

Figure 9: Soils Map

5.1.1.1 Agricultural Potential

The subject site occurs within an area denoted as arable. **Refer to Figure 10 below.**

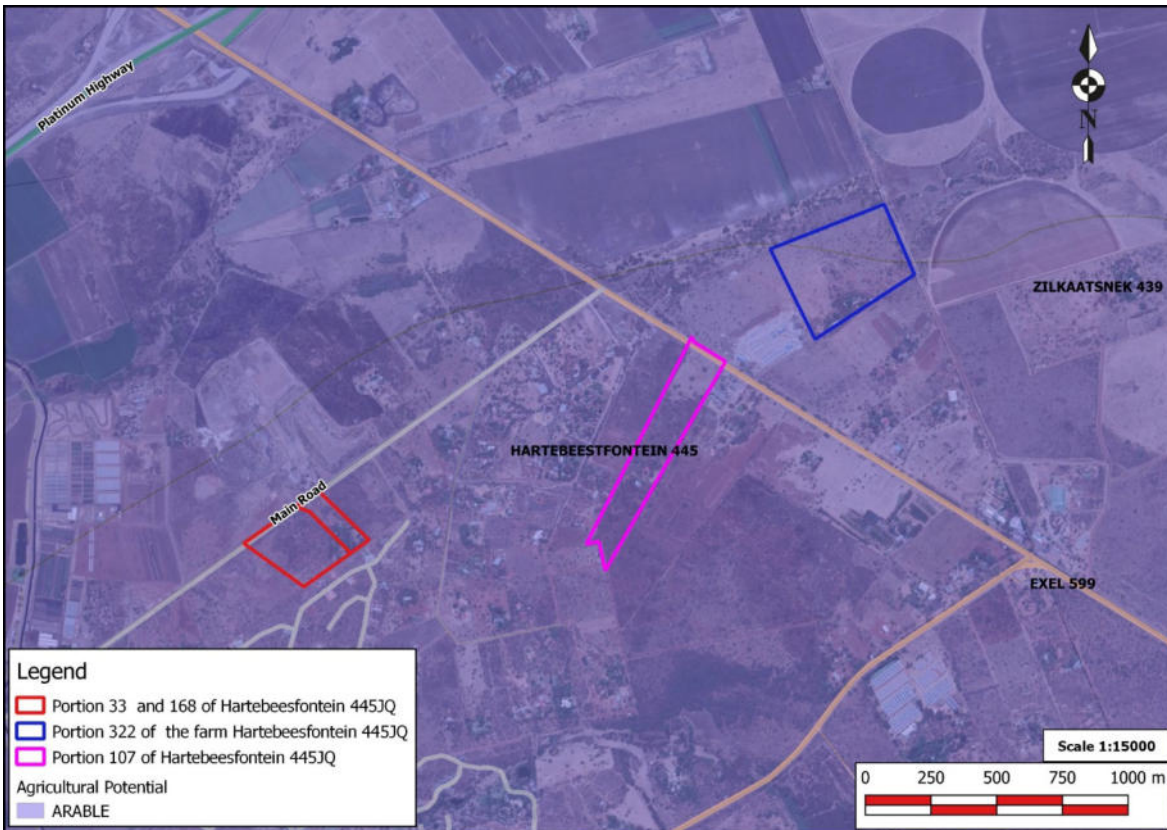


Figure 10: Agricultural potential map

5.1.2 Hydrology

The subject 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. **Refer Figure 11 denoting the Hydrology and the quaternary catchment and the Water Management Area.**

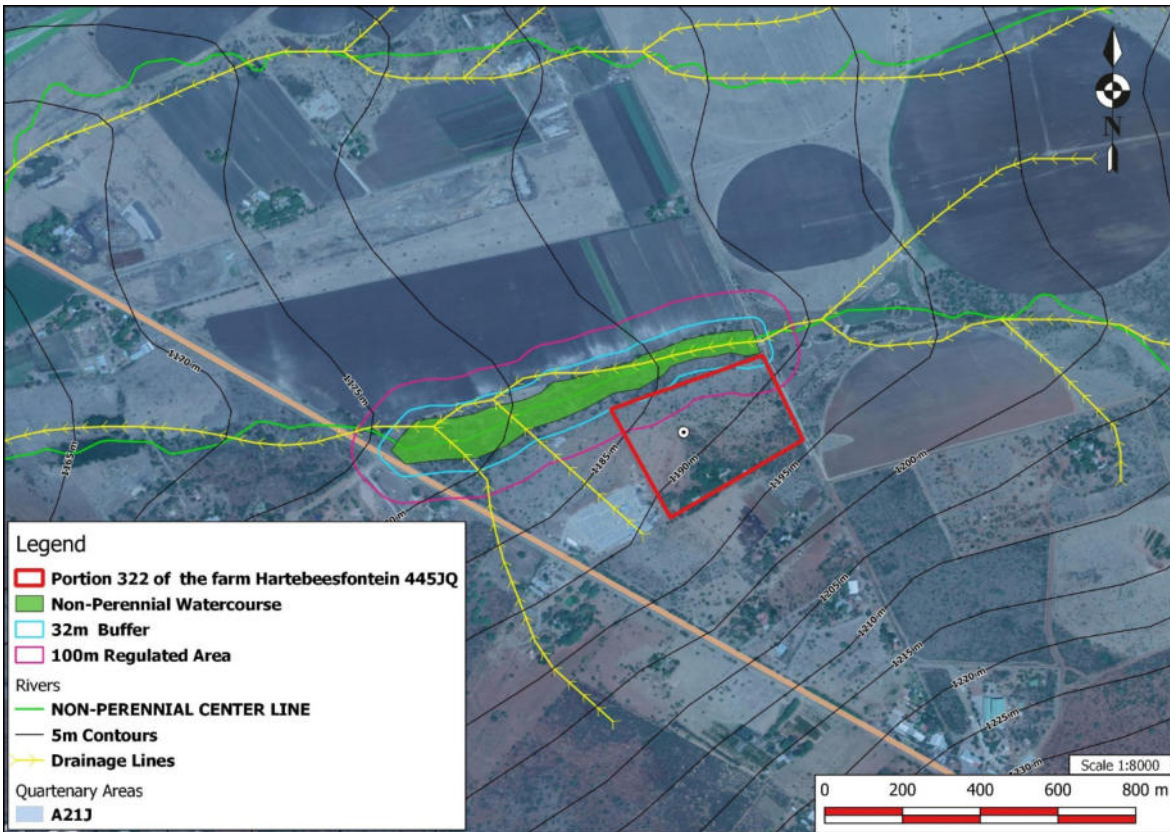


Figure 11: Hydrology Map

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.

5.1.2.1 Wetland Assessment

A Wetland Delineation and Risk Assessment Report dated March 2019 concluded that 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.

5.1.3 Biodiversity

The subject property occurs within a Savannah Biome within the Central Bushveld Bioregion and the Moot Plains Bushveld Vegetation Unit as denoted in **Figures 12 to 14** below.

