maintained during the operational phase of the hatchery by the owner.	Fire breaks maintained.		
Hygiene	Health	Prevent spread of disease	Budget for and design acceptable control measures to be implemented at the Hatchery to prevent the transmission of diseases:	Disease control budgeted for	Developer	Prior to construction commencing

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Environmental Attribute	Environmental impact and risk	Management objective/ outcome/ statement	Impact management actions and mitigation measures	Method of monitoring	Responsibility	Frequency of monitoring
Planning and design phase						
			<ul style="list-style-type: none"> Hatcheries shall conduct regular tests for Salmonella. The Hatchery should have a comprehensive cleaning, disinfection and hygiene monitoring system. Disinfectant foot baths shall be placed at strategic points within the Hatchery to prevent the transfer of bacteria from one section to another. 			
Livestock	Injury/suffering	Prevent suffering of chicks	<p>Plan and budget for training Personnel to prevent the unnecessary suffering of chicks.</p> <p>Staff shall be trained in any required procedure e.g. sexing, toe-removal, maceration, transportation or de-spurring without causing suffering to the chicks.</p>	Training budgeted for	Developer	Prior to construction commencing

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Environmental Attribute	Environmental impact and risk	Management objective/ outcome/ statement	Impact management actions and mitigation measures	Method of monitoring	Responsibility	Frequency of monitoring
Pre-construction and Construction phase						
Geology and Soils	Excavation of soils for foundations Vegetation clearing for site camp/s, parking areas and stockpile areas	To prevent the loss of soil and siltation of the watercourses	<ul style="list-style-type: none"> -Site 2 is not located near any geological structural defects. --It is critical that all civil design and construction must be in accordance with prevalent soil conditions. -Designs of storage tanks for water must be appropriate to site layout. -Determine the ground water levels on the site before designing of the structures and the tank installation. -Designs of on-site sewage package plant to cater for leak detection system and underground containment tank in the case of a power failure. -Waste water pond where the waste water (wash water, detergent and fluff) effluent from the hatchery and on-site package plant will be discharged into must be appropriately lined (SANS approved) to counteract leakage. -Include dust pollution control measures. -Paved areas to be impermeable surfaces and such surface must also be lined in order to prevent leachate/ soil pollution and ground water pollution. -Make provision for ground water quality in monitoring boreholes to assist with the monitoring of ground water levels and quality. 	Engineering designs implemented	Contractor/ ECO	During construction
	Erosion due to unstable slopes	Prevent erosion	Sediment containment structures throughout the site to prevent sediment runoff and accumulation in the watercourses and adequate stormwater mitigation to prevent surges.	Stormwater management plan implemented	Developer	During construction
	Loss of Vegetation, and topsoil	Strip topsoil to depth of 150mm	Areas where construction is to take place is to be stripped of topsoil to a depth of at least 150mm .	Vegetation only removed in designated areas. Topsoil stripped to 150mm.	Contractor/ ESO	Before any construction activity commences
	Loss of topsoil	To prevent the loss of topsoil To prevent soil and materials being tracked onto the	Stockpiling of topsoil will only be done in designated areas where it will not interfere with the natural drainage paths of the environment and must not be higher than 1, 5 m. -Rehabilitate slope areas to 1:3 and cover with topsoil, revegetate and water regularly. In order to minimise erosion of topsoil and siltation and	No loss of topsoil. Excavated materials correctly stockpiled < 1.5m high. No visible signs of erosion of topsoil.	Contractor/ ESO	Before construction commences in a designated area.

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Environmental Attribute	Environmental impact and risk	Management objective/ outcome/ statement	Impact management actions and mitigation measures	Method of monitoring	Responsibility	Frequency of monitoring
Pre-construction and Construction phase						
		road.	disturbance to existing vegetation, it is recommended that stockpiling be done in already disturbed/exposed areas. Remove vegetation only in areas designated during the planning stage and for the purpose of construction.			
Hydrology and Geohydrology	Pollution of ground and surface water	Prevent the pollution of the ground- and surface water	<p>Chemical toilets may not be placed within 100m from drainage lines.</p> <p>At least one sanitary facility for each sex and for every worker at each construction area. The contractor shall keep the toilets in a clean, neat, and hygienic condition. Toilets provided by the contractor must be easily accessible and a maximum of 50 m from the working area to ensure they are utilized. The contractor (who must use reputable toilet-servicing company) shall be responsible for the cleaning, maintenance and servicing of the toilets. The contractor (using reputable toilet-servicing company) shall ensure that all toilets are cleaned and emptied before the builders' or other public holidays. No person is allowed to use any other area than chemical toilets. No French drain systems may be installed. No chemical or waste water must be allowed to contaminate the run-off on site. The chemical toilets may not be placed in close proximity of adjacent developments to prevent odours.</p>	<p>Toilets are located away from drainage lines.</p> <p>Workforce use toilets provided.</p> <p>Chemical toilets are clean and maintained.</p>	Contractor/ ESO	Before construction activities commence
Hydrology and Geohydrology	Pollution of ground and surface water	Prevent pollution of ground and surface water by hydrocarbons from mobile plant	<p>Drip trays should be provided for all mobile plant on site for the construction period, while parked;</p> <p>All mobile plant should be equipped with a hydrocarbon spills kit to facilitate cleaning up any spills as a result of a breakdown;</p> <p>An impermeable plastic sheet must be placed underneath the mobile plant to be worked on to prevent ingress of hydrocarbons into soil or water; Any spillages on the impermeable sheet must be</p>	<p>No signs of hydrocarbon spillages on site.</p> <p>The contractor must prove vehicles have been serviced and do not have any leaks.</p>	Contractor/ ESO	Continuous

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Environmental Attribute	Environmental impact and risk	Management objective/ outcome/ statement	Impact management actions and mitigation measures	Method of monitoring	Responsibility	Frequency of monitoring
Pre-construction and Construction phase						
			cleaned with a spills kit prior to removing the sheet. No leaking vehicle shall be allowed on site. The mechanic/the mechanic of the appointed contractor must supply the environmental officer with a letter of confirmation that the vehicles and equipment are leak proof.			
		To minimize pollution of surface and groundwater resources due to spilling of hazardous materials.	Hydrocarbons and chemicals must be confined to specific secured areas within the site camp. These areas must be banded with adequate containment (at least 1.5 times the volume of the substance stored) for potential spills or leaks. All spilled hazardous substances must be contained in impermeable containers for removal to a licensed hazardous waste site. No bins containing organic solvents such as paint and thinners shall be cleaned on site. All spillages must be cleaned up with spills orb product and contaminated soil removed as hazardous waste. Hazardous waste must be disposed of by a registered contractor at an appropriately registered disposal site.	No pollution of the environment by hazardous substances visible on site	Contractor/ ESO	Continuous
		To minimize pollution of surface and groundwater resources by cement	The mixing of concrete shall only be done at specifically selected sites outside the aquatic buffer zone, on mortar boards or similar structures to prevent run-off into surrounding drainage lines, streams, and natural vegetation.	No evidence of cement contaminated soil on the construction site	Contractor/ ESO	Continuous
Hydrology and Geohydrology	Pollution of ground and surface water	To minimize pollution of surface and Groundwater resources due to effluent	No effluent (including effluent from any storage areas) may be discharged into any water surface or groundwater resource.	No evidence of contaminated water resources	Contractor/ ESO	Continuous

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Environmental Attribute	Environmental impact and risk	Management objective/ outcome/ statement	Impact management actions and mitigation measures	Method of monitoring	Responsibility	Frequency of monitoring
Pre-construction and Construction phase						
Waste management	Pollution of sensitive environments	Prevent impact on sensitive environments	<p>Waste management system must be implemented.</p> <p>A Waste Management Plan must developed specifically for the hatchery.</p> <p>-All unusable waste must be stored in an appropriately sealed container and store in a bunded area.</p> <p>-Waste bins must be sealed appropriately to prevent leakage of waste and which must be emptied out regularly.</p> <p>-Waste should be recycled as far as possible and separated into different containers (paper, plastic, glass etc.).</p> <p>-Waste water is recommended to be re-used where possible.</p> <p>-Waste water disposal methods must ensure no pollution of the environment (soil and water) occurs.</p>	Plan implemented	ECO	Continuous
Health and Safety	Impacts on the health and safety of the surrounding environment during the construction and operational phase - Impacts on the health and safety of the employees at the chicken hatchery and any clientele at the hatchery during construction and operational phases	Prevent adverse impacts regarding health and safety	<p>-Make provision for the appointment of a suitably qualified health and safety officer to assist with compliance with the relevant health and safety legislation during all the development phases of the hatchery.</p> <p>-The minimum standards relating to the health and safety for chick hatcheries as stipulated in the South African Poultry Association Abridged Code of Practice: Chick Hatchery, must be adhered to.</p> <p>-Plan and discuss fire prevention measures and allow for the installation of the required fire equipment and health and safety signage for the operational phase.</p> <p>- In light of the nature of the proposed development and control measures that are required to be implemented to counteract the transmission of diseases, it is recommended that the developer may have to register in terms of the Fertilizers, Farm Feeds, Agricultural Remedies, and Stock Remedies Act.</p>	health and Safety Plan implemented	Health and Safety Officer and Developer	continuous
	Safety and security	Prevent safety and security issues	<p>Health and safety officer to be appointed prior to commencement with construction and the safety plan as well as the required safety gear for workers to be available on the study area.</p> <p>-Allow for 24 hour security on the study area.</p>	No issues regarding safety and security arising.	Health and Safety Officer and Developer	continuous

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Environmental Attribute	Environmental impact and risk	Management objective/ outcome/ statement	Impact management actions and mitigation measures	Method of monitoring	Responsibility	Frequency of monitoring
Pre-construction and Construction phase						
			<p>-Fence the construction site at strategic points. This will keep the public out of the potentially dangerous construction area.</p> <p>-Site security will ensure that the site is secured and only authorised access allowed.</p> <p>-If required for some of the workers to sleep on the site, such workers must be accommodated in an allocated area on the construction site.</p> <p>-Plan for the implementation of a security system that will reflect a database of all workers and personnel on site during the construction phase.</p> <p>-Also indicate the names of the workers that will reside on the study area during the construction phase.</p> <p>-Remove the names of workers no longer involved in construction works on the study area immediately after such workers stopped with their duties/ we removed from their duties.</p> <p>-The 24-hour security must be notified of new construction workers/ workers to be accommodated on the study area and must also be informed of workers no longer involved in construction activities on the study area.</p> <p>-Workers that sleep on the study area must sign out when they leave the premises after hours and must sign back in when they return to the accommodation supplied on site. On site accommodation could prevent illegal occupation of open spaces in close proximity of the study area by workers that cannot afford daily travelling costs.</p> <p>-Where possible local laborers must be used in order to avoid an influx of people into the area.</p> <p>-Details of all persons to work on the site that must be supplied to the security and project manager must include the following:</p> <ul style="list-style-type: none"> • Name and Surname, ID Number or Passport Number, Driver's License, copy of relevant ID document/ passport/ driver's license/ service delivered by worker/ employee of the worker/Contact Details of the worker and contact details of a family member or employee. 			

Environmental Management Programme (EMPr) for the proposed Kroon's Gourmet Chickens Hatchery

Environmental Attribute	Environmental impact and risk	Management objective/ outcome/ statement	Impact management actions and mitigation measures	Method of monitoring	Responsibility	Frequency of monitoring
Pre-construction and Construction phase						
			<ul style="list-style-type: none"> -Fence the area earmarked for the temporary accommodation of construction workers. - If possible fence the construction site and allow for one/ two allocated and monitored contractor's entrance/s. 			
Compliance with the relevant local authority by-laws and policies	<p>-Local authorities have specific requirements for storm water management, discharge of treated effluent into the municipal system, emergency procedures, construction works that affect roads and accesses to roads, road safety conditions, temporary disruption of services, air emissions, waste management, outdoor advertising, water services, health and safety, security etc.</p>		<ul style="list-style-type: none"> -It is recommended that the proposed hatchery be authorised due to being in line with local plans and strategies with the provision that the hatchery development complies with the recommendations as contained in the EMPr. - Obtain copies of such by-laws/polices from the local and district municipality in order to ensure compliance. -Confirm that the proposed hatchery will comply with the relevant local authority and district municipality by-laws and policies: North West Biodiversity Sector Plan, 2015; Madibeng Local Municipality Integrated Development Plan (IDP); Madibeng Local Municipality Draft Spatial and Land Use Management By-Law 2016 and; Madibeng Local Municipality Draft Waste Management By-Law, 2017. - Site Alternative 2 is in line with national, provincial and local development policies and frameworks. -The proposed hatchery is in line with the IDP and the SDF plans as the development will be contributing towards food production and employment creation. -Proposed hatchery viewed as a societal priority due to contribution to food production egg production is not conducted on a large scale within the Madibeng Local Municipality and therefore the hatchery will indirectly contribute to expanding the commercial farming sector, specifically egg production. -Minimum standards pertaining to Health and Safety, for Chick Hatcheries as set out in South African Poultry Association Abridged Code of Practice: Chick Hatchery must be conformed to. -In terms of the Madibeng Local Municipality Draft Waste Management By-Law 2019, the Municipal waste management officer must be informed of the intention to generate general waste, 60 days prior to commencement of generating waste. 	All of the relevant by-laws and plans implemented and adhered to	Developer	Continuous

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Environmental Attribute	Environmental impact and risk	Management objective/ outcome/ statement	Impact management actions and mitigation measures	Method of monitoring	Responsibility	Frequency of monitoring
Pre-construction and Construction phase						
			<p>-The hatchery will need to comply with the Norms and Standards for Storage of Waste, 2013 published in terms of the NEM:WA due to triggering Category C (2) of the List of Waste Management Activities that have, or are likely to have a detrimental effect on the environment, due to storing more than 80m³ of hazardous waste.</p> <p>-The hatchery must register in terms of the Fertilizers, farm feeds, Agricultural Remedies, Stock Remedies Act, if required.</p> <p>-A separate Environmental Impact Assessment process will be conducted for the Waste Management Licence and Air Quality Licence triggered by the processing of waste by means of the macerator.</p>			
Hygiene	Health	Prevent spread of disease	<p>Install acceptable control measures at the Hatchery to prevent the transmission of diseases:</p> <ul style="list-style-type: none"> • Hatcheries shall conduct regular tests for Salmonella. • The Hatchery should have a comprehensive cleaning, disinfection and hygiene monitoring system. • Disinfectant foot baths shall be placed at strategic points within the Hatchery to prevent the transfer of bacteria from one section to another. 	Disease control installed	Developer	Prior to construction commencing
Livestock	Injury/suffering	Prevent suffering of chicks	Train staff in any required procedure e.g. sexing, toe-removal, maceration, transportation or de-spurring to prevent suffering to the chicks.	Training presented	Developer	Prior to construction commencing
Flora	<p>The study area has a low ecological sensitivity.</p> <p>Removal of indigenous vegetation.</p>	Protect sensitive species	Approximately 60% (eastern part) of Portion 322 is classified as a Critical Biodiversity Area 2 (CBA 2) and the remaining 40% (western part) is classified as Ecological Support Area (ESA2) due to occurrence within the 5km buffer of a Protected Area in the form of the Hartebeespoort Nature Reserve and the Magaliesberg Protected Natural Environment, and due to occurring within an Important Bird Area and within a Freshwater Ecosystem Protected Area (FEPA) Catchment.	<p>Ecological Management Plan Implemented</p> <p>Indigenous trees removed/stripped must be conserved for rehabilitation/landscaping purposes</p>	ECO/ESO	Once off

Environmental Management Programme (EMPr) for the proposed Kroon's Gourmet Chickens Hatchery

Environmental Attribute	Environmental impact and risk	Management objective/ outcome/ statement	Impact management actions and mitigation measures	Method of monitoring	Responsibility	Frequency of monitoring
Pre-construction and Construction phase						
			<p>-Due to the proposed development site occurring within the 5km buffer of a Protected Area, specific NEMA listed activities apply to the proposed hatchery.</p> <p>-The study site of Portion 322 has been classified as having a low ecological sensitivity.</p> <p>-Prior to construction commencing with any construction works, the development area should be fenced off from the areas that are to be retained as an open space system. The construction related impacts must be contained within the fenced-off development area.</p> <p>-An Ecological Management Plan (EMP) must be developed for the construction and the operational phase of the hatchery.</p> <p>- The indigenous plants that naturally grow on the study site (that would otherwise be destroyed) should be incorporated into the landscaped area.</p> <p>-The area must be properly managed throughout the construction phase in terms of fire, eradication of exotics etc. to ensure continuous biodiversity. It is proposed that as little of the vegetation cover to be cleared to prevent erosion on the application site. Only sections that are intended for the development must be cleared from vegetation. Each section must be rehabilitated as soon as construction is done.</p>			
	Spread of invasive and alien vegetation	To prevent invasion and spread of the area with alien invaders	Alien eradication programme must be implemented to ensure removal of alien vegetation, following construction.	No alien vegetation visible	EA holder/ Project Manager	Continuous
	Incomplete rehabilitation	To protect the existing indigenous flora and fauna	Upon completion of construction and rehabilitation the ECO should assess and approve the adequacy of the rehabilitation and ensure that sufficient levels of rehabilitation have been undertaken to allow re-establishment of the necessary vegetation. Rehabilitation works should be monitored until 80% of vegetation has been established.	ECO to audit site rehabilitation	Contractor/ ESO/ECO	Once off
Aesthetic	Pollution of environment due to illegal dumping	Waste removed from construction site to be disposed of	All construction waste has to be removed from the site during the decommissioning phase and prior to the project being regarded as operational. Safe Disposal	Audit compliance to Waste Management Programme	Contractor/ ESO/ECO	Once off