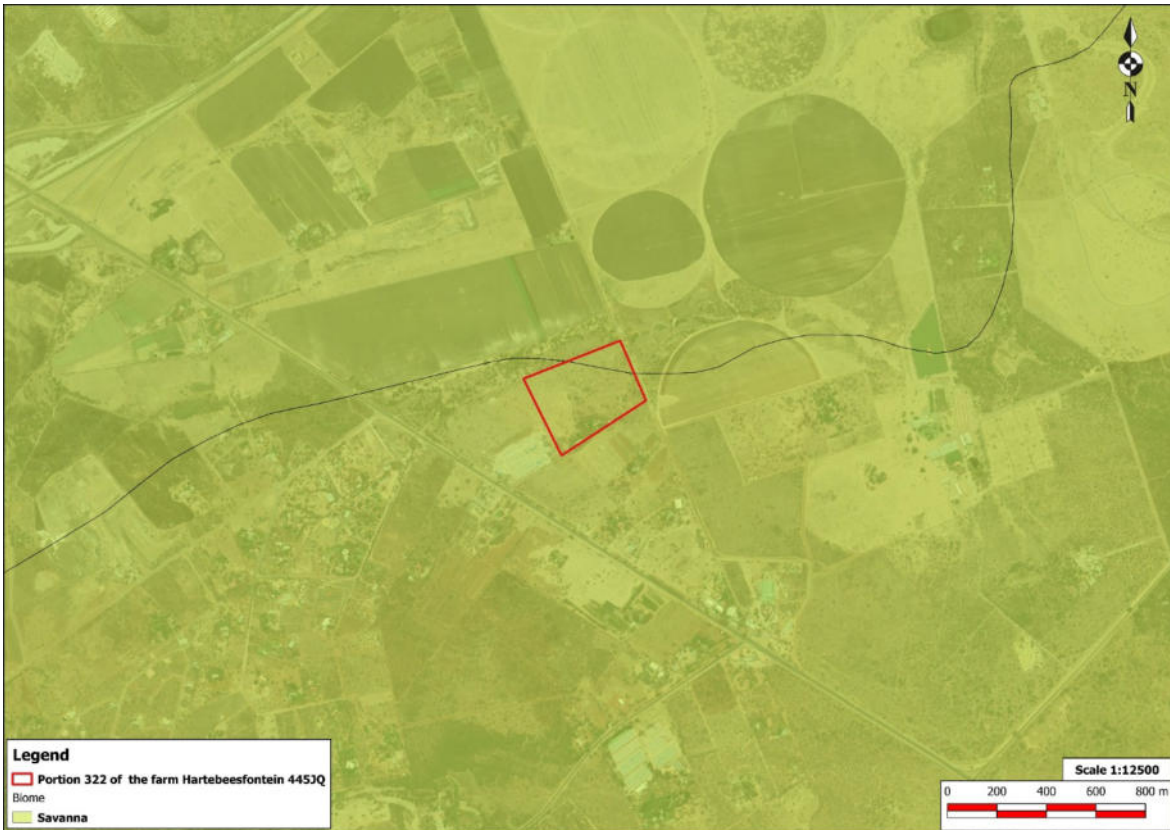


Figure 12: Biome Map

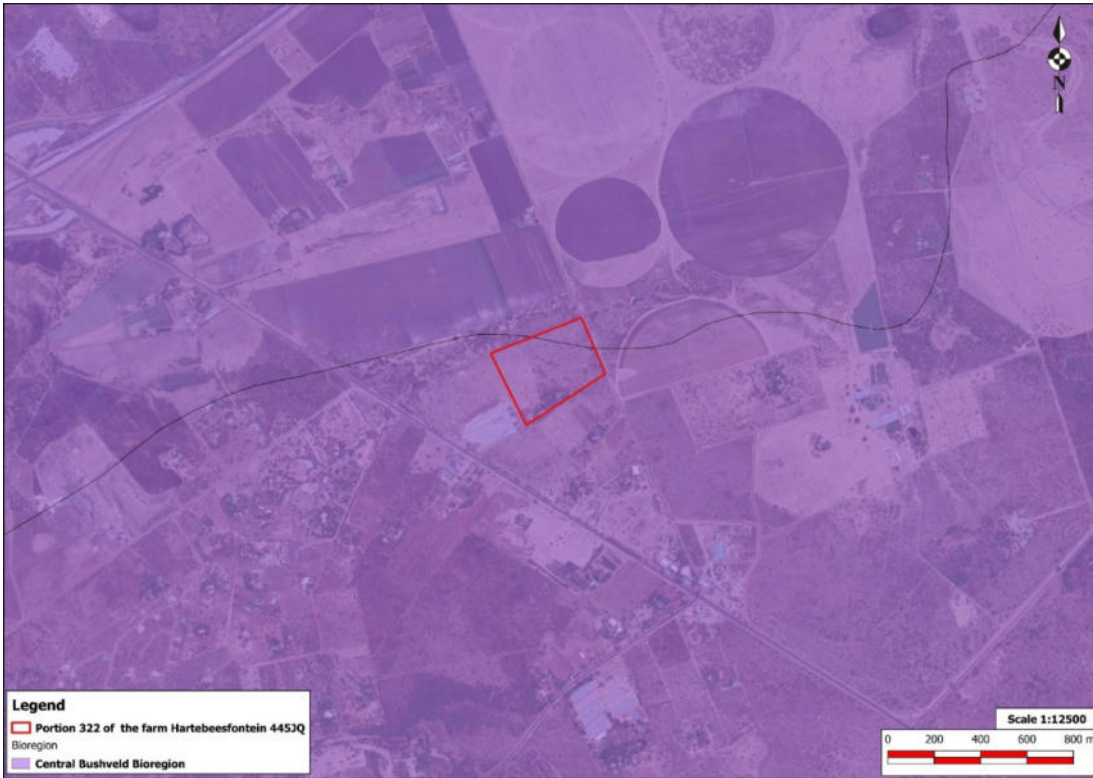


Figure 13: Bioregion Map

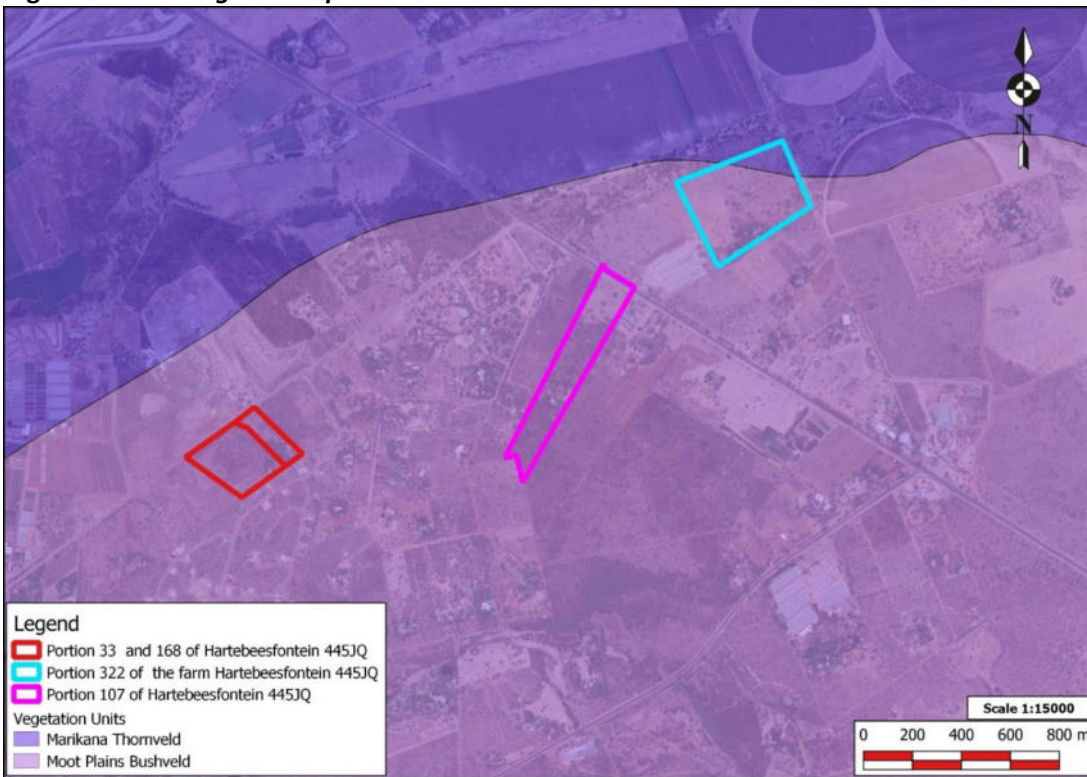


Figure 14: Vegetation Unit Map

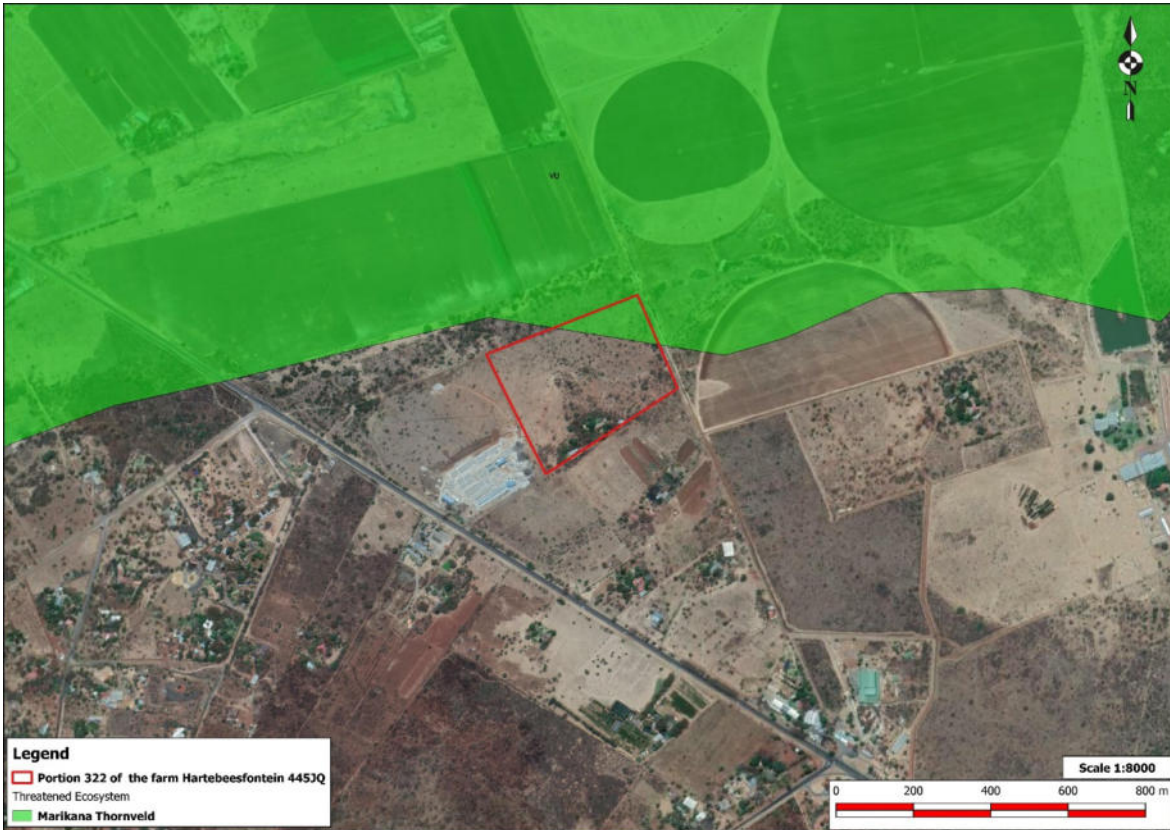


Figure 15: Threatened Ecosystems

The north-eastern corner of the site occurs within a Threatened Ecosystem in the form of the Marikana Thornveld, carrying the status Vulnerable. **Refer to Figure 15 above.**

According to the North West Biodiversity Sector Plan, the proposed development site has moderate to high hyperdiversity. **Refer to Figure 16 below.** The non-perennial watercourse flowing past the site is regarded as having high hyperdiversity.

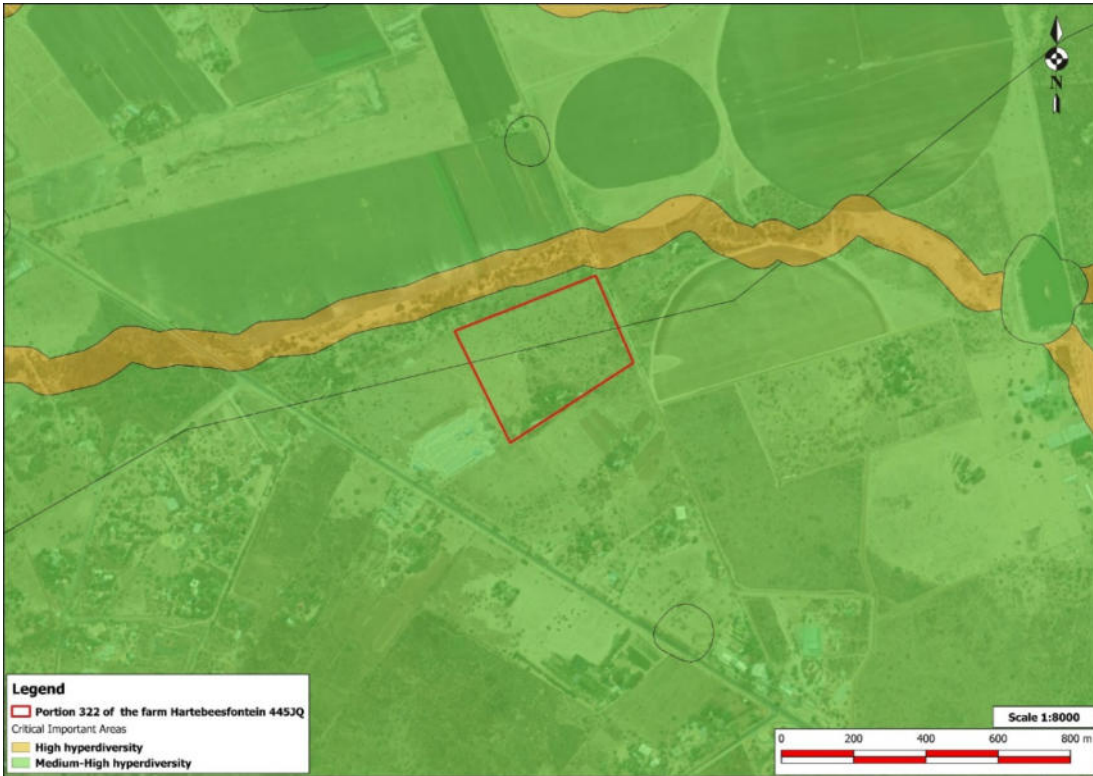


Figure 16: North West Biodiversity Sector Plan Areas



Figure 17: Critical Important Area - Flora

According to the North West Biodiversity Sector Plan, the proposed development site is classified as Critical Important Area in terms of Flora. **Refer to Figure 17 below.**

Based on the Fauna and Flora Comparative Assessment conducted, Portion 322 of the Farm Hartebeestfontein 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. **Refer to Appendix G3 for the Fauna and Flora Comparative Assessment.**



Figure 1: Important Bird and Biodiversity Areas

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. **Refer to Figure 18 above.**

Important Bird and Biodiversity Areas (IBAs), as defined by Bird Life International, constitute a global network of over 13 500 sites, of which 1 12 sites are found in South Africa. IBAs are sites of global significance for bird conservation.

5.2 Physical/Built Environment

Horizon Bricks borders the proposed development site to the west. The prevalent wind direction in the area is easterly during winter and westerly during summer. Considering the hatchery facility will be in an enclosed building it is not foreseen that dust generated by activities associated with Horizon Bricks will have a negative impact on proposed hatchery.

An existing dwelling occurs on site, but will not affect the proposed hatchery site layout.

6. SOCIAL ENVIRONMENT

6.1 Heritage

A Phase 1 Heritage Impact Assessment Report was conducted by A Pelsers Archaeological Consulting (APAC) dated March 2019. **Refer to Appendix G4 for the said report.**