Environmental Management Programme (EMPr) for the proposed Kroon's Gourmet Chickens Hatchery

Environmental Attribute	Environmental impact and risk	Management objective/ outcome/ statement	Impact management actions and mitigation measures	Method of monitoring	Responsibility	Frequency of monitoring
Pre-construction and Construction phase						
	of waste	applicable registered landfill site	Certificates are to be retained on site. Ensure compliance to Waste Management Plan.			
Legal compliance	Compliance with EA/EMPr/WULA	ECO to conduct final site inspection and audit	ECO to conduct final inspection on site and sign off that the EMPr has been complied with or identify breaches. Submit report to NWREAD for approval.	ECO to audit EMPr compliance	Contractor/ ESO/ECO	Once off

Environmental Management Programme (EMPr) for the proposed Kroon's Gourmet Chickens Hatchery

Environmental Attribute	Environmental impact and risk	Management objective/ outcome/ statement	Impact management actions and mitigation measures	Method of monitoring	Responsibility	Frequency of monitoring
Operational Phase						
Agriculture	Site occurs in an area denoted as arable	To prevent loss of arable land	Although the site is denoted as arable, according to the Due Diligence Report: Land Use Matters, the property is zoned as "Undetermined, and as per the Madibeng Spatial Development Framework (SDF), the area within the subject site is allocated for future residential, however, the operation of a hatchery is not eliminated.	Reports compiled	Developer	Once-off
Hydrology	Subject site occurs with the quaternary catchment A21J, upper Crocodile Sub-catchment in the Limpopo Water Management Area. A non-perennial tributary of the Crocodile River flows from east to west past the site outside the northern boundary.	Protect the non-perennial tributary of the Crocodile River	Although no wetlands were identified on site during the Wetland Assessment conducted, the wetland specialist recommended that a 100m buffer must be applied around the non-perennial watercourse due to the site occurring outside the urban edge (due to connectivity that still exists upstream and downstream of the watercourse).	Implementation of the EMPr	EA holder	Once -off
	Leakage of on-site package plant and waste pond (that will receive effluent from the hatchery and package plant) can cause ground water pollution. Spillages on the surface can cause surface water pollution potentially pollute the non-perennial	Prevent surface and groundwater pollution	Although no wetlands were identified on site during the Wetland Assessment conducted, the wetland specialist recommended that a 100m buffer must be applied around the non-perennial watercourse due to the site occurring outside the urban edge (due to connectivity that still exists upstream and downstream of the watercourse). -Design the on-site package plant to prevent surface water and ground water contamination. -Design the waste pond to include an appropriate lining (SABS approved) to prevent any leakage. -Compile an emergency and response plan for pollution and other incidents. -Take the necessary SANS standards for poultry facilities, into consideration.	Implementation of the EMPr, ground and surface water monitoring.	Developer/ Engineers/	Once off

Environmental Management Programme (EMPr) for the proposed Kroon's Gourmet Chickens Hatchery

Environmental Attribute	Environmental impact and risk	Management objective/ outcome/ statement	Impact management actions and mitigation measures	Method of monitoring	Responsibility	Frequency of monitoring
Operational Phase						
	tributary of the Crocodile River that flows from east to west along the northern boundary of the Site Alternative 2 (Portion 322 of the Farm Hartebeesfontein 445 JQ)		<ul style="list-style-type: none"> -Take the contaminated land provisions as set out in the National Environmental Management: Waste Act into consideration. -Paved areas to be impermeable. -Confirm water discharge standards with the local authority. -Prevent the mixing of cleaning/process water with storm water and roof water. -A proper storm water management system should be designed or in place for implementation during construction to manage all surface water flows in a sustainable manner. Provision should in addition be made for an oil-water separator to remove all hydrocarbons, greases etc. as a result of waste items that may be contaminated, prior to be discharged into the municipal storm water system. - This separator must be compliant with SANS. - Proper provision should be made for a designated area on site for the duration of the operational phase for the storage of hazardous and/ or flammable items, including oils, greases, fuel etc. The said area should be lined with secondary containment and bunded to contain at least 110% of the spilled substance. 			
	The proposed development triggers a section 21 (a), (b), (c), (e), (g) and (i) WULA	Legal compliance	Water Use Licence issued.	WUL conditions adhered to	Developer/	Continuous
	Availability of groundwater to sustain the proposed development is required	Groundwater resource availability	A Section 21 (a) Water Use Licence Application approved. The water needs of the hatchery at 10 950m ³ , far exceed the abstraction allowed in terms of the GA and that a non-perennial tributary of the Crocodile River flows from east to west past the site outside the northern boundary of the site, a full Water Use Licence Application is triggered. No development is allowed within the 100m buffer associated with the non-	Ground water monitoring programme implemented. Monitoring boreholes	Developer	Continuous

Environmental Management Programme (EMPr) for the proposed Kroon's Gourmet Chickens Hatchery

Environmental Attribute	Environmental impact and risk	Management objective/ outcome/ statement	Impact management actions and mitigation measures	Method of monitoring	Responsibility	Frequency of monitoring
Operational Phase						
			<p>perennial stream flowing past the site outside its northern boundary.</p> <ul style="list-style-type: none"> -A 24-hour yield test is required to confirm availability of water for all five phases of the hatchery development. -Borehole water quality tests must also be carried out to ascertain whether the borehole water quality meets the hatchery standards or whether water treatment will be required. -The quality of groundwater supply must be monitored frequently for parameters as stipulated in the EMPr. --Monitoring boreholes downstream of the hatchery to detect any groundwater contamination which emanate from this activity. --Regular water quality tests of the watercourse should be performed at regular intervals during the operational phase to ensure no pollution of surface water has occurred. <p>Implement the emergency preparedness and response plan for the operational phase and put emergency contact number on walls at strategic points for purpose of dealing with emergencies (i.e. fires, explosions, oil spills, fuel spills etc.).</p> <p>Water quality in the hatchery must consider the following water quality parameters: Acidity/alkalinity (pH): A pH of 7 is neutral. Below 7, the water becomes acid (can cause corrosion) while above 7 means the water is alkaline (can indicate hard water due to high levels of calcium). Generally a pH of 6-8 is acceptable - and pH can be corrected by adding chemicals. Total hardness is an indication of hard water, which can cause limescale build-up, resulting in inefficiencies or the breakdown of equipment. The most common unit used is °dH (German degree) or mg CaCO₃/l. Generally, 2-6°dH (35-107 mg CaCO₃/l) is advised, with a maximum of 2°dH recommended for nozzle/spray humidification. Water softeners are used to reduce water hardness.</p>			

Environmental Management Programme (EMPr) for the proposed Kroon's Gourmet Chickens Hatchery

Environmental Attribute	Environmental impact and risk	Management objective/ outcome/ statement	Impact management actions and mitigation measures	Method of monitoring	Responsibility	Frequency of monitoring
Operational Phase						
			<p>Suspended particles should be absent, as these will block pipes, nozzles etc. Suspended solids are removed by filters.</p> <p>Microbial contamination should be absent. If water is contaminated, another source should be used. Disinfection can reduce contamination, but for example, using water contaminated with Pseudomonas, Acentobacter, Proteus, yeasts or molds - even after disinfection - for humidification is not advised.</p> <p>Some elements in water are known for aggressive reactions which cause the discolouration of equipment. Commonly, the following thresholds are used: the total sum of chloride and sulphate (Cl & SO4) max 200mg/l, Magnesium (Mg) max 50mg/l, Iron (Fe) max 0.02mg/l. These elements require specific treatments. Extremely pure water (for example distilled or Reverse Osmosis water) is also known to be aggressive. It is therefore advisable to build a small bypass into the system.</p>			
Services	Water required for the main users/processes in the hatchery	Ensure services available	<p>Conditions stipulated in the relevant authorisations must be complied with during the operational phase i.e. mentoring requirements etc.</p> <p>WUL and EA conditions must be complied with during the operational phase.</p>	<p>WUL conditions implemented.</p> <p>Ground water monitoring</p>		
	An on-site sewage package plant to be constructed	Ensure services available	<p>Conditions stipulated in the relevant authorisations must be complied with during the operational phase</p>	<p>WUL conditions implemented.</p> <p>Regular water quality tests of the watercourse should be performed at regular intervals during the operational phase to ensure no pollution of surface water has occurred.</p>		

Environmental Management Programme (EMPr) for the proposed Kroon's Gourmet Chickens Hatchery

Environmental Attribute	Environmental impact and risk	Management objective/ outcome/ statement	Impact management actions and mitigation measures	Method of monitoring	Responsibility	Frequency of monitoring
Operational Phase						
				Leak detection system implemented		
	Impacts on provincial and local roads and on adjacent properties	Legal compliance	Maintenance of road			
	WULA triggered by service infrastructure	Protect watercourse	WUL issued for all water uses implemented and conditions adhered to.	WUL conditions adhered to	Developer	Continuous
Waste management	Pollution of sensitive environments	Prevent impact on sensitive environments	The Waste Management Plan developed specifically for the hatchery must be implemented. -All unusable waste must be stored in an appropriately sealed container and store in a bunded area. -Waste bins must be sealed appropriately to prevent leakage of waste and which must be emptied out regularly. -Waste should be recycled as far as possible and separated into different containers (paper, plastic, glass etc.). -Waste water is recommended to be re-used where possible. -Waste water disposal methods must ensure no pollution of the environment (soil and water) occurs. -Domestic waste will be removed from the site by a certified waste contractor. -Waste disposal certificates must be kept on record.	Waste Management Plan implemented	Developer	Continuous
	Hazardous waste	Prevent impact on sensitive environments	The proposed hatchery must comply with the Norms and Standards for Storage of Waste, 2013 published in terms of the National Environmental Management: Waste Act, as the hatchery will store more than 80m³ of hazardous (biological waste: infertile eggs, mortalities and egg shells) waste. -During the operational phase, all biological waste will	Waste Management Plan implemented Norms and standards adhered to	Developer	Continuous

Environmental Management Programme (EMPr) for the proposed Kroon's Gourmet Chickens Hatchery

Environmental Attribute	Environmental impact and risk	Management objective/ outcome/ statement	Impact management actions and mitigation measures	Method of monitoring	Responsibility	Frequency of monitoring
Operational Phase						
			<p>be reduced through the use of a macerator situated inside of the facility before being transferred into steel drums outside the facility via a screw conveyor. The waste will then be transported to the Kroon's Chickens Abattoir's rendering plant.</p> <p>A separate Environmental Impact Assessment process will be conducted for the Waste Management Licence and Air Quality Licence triggered by the processing of waste by means of the macerator.</p>			
Fire Management	Damage to ecologically sensitive environments	Prevent impact on sensitive environments,	<p>Fire and emergency plans will be implemented during construction especially due to the two nature reserves and surrounding agricultural holdings located in close proximity.</p> <p>-Adequate firefighting equipment will be instituted as recommended.</p> <p>-Fire breaks will have to be maintained during the operational phase of the hatchery by the owner.</p>	Fire Management Plan implemented	Developer	Continuous
Ecological integrity	Damage to natural environment	Raise environmental awareness of all persons involved with operation of the site	Implement Environmental Awareness Plan attached as Appendix A to this EMPr	Verbally test understanding of environmental awareness of operations personnel	ECO	Monthly
	Fire risk to site and surrounding land users	To decrease fire risk	Emergency numbers/contact details must be available on site.	<p>Inspect and verbally confirm:</p> <ul style="list-style-type: none"> Emergency numbers displayed. 	ECO	Weekly
	Loss of protected Vegetation	To prevent invasion and spread of alien invaders	Alien eradication programme must be implemented to ensure removal of alien vegetation during development phase of proposed project.	Confirm alien vegetation management programme implemented	ECO	Continuous
Hygiene	Health	Prevent spread of disease	<p>Implement acceptable control measures at the Hatchery to prevent the transmission of diseases:</p> <ul style="list-style-type: none"> Hatcheries shall conduct regular tests for 	Disease control implemented	Developer	Prior to construction commencing

Environmental Management Programme (EMPr) for the proposed Kroon's Gourmet Chickens Hatchery

Environmental Attribute	Environmental impact and risk	Management objective/ outcome/ statement	Impact management actions and mitigation measures	Method of monitoring	Responsibility	Frequency of monitoring
Operational Phase						
			<p>Salmonella.</p> <ul style="list-style-type: none"> • The Hatchery should have a comprehensive cleaning, disinfection and hygiene monitoring system. • Disinfectant foot baths shall be placed at strategic points within the Hatchery to prevent the transfer of bacteria from one section to another. 			

5 EMPr review and reporting on compliance

The EMPr is a dynamic document which should be reviewed and amended as the need arises, in accordance with the EIA Regulations.

In terms of Section 32 (1) of the EIA Regulations, 2014 as amended, if the project scope is changed subsequent to EA being granted, then a Part 2 Amendment Application together with an amended EMPr has to be subjected to another public participation process of at least 30 days.

In terms of Section 34 (1) and (2) of the EIA Regulations, 2014 as amended the holder of the EA must have the EA and EMPr audited by an independent person and submit an audit report to the relevant authority at intervals stipulated in the EA. If the auditor finds insufficient mitigation measures or non-compliance to the EA or EMPr, the holder must submit recommendations to the competent authority to amend the EMPr together with the audit report.

The audit report and amended EMPr must be made available to potential and registered interested and affected parties within 7 days of submission to the competent authority.

In terms of Section 35 (1) and (2) of the EIA Regulations, 2014 as amended the competent authority may approve the amended EMPr resulting from an audit or request further amendments to manage and mitigate environmental impacts.

In terms of Section 37 of the EIA Regulations, 2014 as amended the holder of the EA may apply for amendment of the EMPr from the competent authority following publications of the amended EMPr for 30-day review as part of public participation process.

Appendix A: Environmental Awareness Plan

SITE ENVIRONMENTAL RULES

TOOLBOX TALK 1: Site environmental rules.

ISSUE: Do's and Don'ts of the Construction Site.

PRESENTER:

What is the Environment?

Environment (NEMA, 1998) - means the surroundings within which humans exist and that are made up of:

- the land, water and atmosphere of the earth;
- microorganisms, 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 wellbeing;

What is the Pollution?

Pollution (NWA, 1998) - means the direct or indirect alteration of the physical, chemical or biological properties of a water resource so as to make it -

- (a) less fit for any beneficial purpose for which it may reasonably be expected to be used; or
- (b) harmful or potentially harmful -
 - (aa) to the welfare, health or safety of human beings;
 - (bb) to any aquatic or non-aquatic organisms;
 - (cc) to the resource quality; or
 - (dd) to property;

What is an EMPr?

Environmental Management Programme – refers to a document that is used to investigate, assess and evaluate the impacts that a development is likely to have on the environment during the construction, operation and decommission phases.

Why should we protect the Environment?

- It is our right to live in a clean and healthy environment.
- To ensure that future generations live in a clean environment.
- To prevent the loss of species diversity.
- To prevent loss of ecological goods and services

Environmental Site Rules:

- *No urinating or defecating on site. Toilet facilities provided at the construction site must be used at all times.*
- *Do not waste water.*
- *No littering.*
- *No washing of cars or other vehicles on site.*
- *No open fires allowed on site.*

DATE:	TIME:	LOCATION:
TOPIC:	Site environmental rules	
ISSUE:	EMPr compliance	

DISPENSING, STORAGE AND DISPOSAL OF HYDROCARBONS/CHEMICALS

TOOLBOX TALK 2: Dispensing, storage and disposal of hydrocarbons/chemicals

ISSUE: Do's and Don'ts.

What is a Hydrocarbon (mineral oil)?

Diesel/hydraulic oil etc. are hydrocarbons and therefore classified as hazardous substances. A hazardous substance is any material that poses an unreasonable risk to people, property and the environment. The environment is our surroundings, soil, air and water.

Chemicals

Hydrocarbons/chemicals are toxic if swallowed by humans or animals. The presence of Hydrocarbons/chemicals in water can also prevent aquatic organisms from breathing and may result in aquatic kills depending on the extent of the spill. Hydrocarbons should therefore be prevented from contaminating ground or surface water.

Note:

Only 1 litre of oil can contaminate a soccer field size of water. It is therefore essential to prevent spillages as far as possible and to ensure that if they do occur that they are properly cleaned up and that the resulting material is disposed of correctly.

What is a spillage?

All situations involving the spilling of a Hydrocarbons/chemicals on to the floor or ground or in water, irrespective of volume.

How do we manage this?

1 Correct Storage:

- a. Refer to issues around the bunded area.
- b. Should be contained in waterproof and leak proof containers. Any containers or points that are leaking to be addressed immediately.
- c. Should be stored in a dedicated area on site.

2 Correct Dispensing:

- a. Should check lines for leaks before starting with dispensing.
- b. Place drip tray so as to catch any drips. How would you and into what would you empty the drip tray?
- c. Ensure all residual Hydrocarbons/chemicals is drained from pipe before disconnecting.

3 Maintenance of vehicles and equipment

- a. Check equipment and vehicles for leaks daily. Report leaks to supervisor immediately. Contain slow drips using a drip tray.
- b. Do not use excessive grease when greasing vehicle or equipment parts.

4 Correct Spillage Handling and Disposal:

- a. Clean all spillages immediately. This means treat spill using spill kit and remove spillage.
- b. Dispose in hazardous waste drum or skip.
- c. Report spillage to supervisor.