Only one site of cultural heritage origin and significance was identified during the assessment. A grave site is located close by to Site Alternative 3 which is Portion 33 and 168 of the Farm Hartebeestfontein 445 JQ. The grave site has approximately between 30 and 50 graves. Two graves have formal headstones with inscriptions.

From a cultural heritage perspective, Site Alternative 1 and 2 are preferred development sites as there will be no impacts on archaeological or historical sites, features or material. Site Alternative 3 is the least preferred site due to the grave site in close proximity.

7. SERVICE INFRASTRUCTURE

7.1 Bulk Water Supply

The Madibeng Local Municipality and Rand water confirmed that there is currently no bulk water supply in this area although the Zilkaatsnek Reservoir is situated approximately 4km southeast of the proposed development sites. Due to Municipal water not being readily available in the area, property owners and local communities and businesses rely on groundwater as the sole source of water supply for domestic use, irrigation and process water. The proposed hatchery site has an existing production borehole utilised for domestic use. This on-site borehole will be utilised as water source for the proposed hatchery. The installation of elevated storage tanks might also be required.

7.1.1 Bulk Water Supply Quality

Sub-optimal water quality and insufficient water supply can cause losses, by undermining hatching results, contributing to mechanical breakdowns and presenting hygiene risks. A properly designed water system is therefore critical to the success of any hatchery and since good water is generally becoming more scarce and costly, it has become increasingly important to understand how to optimise the hatchery's water quality and supply.

7.1.2 Typical Water Analysis

A good hatchery water system starts with knowing the quality of the water source. This is commonly achieved by regular laboratory analysis, with typical parameters including:

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.

Suspended particles should be absent, as these will block pipes, nozzles etc. Suspended solids are removed by filters.

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.

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.