DATE:	TIME:	LOCATION:
TOPIC:	Dispensing, storage and disposal of Hydrocarbons/chemicals	
ISSUE:	Spillage	

USE AND MAINTENANCE OF DRIP TRAYS

TOOLBOX TALK 3: Use and maintenance of drip trays.

ISSUE: Do's and Don'ts of the Construction Site.

What is a Drip Tray?

A drip tray is a plastic or metal container that can be used to contain a liquid. A container is suitable to be used as a drip tray, if

- It is heavy enough not to be blown away;
- Has no holes in the base or side from which a liquid could leak; and
- The sides are high enough that the liquid will not overflow.

The drip tray must be sized according to the amount of liquid that needs to be captured and contained.

What is the risk?

There is a risk of spillage of hydrocarbons or other chemicals under the following circumstance:

- Various equipment and vehicles may develop slow hydrocarbon leaks (oils);
- During maintenance of vehicles and equipment, there is a risk that hydrocarbons, grease, diesel/petrol may be spilt;
- Refuelling of equipment and vehicles;
- During decanting of chemicals such as paint and curing compound etc., some of the chemicals may be spilt on the ground; and/or
- While applying paint or grease you need something to put the tin, paint brush or roller into.
- Temporary storage of chemicals at point of use

Under all these circumstances the correct use of a drip tray could prevent a spillage on to the ground or into water.

What is correct use of a drip tray?

Note that the use of a drip tray should be an additional precaution to other controls. For example:

- Decanting of chemicals should be done within a bunded area as far as possible. A funnel should be used when discharging liquids into a container with a small opening. Spillage of chemicals should always be avoided. A drip tray should be used only as a precaution in case there is a spill.
- Vehicles and equipment should be checked daily and maintained correctly to prevent leaks. Drip trays should be placed underneath equipment and vehicles when stationary as a precaution in case there is a leak.
- Temporary storage of chemicals at point of use. Chemicals should always be returned to chemical store at the end of the shift.
- When refuelling vehicles or equipment a drip tray should be used to capture any excess or spillages from the nozzle of the hose. There should be no overfilling of vehicles and equipment.
- Drip trays may be used for the placing of paint brushes and rollers while applying curing compound.

Correct maintenance?

Drip trays should be maintained empty. Drip trays are to be checked daily, cleaned and emptied into the hazardous waste skip. Drip trays that are not being used should be stored under cover to prevent them filling with rain water.

DATE:	TIME:	LOCATION:
TOPIC:	Use and maintenance of drip trays	
ISSUE:	Spillage	

USE, HANDLING AND STORAGE OF CHEMICALS

TOOLBOX TALK 4: Use. Handling and storage of chemicals

ISSUE: Do's and Don'ts of the Construction Site.

What is a Hazardous Chemical?

These are substances that may be dangerous to humans and or the environment if not handled, stored and disposed of correctly. The definition of a hazardous chemical is based on the amount, concentration or inherent properties of the waste.

e.g. Consumption of Alcohol,

Amount – the effect of 1 glass versus 5 litres. It is the same with a chemical. One drop may not be harmful but continuous dripping over a period of a week could be very harmful

Concentration – Beer as opposed to wine, there is alcohol in both but there is more alcohol in the wine than in the beer. It is the same with some chemicals

Inherent properties – Methylated spirits versus Beer, one bottle of methylated spirits could kill you but one beer won't because of the type of alcohol in the beer versus that in methylated spirits. It is the same with some chemicals

What is the risk?

There is a risk of spillage of chemicals under the following circumstance:

- During decanting of chemicals such as paint and curing compound etc., some of the chemicals may be spilt on the ground; and/or
- While applying paint or grease you need something to put the tin, paint brush or roller into.
- Temporary storage of chemicals at point of use

What are the correct use, handling and storage of hazardous chemicals?

- Hazardous chemicals should be stored in a roofed, bunded area that is kept locked. Entry of rain water into the bunded area must be prevented.
- All chemicals or chemical contaminated items should be stored within the bunded area. NOT on the wall of the bunded area or outside the bunded area on a concrete slab.
- Empty chemical containers and drums should be stored in the bunded area until removed or smaller containers thrown in the hazardous waste skip e.g. paint tins, paint brushes or rollers.
- Decanting of chemicals should be done within a bunded area as far as possible. A funnel should be used when discharging liquids into a container with a small opening. Spillage of chemicals should always be avoided.
- All chemical containers should be labelled. No food related containers are to be used for the storage of chemicals e.g. cool drink bottles.
- Temporary storage of chemicals at point of use. Chemicals should always be returned to chemical store at the end of the shift.
- Drip trays may be used for the placing of paint brushes and rollers while applying curing compound or shutter oil.
- All these chemicals must have an MSDS (material safety data sheet). This information is required to ensure that all chemicals are stored, handled and disposed of in the best possible way to ensure the safety of staff and the environment.

Correct maintenance of bunded area

Any cracks in the walls or floors and holes in the roof are to be repaired as soon as possible. Bunded area is to be kept free of spillages. Any spillages are to be cleaned up and disposed of as hazardous waste.

DATE:	TIME:	LOCATION:
TOPIC:	Use and storage of hazardous chemicals	
ISSUE:	Spillage	

WASTE SEGREGATION AND SEPARATION

TOOLBOX TALK 5: Waste segregation and separation.

ISSUE: Do's and Don'ts of the Construction Site.

What is waste separation?

This is the separation of hazardous and general waste

Some examples of hazardous wastes generated on site:

Used oils (hydrocarbons), contaminated spill absorbent or sand, paints, batteries (acid), fluorescent tubes (mercury), concrete.

Some examples of general waste generated on site:

Cool drink bottles, chip packets, plastic, leftover food, paper etc.

Correct handling, storage and disposal

- General waste must be disposed of designated marked bins or marked skips provided
- Hazardous waste to be thrown in designated marked skips provided or 210L marked drums provided in certain areas
- The two must not be mixed!
- If hazardous waste is found in general waste, all must be disposed of as hazardous waste.

Why?

- The two waste types are disposed of at different waste dumps. The general waste dump is built only to deal with general waste. Hazardous waste accidentally disposed of here, could pollute the water and harm the people in the area.
- Disposal of general waste at a hazardous waste site results in an unnecessary cost to the company, as it is a lot more expensive to dispose of hazardous waste than general waste.

What is an incident?

- Mixed waste in any of the skips or bins.

DATE:	TIME:	LOCATION:
TOPIC:	Waste segregation and separation	
ISSUE:	Waste management	

ENVIRONMENTAL INCIDENTS

TOOLBOX TALK 6: Environmental Incidents

ISSUE: Do's and Don'ts of the Construction Site.

What constitutes an environmental incident?

Any incident which could potentially negatively impact the environment such as a watercourse, protected plant, historic graves, or an animal irrespective of how minor or severe e.g. 5l oil spill on soil, animal caught in snare, honey sucker overturning and sewage flowing into river etc. are all environmental incidents.

What to do in case you come across an environmental incident:

Report the incident immediately to the ESO and your direct supervisor. ESO will advise on corrective actions to be taken.

When reporting an environmental incident, be specific, stipulating who, what, where and when.

DATE:	TIME:
TOPIC:	Wasting drinking water
ISSUE:	Scarcity of drinking water
	Expense to supply drinking water

GENERAL PROCEDURES:	SITE INCEPTION	CONSTRUCTION	POST CONSTRUCTION	OPERATION	KEY ISSUES
GENERAL ADMINISTRATION	<p>SITE INCEPTION</p> <ul style="list-style-type: none"> • An emergency response plan must be available on site as must a copy of the EMPr and the EA. • A complaints register must be maintained and kept on site. • A record of training must be maintained and kept on site. • Records proving source of materials must be kept on site. • A record of audits conducted on operations, as well as findings must be kept by the Site Engineer, and findings from audits are to be communicated to the Foreman on site. Proof of communication of findings is to be kept on site. • The site must be sufficiently lit, enabling security and policing should work be required at night. • The following details are to be available at each site: <ul style="list-style-type: none"> ▪ Emergency contact numbers: Name, contact details ▪ Environmental Control Officer: Name, contact details ▪ A list of the sensitive areas identified for that site ▪ Proof of communication of these details to the staff at that particular site. • A hazardous chemical/waste storage area must be provided for, if required. This could be in the form of a leak proof container or suitably sized drip tray. An inventory of goods stored must be maintained and updated weekly. • General waste bins with lids must be provided on site. Accumulated waste must be removed from site regularly and disposed of at a suitably licensed landfill site. • Adequate spill kits and containers for spilled and contaminated material must be provided on site. • Designated areas for stockpiling of raw materials must be identified on site. No stockpiling is to occur on or near slopes or watercourses. All stockpiling areas must be approved by the Site Engineer. • Haulage roads must be identified and demarcated at site set up. Turning areas must be identified and clearly demarcated. Roads may not be located in the designated sensitive areas. • Temporary stormwater protection measures must be established before construction activities commence. <p>All staff is to be trained on their environmental responsibilities before commencing work. All new staff is to be trained before they start work on site. All construction staff will have basic environmental awareness training, which can be conducted at the same time as the required health, & safety training. Training should include (1) the definition of environment (people + air + soil + water +business); (2) reasons for conserving and protecting the environment; (3) how the following activities can impact the environment: - Not using assigned ablutions, hazardous materials, uncleaned spills, mixing of cement or paint on soil or grass surfaces, waste management i.e. use of waste receptacles and waste separation for recycling, vehicle washing polluting soil & ground water; litter; (4) What to do to prevent the above impacting the environment i.e. assign impermeable mixing areas, no vehicle washing on site, use of waste</p>				

Appendix K:

Details of EAP and expertise

Qualifications And Experience In The Field Of Environmental Planning And Management (Lizelle Gregory (Member Bokamoso)):

Qualifications:

- Qualified as **Landscape Architect** at UP 1991;
- Qualified as **Professional Landscape Architect in 1997**;
- A Registered Member at The **South African Council for the Landscape Architect Profession (SACLAP)** with Practise Number: **PrLArch97078**;
- A Registered Member at the **International Association for Impact Assessment Practitioners (IAIA)**;
- Qualified as an **Environmental Auditor in July 2008** and also became a Member of the International Environmental Management Association (IEMAS) in 2008.