7.1.3 Water Treatment Systems

Depending on the differences between the results of water analysis and the hatchery's requirements, water treatment may be needed. Typically, water treatment is implemented using modular units:

- Filtration eliminates suspended solids, usually by means of cartridge and/or sand filters;
- Chemical treatment: usually anti-bacterial and anti-scaling treatments and/or a UV disinfection unit;

- Water softener, which reduces water hardness by replacing calcium and magnesium with sodium;
- Reverse osmosis, which uses membranes to separate dissolved salts, producing pure water;
- Pumps, sensors and control units, to monitor equipment function, with buffer tanks to balance the difference between supply and demand. Reject or backwash water needs to be drained.

7.1.4 Bulk Water Needs

Water is required by the following main users/processes in the hatchery:

- Potable water (for taps, human consumption, showers, toilets). Volume is mainly dependent on the size of the hatchery operation and its staff and the number of chicks being hatched per week.
- Humidification (spray nozzles, rotating discs, fogging), consumption depends on the outside climate and on the volume of intake air.
- Circulating systems (chilled or hot water) are filled once and only require replenishing in the case of spills or leaks in the system. Note: the risk of limescale and water aggressiveness increases with temperature, making hot water systems more vulnerable to the development of sub-optimal water quality than chilled water systems.
- Production water (cleaning water for building, machines, trays, crates, trucks). Volume (expressed in litre/day old chick) varies significantly, depending on the hatchery's cleaning protocols, which may be one or other of the following extremes, or anywhere in between:
 - Not manually removing debris (shells, fluff) prior to washing, using low pressure water hoses (1-3bar) and manually cleaning and rinsing
 - Removing debris prior to washing. Soaking, using detergent foam. Cleaning with mid-to-high pressure water jets (25-100 bar). Using high- pressure industrial tray/crate/trolley washers with internal water circulation.

As a general rule, 0.35 litre of water is required per day old chick in order to address the water requirements of a hatchery. At full production following implementation of all five phases, the proposed hatchery will hatch 600 000 chicks per week. The water requirements including process water (production, humidifying, cleaning and circulation) and potable water amounts to 210m³ of water per week or approximately 11 000m³ per annum.

In terms of potable water and ablution needs i.e. is estimated that the proposed Hatchery will require 20 litres per person per day for the 50 employees i.e. 365m³ of potable water per annum which is included in the 11 000m³ per annum.

The intake water will generate approximately 8 250m³ of effluent per annum calculated as 75% of the intake volume.

The Total volume of groundwater required in order to cater for the proposed Hatchery amounts to approximately 11 000m³ per annum.

A four-hour test conducted on the existing production borehole situated on the proposed hatchery site, yielded 4 800 litre per hour consistently for four hours, i.e. the borehole can yield 19.2m³ per day and 7 008m³ of water per annum.

Phase 1 of the hatchery requires 7.5m³ of water per day (water calculated for 150 000 chicks) or approximately 2 750m³ of water per annum. The on-site borehole thus has sufficient capacity to cater for the water needs of Phase 1 of the hatchery. Following completion of all five phases of the hatchery, 30m³ of water will be required per day or approximately 11 000m³ per annum in order to cater for 600 000 chicks hatching per week at full production.

A 24-hour yield test has been carried out in order 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 hatchery standards or whether water treatment will be required. A full Geohydrological Assessment is currently underway as part of the Water Use Licence Application.

In terms of Table 2: Groundwater Abstraction Rates of the Revision of the General Authorisation (GA) for the Taking and Storing of Water, Notice 538 of 2016, only 45m³ of water may be abstracted per hectare per annum from quaternary catchment A21J, within which the proposed development site is located. Considering the size of the property on which the proposed hatchery will be situated is 12.9 hectares in extent, only 580.5m³ of groundwater may be abstracted from the on-site borehole per annum in terms of the GA, and only 2000m³ of water may be stored on the property.

A full Water Use Licence Application (WULA) is thus triggered by the proposed groundwater abstraction on 322 of the Farm Hartebeesfontein 445 JQ.

A Section 21 WULA for the abstraction of water already commenced and according to the desktop geo-hydrological study conducted for the site, the groundwater yield potential for the study area is regarded as high. The geo-hydrological report for the study area will also address the pollution potential of the study area.

7.2 Sewerage system

Due to the rural setting of the proposed development site, outside the urban edge, there are no municipal sewerage infrastructure occurring in close proximity to the site.

The Madibeng Local Municipality confirmed there is no bulk sewer infrastructure including Waste Water Treatment Works in the area.

Three options were proposed for dealing with sewage to be generated on site by the proposed hatchery:

- a package plant with effluent captured in a waste water pond to be utilised for the irrigation of gardens;
- a conservancy tank to be emptied on a weekly basis; and
- a septic tank drains that can be emptied if required.

As the proposed septic tank cannot cater for the volume of sewage (± 50 employees) and process water effluent to be generated by the proposed hatchery and the conservancy tank will have to be emptied on a weekly basis, it was decided to construct an on-site sewage package plant and waste water pond.

Hatchery wash water containing soap, detergent and fluff as well as sewage will be diverted into the on-site package plant. Effluent from the on-site package plant amounting to approximately $8\,250\text{m}^3$ per annum will be discharged into a waste water pond for the purpose of irrigation. **Refer to Appendix G5i Desktop Study for Availability of Civil Engineering Services.**

7.3 Waste Management

It is estimated that approximately 9.5 tonnes of solid waste will be generated per week (± 42 tonnes per month or ± 500 tonnes per annum) 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.

A breakdown of waste volumes to be generated per Phase is given below.

Phase 1: 150 000 chickens hatch per week

327 kg per day of hazardous biological waste

Weight of egg = 65g on average

$150\,000 \times 15\%$ mortalities and infertile eggs = 22 500 eggs per week $\times 65\text{g}$ per egg =

1 462.5kg per week / 7 days = 209kg per day

Plus

$150\,000 \times 85\%$ egg shells = 127 500 egg shells per week $\times 0.65\text{g}$ (10%) per egg = 829kg per week / 7 days per week = 118 kg per day

Equals: 327 kg per day of hazardous biological waste

Phase 2: 300 000 chickens hatch per week

654kg per day of hazardous biological waste i.e. more than 500kg but less than 1 tonne of hazardous waste per day triggering a Waste Management Licence Application in terms of Category A (7) of NEM: WA listed activities.

Phase 3: 450 000 chickens hatch per week

981kg per day of hazardous biological waste.

Phase 4: 600 000 chickens hatch per week

1 308kg per day of hazardous biological waste i.e. more than 1 tonne per day triggering Category B (4) of NEM: WA of NEM: WA listed activities.

The generation of hazardous waste (biological waste) exceeding 500kg per day from Phase 2 (300 000 chicks per week) onwards, triggers a Waste Management Licence Application in terms of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008, as amended).

Note: Hazardous waste resort under the Minister of Environmental Affairs and thus the National Department of Environmental Affairs is the competent authority responsible for issuing a Waste Management Licence.

It must be emphasized that Phase 1 of the proposed hatchery (150 000 chicks) do not trigger a Waste Management Licence, however Bokamoso already commended with a Waste Management Licence application process.

7.4 Electricity supply

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. **Refer to Appendix G5ii for Eskom confirmation of transformer upgrade.**

8. PUBLIC PARTICIPATION

Please Refer to **Annexure I** for Public Participation information.

8.1 Purpose of Public Participation

Public Participation is a cornerstone of any Environmental Impact Assessment process. The principles of the National Environment Management Act, 1998 (Act No. 107 of 1998) govern many aspects of Environmental Impact Assessments, including Public Participation. These include provision of sufficient and transparent information on an on-going basis to the Stakeholders. This will allow stakeholders to comment and ensuring the participation of previously disadvantaged people, women, and youth.

Effective public involvement is an essential component of many decision-making structures, and effective community involvement is the only way in which the power given to communities can be used efficiently. The Public Participation Process is designed to provide sufficient and accessible information to Interested and Affected Parties (I&APs) in an objective manner which assist them to:

- Raise issues of concern and suggestions for enhanced benefits.
- Verify that their issues have been captured.
- Verify that their issues have been considered by the technical investigations.
- Comment on the findings of the EIA.

8.2 Identification of Interested and Affected Parties

Potential Interested and Affected Parties relevant to the project and the surrounding area were listed. The list was updated throughout the Basic Assessment process with information forthcoming from discussions with various role players and authorities (**Refer to Annexure 16**).