Working Experience:

- Worked part time at Eco-Consult – 1988-1990;
- Worked part time at **Plan Associates as Landscape Architect in training** – 1990-1991;
- Worked as Landscape Architect at **Environmental Design Partnership (EDP)** from 1992 - 1994
- Practised under **Lizelle Gregory Landscape Architects** from 1994 until 1999;
- Lectured** at Part-Time at **UP** (1999) – Landscape Architecture and **TUT** (1998- 1999)- Environmental Planning and Plant Material Studies;
- Worked as **part time Landscape Architect and Environmental Consultant at Plan Associates** and **managed their environmental division for more than 10 years** – 1993 – 2008 (assisted the **PWV Consortium** with various road planning matters which amongst others included environmental Scans, EIA's, Scoping reports etc.)
- Renamed business as **Bokamoso in 2000** and is the only member of Bokamoso Landscape Architects and Environmental Consultants CC;
- More than 25 years experience in the compilation of Environmental Reports**, which amongst others included the compilation of various **DFA Regulation 31 Scoping Reports**, EIA's for EIA applications in terms of the applicable environmental legislation, Environmental Management Plans, Inputs for Spatial Development Frameworks, DP's, EMF's etc. Also included EIA Application on and adjacent to mining land and slimes dams (i.e. Brahm Fisherville, Doornkop)

Qualifications And Experience In The Field Of Landscape Architecture (Lizelle Gregory (Member Bokamoso)):

Landscape Architecture:

-Compiled landscape and rehabilitation plans for more than 22 years.

The most significant landscaping projects are as follows:

-Designed the Gardens of the Witbank Technicon (a branch of TUT). Also supervised the implementation of the campus gardens (2004);

-Lizelle Gregory was the Landscape Architect responsible for the paving and landscape design at the UNISA Sunnyside Campus and received a Corobrick Golden Award for the paving design at the campus (1998-2004);

-Bokamoso assisted with the design and implementation of a park for the City of Johannesburg in Tembisa (2010);

-The design and implementation of the landscape gardens (indigenous garden) at the new Coca-Cola Valpre Plant (2012-2013);

-Responsible for the rehabilitation and landscaping of Juksei River area at the Norwood Shopping Mall (Johannesburg) (2012-2013);

-Designed and implemented a garden of more than 3,5ha in Randburg (Mc Arthurpark). Bokamoso also seeded the lawn for the project (more than 2,5 ha of lawn successfully seeded) (1999);

-Bokamoso designed and implemented more than 800 townhouse complex gardens and submitted more than 500 Landscape Development Plans to CTMM for approval (1995 – 2013);

-Assisted with Landscape Designs and the Masterplan at Eco-Park (M&T Developments) (2005-2011);

-Bokamoso designed and implemented an indigenous garden at an office park adjacent to the Bronberg. In this garden it was also necessary to establish a special garden for the Juliana Golden Mole. During a recent site visit it was established that the moles are thriving in this garden. Special sandy soils had to be imported and special indigenous plants had to be established in the natural section of the garden.

-Lizelle Gregory also owns her own landscape contracting business. **For the past 20 years she trained more than 40 PDI jobless people (sourced from a church in Mamelodi)** to become landscape contracting workers. All the workers are (on a continuous basis) placed out to work at nurseries and other associated industries;

-Over the past 20 years the Bokamoso team compiled more than 800 landscape development plans and also implemented most of the gardens. Bokamoso also designed and implemented the irrigation for the gardens (in cases where irrigation was required). Lizelle regarded it as important to also obtain practical experience in the field of landscape implementation.

BOKAMOS

Landscape Architects & Environmental Consultants CC



BOKAMOSO

LANDSCAPE ARCHITECTS & ENVIRONMENTAL CONSULTANTS CC

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1. Executive Summary
 2. Vision, Mission & Values
 3. Human Resources
 4. Services
 5. Landscape Projects
 6. Indicative Clients
 7. Environmental Projects
 8. Corporate Highlights
 9. Landscape Projects

1. Executive Summary

Bokamoso specializes in the fields of Landscape Architecture and all aspects of Environmental Management and Planning. Bokamoso was founded in 1992 and has shown growth by continually meeting the needs of our clients. Our area of expertise stretches throughout the whole of South Africa. Our projects reflect the competence of our well compiled team. The diversity of our members enables us to tend to a variety of needs. Our integrated approach establishes a basis for outstanding quality. We are well known to clients in the private, commercial as well as government sector.

At Bokamoso we stand on a firm basis of environmental investigation in order to find unique solutions to the requirements of our clients and add value to their operations.

2. Vision, Mission & Values

Vision:

At Bokamoso we strive to find the best planning solutions by taking into account the functions of a healthy ecosystem. Man and nature should be in balance with each other.

Mission:

We design according to our ethical responsibility, take responsibility for successful completion of projects and constitute a landscape that contributes to a sustainable environment. We add value to the operations of our clients and build long term relationships that are mutually beneficial.

Values:

Bokamoso stands on the basis of fairness. This include respect within our multi-cultural team and equal opportunities in terms of gender, nationality and race.

We have a wide variety of projects to tend to, from complicated reports to landscape installation. This wide range of projects enables us to combine a variety of professionals and skilled employees in our team.

Bokamoso further aids in the development of proficiency within the working environment.

3. Human Resources

Lizelle Gregory - Owner

Lizelle Gregory obtained a degree in Landscape Architecture from the University of Pretoria in 1992 and passed her board exam in 1995. Her professional practice number is PrLArch 97078.

Ms. Gregory has been a member of both the Institute for Landscape Architecture in South Africa (ILASA) and South African Council for the Landscape Architecture Profession (SACLAP), since 1995.



Ms. Gregory has been registered as a member of IAIA in 2007.

Ms. Gregory attended and passed an International Environmental Auditing course in 2008. She is a registered member of the International Environmental Management and Assessment Council (IEMA).

She has lectured at the Tshwane University of Technology (TUT) and the University of Pretoria (UP). The lecturing included fields of Landscape Architecture and Environmental Management. Ms. Gregory has more than 25 years' experience in the compilation of Environmental Evaluation Reports:

- Environmental Management Programmes (EMPr);
- Strategic Environmental Assessments;
- All stages of Environmental input;
- EIA under ECA and the new and amended NEMA EIA regulations; and
- various other Environmental reports and documents.

Ms. Gregory has compiled and submitted more than 600 Impact Assessments within the last eight years.

Furthermore, Ms. L. Gregory is also familiar with all the GDARD/Provincial Environmental policies and guidelines. She assisted and supplied GAUTRANS/former PWV Consortium with Environmental input and reports regarding road network plans, road determinations, preliminary and detailed designs over a period of 12 years.

3. Human Resources

Environmental Impact Assessments

Adèle Drake – HR & Systems Manager and Senior EAP

BA (Geography and History) (UP).

NQF Level 7 Air Quality Management (UJ).

Qualified SHEQ Auditor.

Project Management (UP)

18 years' experience in the field of Environmental Management within Mining, Forestry and Renewable Energy Industries, and Environmental Consulting Field. Responsible for compiling EIAs, WULAs, AELs and conducting SHE legal compliance audits.

Mary-Lee Van Zyl – QC Manager and Senior EAP

MSc Plant Science (UP).

BSc (Hons) Plant Science (UP) BSc Ecology (UP).

Seven years' experience in the Environmental field. Specialises in NEMA Application Forms, BARs, EIA and Scoping Reports, Appeals, S24G Applications, EMPRs, Amendment Applications, NEMA queries, WULAs and GEMF Registrations.

Bianca Cronjé - Environmental Assessment Practitioner (EAP)

Certificate in Life and Environmental Sciences (UNISA).