Authorities and organs of state identified as key stakeholders. Key stakeholders identified in terms of Regulation 7(1) and (2) and Regulation 40(2) (a)-(c) of GN R.982:

Authority/Organ of State	Contact person (Title, Name and Surname)	Tel No	E-mail
Rand Water	Ms. Natalie Koneight	011 682 0911	nkoneigh@randwater.co.za
Department of Health	Albert Marumo		albert.marumo@gauteng.gov.za
Department of Water and Sanitation	Lehthabo Ramashala	082 908 3177	RamashalaL@dws.gov.za
South African Heritage Resource Association	Natasha Higgitt	021 462 4502	nhiggitt@sahra.org.za
North West Heritage	M. Mosiane	018 388 2826	mosianem@nwpg.gov.za
South African National Roads Agency Limited	Victoria Botha	012 844 8031	Botav@nra.co.za
Ward Councillor 33 – Madibeng	Maritza du Plessis	082 683 7891	maritzadp@absamail.co.za

8.3 Notifications to I&APs

Stakeholders (I&APs) were notified of the Basic Assessment process for the hatchery through:

- 1) **Site notices** were erected at prominent points in and around the study area on 25 February 2019 regarding the Basic Assessment process inviting I&APs to register **(Refer to Annexure 11 for proof of Site Notices and display)**.
- 2) **Notices** were distributed to the surrounding land-owners and Interested and Affected Parties by means of faxes, hand delivery and e-mail on 25 and 26 February 2019 regarding the Basic Assessment process **(Refer to Annexure 12 for proof of Public Notice and Land owner letter)**.
- 3) **A Newspaper advertisement** was placed in the Platinum Weekly on 1 March 2019 serving as notice of the Basic Assessment process **(Refer to Annexure 13 for proof of advertisement)**.
- 4) **Comments and objections** received from I&APs are recorded in **Annexure 14** and summarised with responses in **Comments & Response Report in Annexure 17**.
- 5) The **Draft Basic Assessment Report will be made** available for review by I&APs for a period of 30 days and comments received will be addressed in the Final BAR to be submitted to the Competent Authority for review.

Since commencement of the Basic Assessment process the following individuals and Associations registered as Interested and Affected Parties; Hartbeesfontein Residents Association, Seasons Home Owners Associated and ML Claassens **(refer to Annexure 16 - List of Interested & Affected Parties)**, and comments were received from the aforementioned parties as well as SAHRA regarding the proposed hatchery development **(refer to Annexure 17 – Comments and Response Report)**.

8.4 Comments from I&APs

Bokamoso responded to comments and objections received from I&APs. Detail of the aforementioned is available in **Annexure E7 – Comments & Response Report** with a brief summary of comments and objections listed below.

The Home Owners Association of the Seasons Eco Golf Estate objected to the proposed hatchery development on any of the site alternatives but specifically to the development proceeding on Portion 33 and 168 of the Farm Hartbeesfontein 445 JQ (**Site Alternative 3**) and Portion 107 of the Farm Hartbeesfontein 445 JQ (**Site Alternative 1**) due to the aforementioned proposed sites being located adjacent to the upmarket Seasons Eco Golf Estate.

Concerns

Concerns raised relates to odour (manure), storm water run-off, groundwater contamination, noise pollution, rodents and property values.

Response

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.

The development proposed is not a broiler farm, but an enclosed hatchery facility with a small development footprint of only 4100m². Considering that all activities will occur indoors and that all biological waste in the form of infertile eggs, mortalities and egg shells will go through a macerator situated inside the facility before being transferred into enclosed steel drums situated outside the facility, no odour is expected to occur as a result of the proposed hatchery facility and associated infrastructure.

The same applies to the concern relating to noise. As the proposed hatchery will be part of an enclosed building, no noise will be generated by the hatchery facility during the operational phase. Ancillary activities such as egg delivery trucks or chick collection trucks could potentially pose a noise nuisance during the operational phase of the project, however no deliveries or collections will occur after hours, thus the potential impact is regarded as negligible. All effluent (wash water and treated sewage effluent) generated by the proposed hatchery will be discharged into an impermeable waste water pond. Eluent will be used to irrigate gardens on site. Clean storm water run-off falling on the roof of the hatchery facility or elsewhere on site will be allowed to flow undeterred by means of natural sheet flow to the watercourse flowing past the northern boundary of the site. Due to the proposed waste water pond being lined, no contamination of groundwater is foreseen. Any potential groundwater contamination will be detected in the production borehole situated on site during periodic groundwater monitoring, as the water quality required for Hatcheries is very strict.

In terms of the South African Poultry Association Code of Practice: Chick Hatchery, Hygiene and chick health is of high priority and there should be a comprehensive cleaning, disinfection and hygiene monitoring system in place and thus rodents are not foreseen to be a potential impact.

Considering the above, it is not foreseen that the proposed hatchery will have any impact, positive or negative on surrounding property values.

SAHRA was notified of the proposed hatchery facility and responded as per the comments contained below.

Comments

SAHRA stated that a Palaeontological Study is not required for any of the proposed development sites and requested that the HIA compiled be submitted to the North

West Provincial Heritage Resources Authority and that the report be amended to assign unique site names and assess the impact to each site adequately.

Response

It must be noted that no sites of cultural historical significance are present on the preferred alternative site (Alternative 2).

9. IMPACT ASSESSMENT AND MITIGATION

9.1 Anticipated Impacts, Including Cumulative Impacts

The impacts/aspects (beneficial and adverse) of the proposed hatchery for the preferred site (Alternative 2) on the receiving environment during all phases of the proposed hatchery, were identified and mitigation measures proposed and tabulated below.

Table 1: Impacts and Mitigation Table

POTENTIAL ADVERSE IMPACTS				SIGNIFICANCE (Prior to mitigation)	PROBABILITY	MANAGEMENT & MITIGATION MEASURES	MITIGATION EFFICIENCY	SIGNIFICANCE (with mitigation)	
TYPE	DESCRIPTION	CUMULATIVE	NATURE						
PLANNING AND DESIGN PHASE									
Bio-Physical									
Geotechnical and Soils	Direct and Indirect	-Excavation of soils for foundations -Vegetation clearing for site camp/s, parking areas and stockpile areas	-No	-Negative	-Low	-High	-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.	-High for all anticipated impacts	-Low
Topography	-Direct	-Siting and layout of the site. Levelling of the site and building it up.	-No	-Negative	-Medium	-High	-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	-High for all anticipated impacts	-Low

Basic Assessment Report for the proposed Kroon's Gourmet Chickens Hatchery

POTENTIAL ADVERSE IMPACTS				SIGNIFICANCE (Prior to mitigation)	PROBABILITY	MANAGEMENT & MITIGATION MEASURES	MITIGATION EFFICIENCY	SIGNIFICANCE (with mitigation)	
TYPE	DESCRIPTION	CUMULATIVE	NATURE						
						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.			
Hydrology	Direct and Indirect	-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 Hartebeestfontein 445 JQ)	-Yes	-Negative	-High	-High	-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 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,	-High for all the anticipated impacts	-Low

Basic Assessment Report for the proposed Kroon's Gourmet Chickens Hatchery

POTENTIAL ADVERSE IMPACTS				SIGNIFICANCE (Prior to mitigation)	PROBABILITY	MANAGEMENT & MITIGATION MEASURES	MITIGATION EFFICIENCY	SIGNIFICANCE (with mitigation)	
TYPE	DESCRIPTION	CUMULATIVE	NATURE						
						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 banded to contain at least 110% of the spilled substance.			
Geohydrology	Direct and Indirect	-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 Hartebeestfontein 445 JQ)	-Yes	-Negative	-High	-High	-A Section 21 (a) Water Use Licence Application will need to be applied for the abstraction of water from existing borehole on the site. -The water needs of the hatchery at 22 400m 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-perennial stream flowing past the site outside its northern boundary. -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.		

Basic Assessment Report for the proposed Kroon's Gourmet Chickens Hatchery

POTENTIAL ADVERSE IMPACTS				SIGNIFICANCE (Prior to mitigation)	PROBABILITY	MANAGEMENT & MITIGATION MEASURES	MITIGATION EFFICIENCY	SIGNIFICANCE (with mitigation)
TYPE	DESCRIPTION	CUMULATIVE	NATURE					
						<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>- 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>-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>-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</p>		

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POTENTIAL ADVERSE IMPACTS				SIGNIFICANCE (Prior to mitigation)	PROBABILITY	MANAGEMENT & MITIGATION MEASURES	MITIGATION EFFICIENCY	SIGNIFICANCE (with mitigation)	
TYPE	DESCRIPTION	CUMULATIVE	NATURE						
						<p>hardness. Suspended particles should be absent, as these will block pipes, nozzles etc. Suspended solids are removed by filters. 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. 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>			
Social and Economical									
Financial	-Direct	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 decommissioning.	-Yes	Negative	High	Medium	<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>	High	Low
Cultural/historical	Direct	Heritage discovery potential	No	Negative	Low	Low	Site Alternative 2 is the preferred site due to no impacts that will be posed on archaeological or historical sites, features or material.	Low	Low

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TYPE		DESCRIPTION	CUMULATIVE					
						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.		
Roads Upgrades	Direct and Indirect	Impacts on provincial and local roads and on adjacent properties	Yes	Negative	Medium	<p>-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.</p> <p>--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.</p>	High	
Qualitative Environment	Direct and Indirect	<ul style="list-style-type: none"> -Dust pollution -Noise Pollution -Soil pollution -Construction after hours and during weekends and public holidays -Visual Pollution -Waste Management -Lighting Pollution -Signage authorisations 	Yes, some impacts	Negative	Low, Medium and High	<ul style="list-style-type: none"> -Address dust pollution and specify damping down of exposed surfaces during the dry and windy seasons. -Supply working hours and rules regarding persons allowed to reside on site and noise during the construction phase. -All contractors and sub-contractors must comply with Part F: Site Operations of the National Building Regulations- attached hereto as Appendix E of the EMPr (EMPr attached as Appendix J of the BAR). -Require that construction equipment be furnished with noise muffing devices. -Make provision for drip trays in the tender documentation. -Plan signage to be visible during the day and night in such a way that it complies with the standards of the local authority, and the relevant roads authorities. -Signage must be designed to cause minimum distraction of vehicles passing by and it should not reflect into the windows of the surrounding properties 		

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TYPE	DESCRIPTION	CUMULATIVE	NATURE						
						(nearest property is Horizon Bricks-no residential or commercial properties are in close proximity to Portion 322) -Confirm signage application requirements with the relevant local authority, district municipality and provincial road authority -Confirm with the local authority that builder's waste can be dumped at the local registered landfill site. -Confirm the local authority's capacity to collect operational phase waste and that waste will be removed by the local authority. -Confirm locality of waste collection areas during the construction and operational phase. -Allow enough space in layout for local authority trucks and other large vehicles to move safely through the site. -Biological waste such as infertile eggs, mortalities and egg shells will be processed or reduced in size before being carried through into steel drums situated outside of the facility via a screw conveyor. Biological waste will then be transported to the Kroon's Gourmet Chickens Abattoir's rendering plant situated in close proximity to the site.			
Health and Safety	Direct and Indirect	-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	Yes, in some cases	Negative	High	High	-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. -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. -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.	High	Low

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POTENTIAL ADVERSE IMPACTS				SIGNIFICANCE (Prior to mitigation)	PROBABILITY	MANAGEMENT & MITIGATION MEASURES	MITIGATION EFFICIENCY	SIGNIFICANCE (with mitigation)
TYPE	DESCRIPTION	CUMULATIVE	NATURE					
						- 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.		
<u>Institutional</u>								
Compliance with the relevant local authority by-laws and policies	Direct	-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.	Yes	Negative	Medium to High	-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	High	Low

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TYPE	DESCRIPTION	CUMULATIVE	NATURE					
						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. -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 80m ³ of hazardous waste. -The hatchery must register in terms of the Fertilizers, farm feeds, Agricultural Remedies, Stock Remedies Act, if required. -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.		
CONSTRUCTION PHASE								
<u>Bio-Physical</u>								

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POTENTIAL ADVERSE IMPACTS				SIGNIFICANCE (Prior to mitigation)	PROBABILITY	MANAGEMENT & MITIGATION MEASURES	MITIGATION EFFICIENCY	SIGNIFICANCE (with mitigation)	
TYPE		DESCRIPTION	CUMULATIVE						NATURE
Geology and Soils	Direct	Loss of topsoil for vegetation clearing, clearing for parking areas and stockpile areas	No	Negative	Low	Medium	-Impact on the environment is expected to be of minimal importance as Portion 322 of the Farm Hartebeestfontein 445 JQ has a low ecological sensitivity. -Earth moving and vehicle access must not occur within the watercourse. -Spillages must be contained. -Vehicles are to be parked and serviced in a bermed or bunded area away from the buffer. -Demarcated and secure storage facilities must be used for the storage and handling of lubricants, oils, paint and cement. -Hay bales and/or sandbags must be used for areas close to the watercourse. -Top soil must be stockpiled separately. -Once the construction phase is complete, the stockpiled topsoil must be added to the areas to be rehabilitated.	Medium	Low
	Direct	Loss of land capability	No	Negative	Low	Medium	-Although Portion 322 of the Farm Hartebeestfontein 445 JQ occurs in an area that is signified as arable, the site is classified as having a low ecological sensitivity. -The proposed site is also earmarked for future residential purposes (although not foreseen that the land will be under pressure for residential development in the long term).	High	Low
	Direct	Soil collapse	No	Negative	Low	Medium	- Pyroxinite, harzburgite and norite soils are the soils of the study site. Such soils do not present any collapse potential. -Mark all excavations clearly and make workers aware of possible soils collapse in and around excavations. -Trucks and equipment should be kept away from the unstable areas in order to avoid collapse.	Medium	Low
	Direct	Soil pollution	No	Negative	Low	Medium	- Temporary measures (i.e. drip trays/ temporary bunded areas) will be implemented to ensure that no hydrocarbons and/or other pollutant liquids are spilt, and if so, they are	High	Low

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TYPE	DESCRIPTION	CUMULATIVE	NATURE					
						contained and a clean-up protocol to be followed. -A Waste Management Plan must be developed specifically for the hatchery. -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.		
	Direct	-Perched water conditions (mainly during the rainy periods) could make excavations and the installations of the underground containment tank for sewage	No	Negative	Low	Low Ground water elevation recorded during the geohydrological investigation reveals 1, 139 and 1, 200m above mean sea level. - It is important to take note of possible perched water conditions during the construction phase. -Sewage containment tanks must preferably be installed on a section of the site where the ground water table is the lowest.	High	Low
	Direct	Clayish conditions: -Possible cracks in structures -Possible damage to tanks to be installed (swelling and shrinking of soils) – can cause ground water pollution	No	Negative	Low	Low -Geotechnical engineer to conduct more detailed geotechnical investigation of site in order to determine perched water conditions and expansiveness of soils that could pose an impact on the infrastructure and cause potential ground water pollution.	High	Low

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TYPE	DESCRIPTION	CUMULATIVE	NATURE						
Topography	Indirect	-Alteration of topography- cut and fill exercises- low gradient -Loose soils cause siltation	No	Negative	Low	Medium	-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.	High	Low
Hydrology	Direct	-No sanitation facilities for workers -Perched water tables/ higher water tables during the rainy season -Ground water and surface water pollution	No	Negative	Low	Low	-A 100m buffer zone must be applied around the non-perennial watercourse due to the subject site being located outside of the urban edge. - No development is permitted within the buffer zone. -It is integral that waste management measures be implemented to ensure that no pollution of the environment occurs.	Medium	Low
	Direct	Siltation and Erosion	Yes	Negative	Low	Medium	-Temporary storm water management solutions such as silt traps, hay bales and sand bags (especially close by to the watercourse) must be properly implemented to minimise silt discharge into surrounding systems during rainstorm events. -It is also recommended that precautionary measures be taken in order to prevent the extensive loss of soil during rainstorms. Large exposed areas should adequately be protected against erosion. -Measures should be implemented during the rainy season to channel storm water away from open excavations and foundations.	Medium	Low
Effects on fauna and flora/ bio-diversity	Direct/ indirect	Removal of indigenous vegetation	No	Neutral The study area has a low ecological sensitivity	Low	Low	-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	High	Low

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TYPE	DESCRIPTION	CUMULATIVE	NATURE					
						<p>Protected Area in the form of the Hartbeespoort 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>		