SAMTRAC (NOSA).

Six years' experience in the field of Environmental Management as EAP. Specialises in NEMA Application Forms, BARs, EIA and Scoping Reports, Appeals, S24G Applications, EMPRs, Amendment Applications, NEMA queries, WULAs and GEMF Registrations.

Water Use Licensing

Dashantha Moodley – WULA Practitioner and EAP

BA Honours Degree in Environmental Management (UNISA).

Bachelor Social Science in Geography and Environmental Management (UKZN)

More than nine years' experience in WUL Application and Integrated Environmental Management within water resource management. Senior Environmental Practitioner and Water Use Licences Consultant. Specialises in Water Use Licences.

Suné – ECO, Water Sampling Assistant, E-WULAAS Assistant and Bio-monitoring Specialist

SASS5 Course Certificate of attendance.

Two years' experience in the environmental field. Responsible for the E-WULAAS, conducting ECO inspections, maintaining the water quality database, conducting Bio-monitoring Assessments and compiling Water Use Licence Applications.

3. Human Resources

Environmental Compliance Officer

Trevor Botham – Landscape Specialist and ECO

Introduction to Horticulture.

Introduction to Garden Design.

Radio telephone Operators Certificate.

2 and 3D Surface and Underground CAD and GIS Modelling.

18 years' experience in the mining, engineering and landscaping sectors and specialises in AutoCAD and GIS.

Dwayne Miller –Environmental Control Officer Manager

B.Sc. Biological and Environmental Sciences (NWU – Potchefstroom Campus).

Advanced Wetland Course (UP) (2016).

Five years of working experience in the environmental field. ECO, ground & surface water sampling and monitoring.

In-House Specialists

Lizette Delport – Wetland Specialist and Water Monitoring Supervisor and EAP

MSc Aquatic Health (UJ).

BSc. Hons. Environmental Management (Cum Laude) (UNISA).

BSc Agric. Animal Science (UFS).

Registered with the South African Wetland Society (SAWS) and SACNASP.

More than six years' experience as a wetland specialist. Experienced in compiling various environmental reports (EIA's, BAR's). Environmental Assessment Practitioner and Wetland Specialist.

Nkoliso Magona – Ecologist

MSc Botany (SU).

More than three years' experience in the Environmental Field. Specialises in Fauna and Flora reports.

Landscape Design

Louis van Wyk – Candidate Landscape Technologist

BScLarch BSc Landscape Architecture (NWU)

2 years' experience in landscape design, 1 years' experience in graphic design and 4 months' experience in Landscape rehabilitation.

3. Human Resources

Geographical Information Systems

Alfred Thomas – GIS Specialist

CorelDraw, Adobe Creative Suite, Open source like Inkscape, Gimp and Blender 3D.

ESri Products -ArcGis /ArcMap.

Microimages -TNT Mips / Global Mapper and QGis

Certified Internet Web Foundations (IT Academy).

CIW Foundation & Internet Marketing Graphic Design (IT Academy).

Webdesign and Management – Joomla/Wordpress/Html 5.

More than 18 years GIS experience and various Multimedia Software

Administration

Juanita de Beer – PA to Owner and Public Participation Officer

Conference, Exhibition and Events Management (Damelin).

Personal Assistant (PA) to the Owner. Specializes in public relations and Public Participation Processes with eight years' experience in the field.

Elsa Swart – Receptionist and Debtors/Creditors Administration

Secretarial Skills (ARMSCOR).

Time Management (ARMSCOR).

Secretarial (Centurion Collage).

47 years' experience in admin and secretarial duties. Responsible for debtors/creditors and reception.

Merriam Mogalaki – Cleaner and Admin Assistant

Cleaner and general office administration assistance. Responsible for office library and archive. 15 years' experience in office administration.

Elias Maloka – Driver and Public Participation Assistant and Landscaping Supervisor

18 Years' experience in landscape contracting.

Site supervisor overseeing landscape installations. Irrigation design and implementation. Assists during Public Participation with distribution of Notices. Courier responsible for collecting and delivering reports to relevant competent authorities.

4. Services

- Basic Assessment Reports
- EIA & Scoping Reports
- Environmental Management Programmes
- Environmental Scans
- Strategic Environmental Assessments
- EMPrs
- Environmental Input and Evaluation of Spatial Development Frameworks
- State of Environmental Reports
- Compilation of Environmental Legislation and Policy Documents
- Environmental Auditing and Monitoring
- Environmental Control Officer (ECO) inspections
- Visual Impact Assessments
- Specialist Assistance with Environmental Legislation Issues and Appeals
- Development Process Management
- Water Use Licence Applications
- Waste Licence Applications
- Ecological Assessments
- Heritage Impact Assessments
- Wetland Delineation and Risk Assessments
- Water sampling and analysis
- Public Participation
- SHE Audits
- Due Diligence
- Landscaping design and implementation

5. Landscaping Architecture and Contracting

5.1 Landscaping Architecture

- Master Planning
- Sketch Plans
- Planting Plans
- Working Drawings
- Detail Design
- Landscape Development Frameworks
- Landscape Development Plans
- Contract and Tender Documents
- Landscape Rehabilitation Works
- Rehabilitation Plans

5.2 Landscaping Contracting

Implementation of landscaping plans for:

- Office parks;
- Commercial/Retail/Recreational Developments;
- Residential complexes;
- Private Residential Gardens; and
- Implementation of irrigation systems.

6. Indicative Clients

Attacq
Balwin Properties Limited
Billion Property Group
Century Properties Group
Chieftain
Coca-Cola
Dovetail Properties
Fontis
GDRT
Golder
Key Spirit Developments
Moolman Group
Napaj
Petroland Developments
Sable Place Properties
Sky Village
Twin City Developments
Urban Dynamics
Velmore

7. Environmental Projects

Environmental Impact Assessments/S24G Reports	
Chamdor X4 Mixed Use Development	Wheatlands Urban Solar Farm
Dalpark X32 Mixed Use Development	Peach Tree X23 Light Industrial Township
Dennehof Filling Station	Glencoe Dundee Abattoir
Fairlands Interchange	Riverwalk External Services
Greenstone Filling Station	Standerton X9 Shopping Centre
Hazeldean Boulevard Road	K56 Road
Kleinfontein Settlement – Residential S24G	Clubview Mixed Use Development EMF
Leeuwoort South Mixed Use Development	Pikitup Garden Waste
Lesotho water treatment - Pharmaceuticals	Peach Tree X20 Residential Development
Nkosi City Integrated Human Settlement	Peach Tree X24 Light Industrial Township
Parkdene X7 Mixed Use Development	Riverwalk Electrical Line
PWV 17 Road	Chantelle X48 - Hartebeeshoek Filling Station & Place of refreshment
PWV18 Road construction Environmental Scan	Hennopsriver Prospecting Right BAR
Reiger Park X19 Residential Development	N4 Salomon Mahlangu Interchange
Rietvlei X10, X11 & X15 - Residential	Peach Tree X21 & X22 - Industrial Township
Rietvlei X6-9 - Residential	Kudube Unit 9 Sewerage pump station
Secunda Shell Filling Station	Peach Tree X25 Industrial Township
Selby Filling Station EMF	Ormonde South Residential
Triple C Dam	Roohuiskraal X29
Trompsburg Mixed Use Development	Greengate X77 Commercial
Varsity College Expansion	Bosbokrand Shopping Centre
Ventersburg Filling Station	Chantelle X49 - Hartebeeshoek - Mixed Use Development
Winterveld X5 Mixed Use Development	La Montagne Reservoirs

7. Environmental Projects

Water Use Licence Applications	
Waterfall Mixed Use Development - Jukskei View X118	Kikuyu-Jukskei View X128 -Emergency storm water dam repairs
Land Parcel 3 Commercial development	Riverwalk Electrical Line
Jukskei View X 128 Residential Development	Kikuyu Water Pipeline
Farm Mushroom to be known as Kyalami Gardens X27	Rondebult Road Section 1 Upgrade
Kameeldriftvoere	Linksfield Mixed Use
Peach Tree X21-25 WWTW	Fairlands Interchange
Teak Place	Farm Waterval 5 IR
Waterfall Bulk Water Pipeline	Grobblersdal Shopping Centre
R104 Culvert Extension	Waterfall Electrical Line
Riverwalk Development and External Services	Q4 City Filling Stations
Winterveld Ext 5 Northern Outfall Sewer	Waterfall Fields Emergency Work
Winterveld Ext 5 Southern Outfall Sewer	Rooihuiskraal X 29
Waterfall Fields Electrical Sleeves	Riverwalk Crystal Lagoon & Conversion application
Farm Waterval 5 IR	Farm Leeuwfontein
Western Cape Farm	Rietvlei Farm Village WULA
Hazeldean Boulevard Road GA amendment application	Kudube Unit 9 Sewerage pump station
Grobblersdal Shopping Centre Conversion application	Nkosi City Mixed Use
Eikestad Mall Stellenbosch	