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TYPE	DESCRIPTION	CUMULATIVE	NATURE						
Social and Economical									
Cultural/historical	Direct	Heritage discovery potential – regarded as low	No	Negative	Low	Low	Site Alternative 2 is the preferred site due to no impacts that will be posed on archaeological or historical sites, features or material. 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.	Medium	Low
Installation of services and upgrading of roads	Direct and Indirect	Impacts on provincial and local roads and on adjacent properties	Yes	Negative	Medium	Medium	-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.	Medium - High	Low

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TYPE		DESCRIPTION	CUMULATIVE						NATURE
Atmospheric Emissions/Air quality pollution	Direct	Dust emissions	No	Negative	Low	Medium	-Dust suppression measures must be implemented during the construction phase to minimise dust generated by construction activities. -Regular and effective damping down of working areas (especially during the dry and windy periods) must be carried out to prevent dust pollution that will have a negative impact on the surrounding developments. -When necessary, these working areas should be damped down at least twice a day depending on the volume of dust.	High	
	Direct	Emissions from vehicles and equipment (CO ₂ , NO _x , SO _x , VOC's etc.)	No	Negative	Low-Medium	Medium	-All construction vehicles must be maintained such as to operate efficiently. Idling times of machinery to be minimised.	Low	Low
	Direct	Air pollution (odours)	No	Negative	Low	Low	-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.	Low	Low
Noise	Direct	Noise	No	Negative	Low	Medium	-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. -Construction operations shall not occur before or after normal working hours. Noise monitoring should be undertaken as spot checks. -When required noise mufflers should be utilized to reduce noise. It is important to keep an open channel of	High	Low

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TYPE	DESCRIPTION	CUMULATIVE	NATURE						
						communication between all stakeholders and keep record of any concerns raised i.e. Complaints Register to be kept on site. -All construction activities must be restricted to normal working hours as depicted in the NBR document for site operations. -No construction may take place on Sundays and public holidays. -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.			
	Direct	Visual impact	No	Negative	Low-Medium	Medium	-The visual impact of construction activities will be low-medium term. Bollards and protective barriers as well as safety tape may be utilised 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.	Low	Low

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TYPE		DESCRIPTION	CUMULATIVE						NATURE
Waste Generation	Direct	Domestic waste	No	Negative	Low	Medium	<ul style="list-style-type: none"> -A Waste Management Plan must be developed specifically for the hatchery. -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. -All employees will be subjected to induction to understand the environmental management requirements on site. -Domestic waste will be removed from the site by a certified waste contractor. -Waste disposal certificates must be kept on record. 	High	Low
	Direct	Construction waste	No	Negative	Medium	Medium	<ul style="list-style-type: none"> -All construction waste must be placed in a demarcated area and disposed of accordingly. --This area will be bermed or appropriately bunded so as to prevent the dispersal of said waste by wind and rain. -Waste disposal certificates will be kept on record. 	Medium	Low-Medium
	Direct	Hazardous waste	No	Negative	Medium	Medium	<ul style="list-style-type: none"> -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 be reduced through 	Medium	Low-Medium

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TYPE		DESCRIPTION	CUMULATIVE						NATURE
						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 Gourmet Chickens Abattoir's rendering plant.			
Resource Consumption	Indirect	Electricity consumption	No	Negative	Low	Low	-Fair usage and minimisation of over usage. -A generator to be put in place during incidental power outages. Solar panels are also recommended for use as a backup source for power. -Energy saving light bulbs are also recommended to be used inside of the facility. -Eskom has confirmed ability to upgrade the transformer to a 500kVA transformer immediately subsequent to the property transferring to Kroon's Chickens.	High	Low
	Direct	Water consumption	No	Negative	Low	Medium	-Fair usage and care not to over use the water resources. Promote the re-use and recycling of process waste water if possible.	High	Low
	Indirect	Fuel consumption	No	Negative	Low	Medium	-All construction vehicles will be maintained such as to operate efficiently. Idling times of machinery to be minimised.	Medium	Low
	Indirect	Raw materials consumption	No	Negative	Low	Medium	Raw materials will be used efficiently. Recycling will be implemented on applicable waste streams and in accordance with the Waste Management Plan.	Medium	Low
Incidents, Accidents and Potential Emergency Situations	Direct	Pollution incidents	No	Negative	Low-Medium	Medium	-Spillages to be cleaned up immediately. Notification to the Department of Water and Sanitation (DWS) should groundwater be affected. -An emergency response plan should be devised in the event of a spillage or leak.	Medium	Low

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TYPE	DESCRIPTION	CUMULATIVE	NATURE						
	Direct	Health and safety	No	Negative	Low-Medium	Medium	<ul style="list-style-type: none"> -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. -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. -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. - 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. 	Medium	Low
	Direct	Storage of hydrocarbons	No	Negative	Low-Medium	Medium	<ul style="list-style-type: none"> -All hazardous materials will be stored in a bunded and lockable area. Material Safety Data Sheet (MSDS) sheets will be available for all hazardous products. -Concrete mixing and tar preparation have to be carried out away from sensitive areas and on an impermeable substratum, all unused concrete and tar need to be removed. -Areas such as oil storage facilities must still be fitted with the necessary oil interceptors or whatever appliances / interceptors are required to prevent pollution. -Any damage or spills onto the existing roads will be cleaned or fixed immediately after noticing, at the contractor's/developer's cost. -All spillages of oil or fuel onto concrete 	Low	Low

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TYPE	DESCRIPTION	CUMULATIVE	NATURE					
						surfaces shall be controlled by the use of an approved absorbent material. -All soil contaminated by oil, fuel, etc. shall be collected immediately and disposed of at an acceptable disposal site to be approved by the ECO. -Water pollution through fuels, oils or other substances must be avoided. -All clean storm water will be diverted away from potential sources of hydrocarbon contamination, dirty water will be captured and disposed of in a proper manner. -Regular maintenance will be done according to a preventative maintenance program and the SABS standards. -Records will be kept of all spills, substantial spills will immediately be reported to the authorities.		
	Indirect	Fire	No	Negative	Low	-Fire and emergency plans will be implemented during construction especially due to the two nature reserves and surrounding agricultural holdings located in close proximity. -Adequate firefighting equipment will be instituted as recommended. -Fire breaks will have to be maintained during the operational phase of the hatchery by the owner.	Medium	Low
	Indirect	Safety and security	No	Negative	Low	-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. -Allow for 24 hour security on the study area. -Fence the construction site at strategic points. This will keep the public out of the potentially dangerous construction area. -Site security will ensure that the site is secured and only authorised access allowed. -If required for some of the workers to	High	Low

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POTENTIAL ADVERSE IMPACTS				SIGNIFICANCE (Prior to mitigation)	PROBABILITY	MANAGEMENT & MITIGATION MEASURES	MITIGATION EFFICIENCY	SIGNIFICANCE (with mitigation)
TYPE	DESCRIPTION	CUMULATIVE	NATURE					
						<p>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. 		

Basic Assessment Report for the proposed Kroon's Gourmet Chickens Hatchery

POTENTIAL ADVERSE IMPACTS				SIGNIFICANCE (Prior to mitigation)	PROBABILITY	MANAGEMENT & MITIGATION MEASURES	MITIGATION EFFICIENCY	SIGNIFICANCE (with mitigation)	
TYPE	DESCRIPTION	CUMULATIVE	NATURE						
						-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.			
Qualitative Environment	Direct	Visual impact	No	Negative	Low-Medium	Medium	-The visual impact of construction activities will be low-medium term. Bollards and protective barriers as well as safety tape may be utilised 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 upgraded roads, nor should it be a distraction.	Low	Low
	Indirect	Damage to roads	No	Negative	Medium	Medium	-Construction vehicles must avoid using sub-standard roads (i.e. roads in agricultural holdings/ rural areas that are not constructed to provincial/ local authority standards). -Record the condition of the surrounding roads (with photographs) prior to construction and require that contractors repair all damages caused during the construction phase. -Construction vehicles should only be permitted to use a designated construction entrance. -Construction vehicles and activities as well as other heavy vehicles to avoid peak hour traffic times.		
	Indirect	Traffic disruptions	No	Negative	Medium	Medium	-Traffic warning and calming measures will be put in place when construction activities may impact on traffic flow.	Medium	Low-Medium

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POTENTIAL ADVERSE IMPACTS				SIGNIFICANCE (Prior to mitigation)	PROBABILITY	MANAGEMENT & MITIGATION MEASURES	MITIGATION EFFICIENCY	SIGNIFICANCE (with mitigation)	
TYPE	DESCRIPTION	CUMULATIVE	NATURE						
	Direct	Temporary employment opportunities for construction workers	Yes	Positive	Medium	High	Not required	N/A	N/A
OPERATIONAL PHASE									
Bio-Physical									
Geology and Soils	Direct and Indirect	-Soil pollution due to spillages -Washing of paved surfaces and equipment with chemicals, soaps etc. and releasing polluted water onto the surface and allowing it to mix with storm water -On -site package plant and containment tank leakage	Yes	Negative	Medium	Medium – HIGH	-Always ensure that storm water and dirty water are separated. -Install oil traps and grease traps where required. -Maintain impermeable paved surfaces and repair areas where leakages into the ground can occur on a regular basis. -Wash paved surfaces on a regular basis. -An Emergency Plan must be implemented. -Monitoring boreholes downstream of the hatchery to detect any groundwater contamination which emanate from this activity. -Compile and implement a waste management plan which includes management of all types of waste created throughout the facility processes and include mitigation measures to prevent pollution in the case of equipment failure or spillages. -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.	High	Low
Hydrology	Direct and Indirect	Contamination of ground water and surface water	Yes	Negative	Medium	Low	- 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	High	Low

Basic Assessment Report for the proposed Kroon's Gourmet Chickens Hatchery

POTENTIAL ADVERSE IMPACTS				SIGNIFICANCE (Prior to mitigation)	PROBABILITY	MANAGEMENT & MITIGATION MEASURES	MITIGATION EFFICIENCY	SIGNIFICANCE (with mitigation)	
TYPE	DESCRIPTION	CUMULATIVE	NATURE						
						phase to ensure no pollution of surface water has occurred. -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.).			
Social and Economical									
Waste Generation	Direct	Domestic waste	No	Negative	Medium	High	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.	High	Low-Medium
	Direct	Hazardous waste	No	Negative	Medium	Medium	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 80m ³ of hazardous (biological waste: infertile eggs, mortalities and egg shells) waste. -During the operational phase, all biological waste will be reduced through the use of a macerator situated inside of the facility before being transferred into	High	Low

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POTENTIAL ADVERSE IMPACTS				SIGNIFICANCE (Prior to mitigation)	PROBABILITY	MANAGEMENT & MITIGATION MEASURES	MITIGATION EFFICIENCY	SIGNIFICANCE (with mitigation)	
TYPE	DESCRIPTION	CUMULATIVE	NATURE						
						<p>steel drums outside the facility via a screw conveyor. The waste will then be transported to the Kroon's Gourmet 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>			
	Indirect	Lighting	No	Negative	Low- Medium	Medium	<p>-Security lighting during the construction and operation phase must be carefully planned. These lights must not spill into the eyes of oncoming traffic and must not shine into adjacent properties.</p> <p>-Prevent the implementation of exterior advertising signs and name boards that will flicker into the eyes of surrounding neighbours and into the eyes of oncoming traffic.</p> <p>-Exterior lighting, especially the lighting in the vicinity of the open space areas must be designed to shine downwards and the bulbs to be used should preferably be dim.</p>	High	Low

10. CONCLUSION

A Comparative Assessment conducted for three site alternatives considered concluded that Site Alternative 2 situated on Portion 322 of the Farm Hartebeestfontein 445 JQ, 12.9ha in extent, was the preferred development site alternative. This site has low ecological sensitivity and the shape of this property presents more placement options for the hatchery building and leaves space for expansion in the future. This site is easily accessible via the R551 and is located in an isolated geographical location to facilitate hygiene and disease control.

No "fatal flaws" were identified that could prevent the proposed project from being executed.

From an assessment of the biophysical, social-economic, cultural, and legislative environments it is evident that the **proposed hatchery – Alternative 2**, is in line with national, provincial, and local development policies and frameworks. Potential Impacts identified can be sufficiently mitigated as not to detrimentally affect the environment.

NATURAL ENVIRONMENT:

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 Protected Natural Environment 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.

GEOLOGY AND GEOHYDROLOGY:

Groundwater abstraction from an existing borehole as potable and process water supply, and an on-site sewage package plant, is proposed for the proposed hatchery facility. Section 21 (a) water use will also need to be applied for

abstraction of water from the boreholes. In terms of the Revision of General Authorisation for the Taking and Storing Water only 45m³ may be abstracted per hectare per annum from quaternary catchment A21J which equates to 580m³ per annum for Portion 322.

Phase 1 of the hatchery requires 7.5m³ of water per day and the existing on-site borehole can yield 19.2m³. **There is thus sufficient groundwater supply to cater for Phase 1 of the hatchery.**

HYDROLOGY:

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). 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, especially due to the fact that connectivity still exists upstream and downstream of the watercourse.

Should the proposed hatchery development on Portion 322 be approved, a General Authorisation (GA) in terms of Section 21 (c) and (i) water uses will need to be applied for with the Department of Water and Sanitation (DWS) due to the site boundary falling within a "Regulated Area".

Groundwater abstraction from an existing borehole as potable and process water supply, and an on-site sewage package plant, is proposed for the proposed hatchery facility. Section 21 (a) water use will also need to be applied for abstraction of water from the boreholes. In terms of the Revision of General Authorisation for the Taking and Storing Water only 45m³ may be abstracted per hectare per annum from quaternary catchment A21J which equates to 580m³ per annum for Portion 322.

SOCIAL ENVIRONMENT:

From a cultural heritage perspective, the proposed development site will have no impact on archaeological or historical sites, features or material.

ECONOMIC ENVIRONMENT:

In terms of both the IDP and the SDF, the proposed hatchery will be in line with both of the plans as the development will be contributing towards food production and employment creation.

The proposed hatchery can be viewed as a societal priority as it will contribute to food production. As stated above, egg production is not conducted on a large scale within the Madibeng Local Municipality and thus the hatchery will contribute indirectly to expanding the commercial farming sector, specifically egg production, which has the potential to be expanded upon.

REGULATORY ENVIRONMENT:

The minimum standards pertaining to Health and Safety, for Chick Hatcheries as set out in the South African Poultry Association Abridged Code of Practice: Chick hatchery, must be conformed to.

Considering the nature of the proposed development and control measures required to prevent the transmission of diseases, it is foreseen that the hatchery might have to register in terms of the Fertilizers, Farm Feeds, Agricultural Remedies, Stock Remedies Act.

The generation of hazardous waste (biological waste) exceeding 500kg per day from Phase 2 (300 000 chicks per week) onwards, triggers a Waste Management Licence Application in terms of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008, as amended). **The volume of waste generated by Phase 1 of the hatchery does not trigger a Waste Management Licence.**

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.

The proposed hatchery development site has an existing dwelling unit which is supplied with electricity. The electricity is supplied from an existing 25kVA transformer located at the entrance to Portion 322. Eskom confirmed that they will be able to

upgrade the transformer to a 500kVA transformer immediately subsequent to the property transferring to Kroon Chickens.

In terms of land use a Rezoning Application is required in order to give effect to the proposed Hatchery.

11. RECOMMENDATION

It is recommended that the proposed hatchery be authorized due to being in line with local plans and strategies, with the proviso that the hatchery development complies with the recommendations as contained in the EMPr and specific conditions as stipulated below.

Considering the water needs of the hatchery at approximately 11 000m³per annum, far exceed the abstraction allowed in terms of the GA, a full Water Use Licence Application is triggered.

A 24-hour yield test has been carried out in order 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 hatchery standards or whether water treatment will be required. A full Geohydrological Assessment is currently underway as part of the Water Use Licence Application.

The quality of groundwater supply must be monitored frequently for parameters as stipulated in the EMPr.

The owner must maintain fire breaks during the operational phase of the hatchery.

The minimum standards pertaining to Health and Safety, for Chick Hatcheries as set out in the South African Poultry Association Abridged Code of Practice: Chick hatchery, must be conformed to.

The hatchery must register in terms of the Fertilizers, Farm Feeds, Agricultural Remedies, Stock Remedies Act, if required.

A Waste Management Licence must be obtained from the Department of Environmental Affairs for the Treatment of more than 1 tonne of biological waste per day by means of a macerator, at the hatchery in full production.

The Municipal waste management officer must be informed of the intention to generate general waste, 60 days prior to commencement of generating waste.

Eskom confirmed that they will be able to upgrade the transformer to a 500kVA transformer immediately subsequent to the property transferring to Kroon Chickens.

Consent for Rezoning in terms of land use must be obtained from the Madibeng Local Municipality.