Environmental Compliance Officer	
Tonga Mall	Peach Tree Extension X23
Lufhereng mixed use development	Olympus X72 Residential
Soshanguve Bridge	Waveside Bottle Water Plant
Kikuyu Residential	Peach Tree X21 and X22, X23, X25
Waterfall Fields Mixed Use	Peach Tree X24
Riverwalk Road	Fleurhof Filling Station
Riverwalk Development	Beyerspark Filling Station
Kameeldrift voere Pty Ltd	Peach Tree Extension X23
Ashlea Gardens Residential	Olympus X72 Residential
Waveside Bottle Water Plant	

7. Environmental Projects

Heritage Assessments	
Cayman Academy	Nkosi City
Chamdor X4	Parkdene X 7 Memorialisation and Destruction
Clubview	Pretoria Gardens
Dalpark X32 (Carnival City)	PWV 18 Scan
Ga-Rankuwa (TUT)	Parkdene X 7 Memorialisation and Destruction
Glencoe Exemption Letter	Reiger Park X 19 Memorialisation and Destruction
Hennops River	Selby Exemption Letter
Industria	Secunda Exemption Letter
Krugersdorp	UNISA Education Campus
Knopjeslaagte	Waterfall Ridge
La Montagne	Nkosi City
Modderfontein (M & T)	

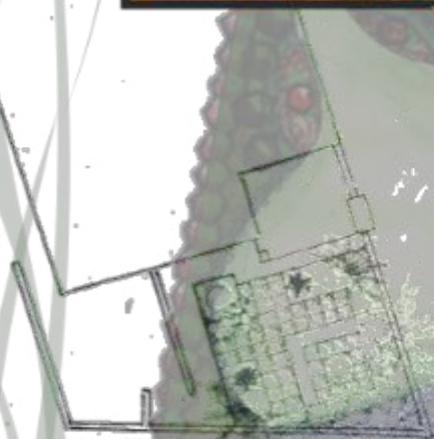
Wetland Assessments	
Ormonde	Reiger Park X19
Wheatlands	Parkdene X7
Riverwalk Electrical	Winterveld North
Thula Mall	Winterveld South
Hartebeeshoek	Winterveld X5
Kameeldrift Voere	Kikuyu pipeline
Mooibosch	Waterfall Fields
Mthatha Bedford City	Mogale City X5
Kudube Sewer	Ga-Rankuwa
Slovo Park	Peach Tree X25
Glen Vista	Corobrick Rietvlei WUL
Nkosi City	Equestria
Hazeldean Rd	Faerie Glen
Leeuwpoort South	Knopjeslaagte X19
Varisty College	Ga-Rankuwa
Farm Waterval rehabilitation	Peach Tree X25
Eagles Creek Rehabilitation	Corobrick Rietvlei WUL
Carnival City	Myoli Beach
Waterfall Ridge	PWV18
Skymall	

7. Environmental Projects

Fauna & Flora Assessments	
Klaserie Private Game Reserve	Equestria Holding 180
Vleikop Abattoir	Groblersdal Filling Station
Greengate X77 Commercial	Lydenburg Siding
Hennopsriver Prospecting Right	Cayman Academy
Triple C Dam	Hazeldean Road
AFT Feedlot	Faerie Glen Development
Drafstap Boerdery WULA	Secunda Filling Station Opinion
Robbertze Boerdery WULA	Mooibosch
Carnival City	Peach Tree X25 identification
Chamdor X4 SCAN	Chamdor X4
Glenvista	Kameeldrift Voere
Chantelle X48 and X49	PWV18
Hazeldean Road	TUT Ga-Runkuwa
Kudube	Olympus AH 72
Mogale X14	Berea site visit
Mooibosch	Parkdene Leeuwoort
Mthatha	Transnet siding objection
Nkosi City	Knopjeslaagte Ext 19
Peachtree X25	Ventersburg Filling Station
Reigerpark X9	Olympus Filling Station
Riverwalk Reservoir	Greenstone Filling Station
Riverwalk	Carnival City
Rooihuiskraal	Cavalier New Parking
Slovopark	Lotus Garden
Thula Mall - relocation	Hidden Hills
Waterfall Ridge	Majesty Oils Mills
Wheatlands	Malekane Mall
Glenvista Update	Munyaka Crystal Lagoon
La Montagne Update	Kroon Chickens Hatchery Farm
N4 and Solomon Mahlangu Interchange	Mooikloof Retail Park
Peach Tree X 21- X25	Garsfontein Filling Station
Rietvlei Filling Station	Secunda Filling Station
Rietvlei Waste Water Treatment Works	Standerton X10 Mixed Use Development
Sunderland Ridge	Mooiplaats Educational Facility
Thulamahashe B Sewer	Mnandi Filling Station
Waterfall Estate	Onderstepoort Wholesale Diesel Storage
Hazyview X44	

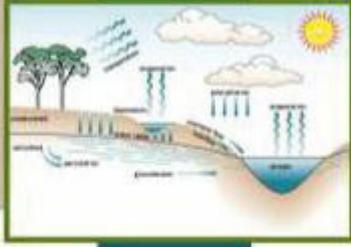
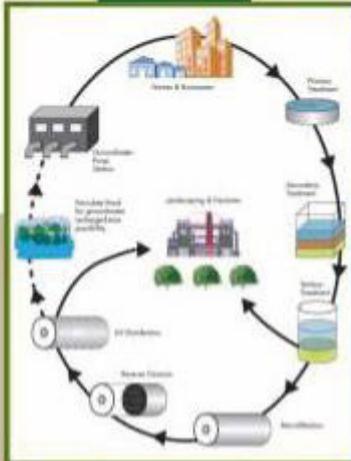
8. Corporate Highlights

Unisa Sunnyside Campus, Pretoria - Best commercial paving plan in Gauteng, 1997
Safari Garden Expo Silver Certificate, 2010



existing house

9. Landscape Projects



project

shelter- mosaic detail



Landscape Projects

9. Landscape Projects

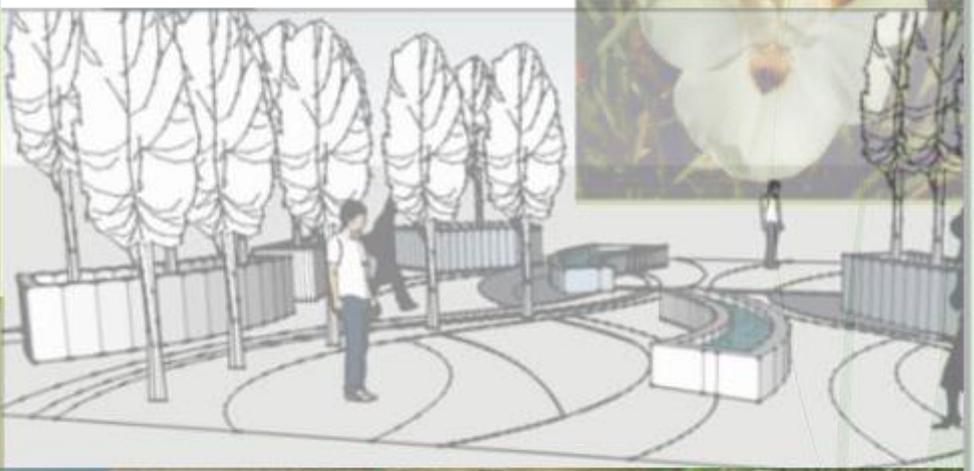
concept plan Valpre Bottling Plant, Heidelberg

- natural veld
- gatehouse
- veldgrass
- feature planting
- entrance water features
- planting areas

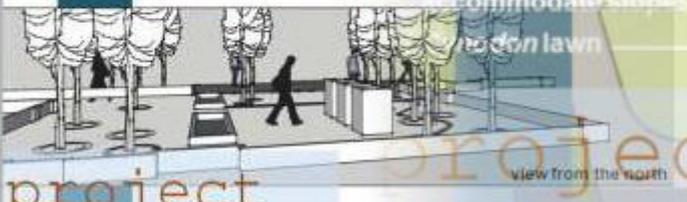
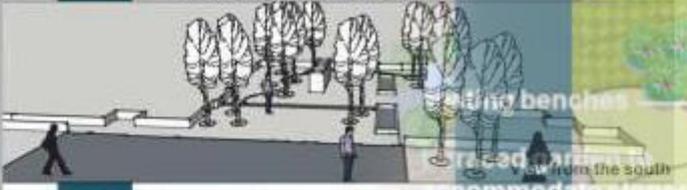


project

gatehouse



3D representations



project

offices /

RAW MATERIAL DELIVERY

front garden

9. Landscape Projects

The Wilds, Pretoria



Appendix L:

Any other Information

Not Applicable

Appendix M:

Financial Provision (if applicable)

Not Applicable

Appendix N:

Closure Plan (where applicable)
as described in Appendix 5 of
EIA Regulations, 2014

Not Applicable