ENVIRONMENTAL MANAGEMENT PROGRAMME (EMPr)

THE PROPOSED DEVELOPMENT OF A FREE-RANGE POULTRY BROILER FACILITY ON THE REMAINDER OF FARM NUMBER 563, 564, 565 AND THE FARM KLEINFONTEIN NUMBER 954, WORCESTER, WESTERN CAPE.

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EXPERTISE: PAUL SLABBERT (Managing Member) graduated from the Potchefstroom University in 1995 with an honours degree B Art Et Scien. His passion for environmental, heritage & land-use planning with knowledge of associated management strategies enables him to facilitate all role players and to implement workable policies. His experience in rural and urban conservation with the emphasis on environmental impact and management, focusing on sustainable development, enabled him to have various publications. He has hands-on expertise in heritage, conservation and recreation discipline with the emphasis on creating economic and employment opportunities. With sufficient practical experience in terms of the criteria of the Interim Certificate Board for Environmental Assessment Practitioners of South Africa (EAPASA) for registration, Paul was registered as an Environmental Assessment Practitioner. He is also a member of the International Association for Impact Assessment (IAIA), Corporate Member of the South African Planning Institute (SAPI) and accredited with the Association of Professional Heritage Practitioners – Western Cape (APHP).

EXPERTISE: JENNA THERON (Senior EAP) graduated from Stellenbosch University with a Bachelor's Degree in International Studies (2005) and a Master's Degree in Cultural Tourism and Heritage Studies (2007). Jenna has experience in the field of environmental and heritage planning since interning for the CoCT's Environmental and Heritage Department in 2008 and thereafter working as an Environmental Assessment Practitioner since 2009 to the present. With sufficient practical experience in terms of the criteria of the Interim Certificate Board for Environmental Assessment Practitioners of South Africa (EAPASA) for registration, Jenna was registered as an Environmental Assessment Practitioner. She is also a member of the International Association for Impact Assessment (IAIA) and an accredited Associate member with the Association of Professional Heritage Practitioners – Western Cape (APHP).

PAUL SLABBERT

JENNA THERON

Please refer to our CVs included in **Annexure 1**.

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SECTION 1: INTRODUCTION & OVERVIEW

1.1 BACKGROUND:

An Environmental Management Plan (EMPr) describes mitigation measures in detail, and is prescriptive, identifying specific individuals or organizations responsible for undertaking specific tasks to ensure that impacts on the environment are minimized during construction, operational and related activities. As an open – ended document, information gained during on-going monitoring of procedures on site could lead to changes in the recommendations and specifications of this document. This document forms an agreement between the Department of Environmental Affairs and Development Planning (DEA&DP) and the Applicant that the environmentally sensitive features on the site will be suitably protected during the lifespan of the activity through the implementation of the applicable mitigation measures.

This document is intended to guide and manage the construction, operation and maintenance phase of the proposed development of a free-range poultry broiler facility on the Remainder of Farm 563, 564, 565 and the Farm Kleinfontein Number 954, Worcester, Western Cape (Breede Valley Local Municipality). Collectively the four farm portions are approximately 987 ha in extent and are located approximately 30 kilometers south of Worcester and approximately 13 kilometers north of Villiersdorp with access being obtained via a gravel road off the R43. The property is zoned Agriculture Zone 1. Please refer to **Annexure 2: Locality Maps**.

1.2 ENVIRONMENTAL ATTRIBUTES:

1.2.1 Vegetation

Vegetation associated with the project site is largely classified as the Critically Endangered Breede Shale Renosterveld (FRs8), represented by the blue area in Figure 1. Smaller patches of North Sonderend Sandstone Fynbos (purple area) and Robertson Karoo (yellow area) are also present.

The vegetation and landscape features generally associated with this type include low hills, slightly undulating to undulating plains, and lower mountain slopes. In the eastern regions, open, tall shrublands—possibly closely affiliated with FRs12 Central Rûens Shale Renosterveld—are found, where microphyllous shrubs form the dominant layer. Breede Shale Renosterveld transitions into Robertson Karoo in the central valley. Karoo shrublands typically occur on the northern aspects, while renosterveld is found on the southern aspects, with a decline in karoo shrubland extent to the south. Heuweltjies (mound-like features) are prominent, often supporting bush clumps in moister areas and succulent shrubs in drier habitats.

However, the proposed activities are largely taking place within fallow agricultural fields or within the farm werf. Considering the agricultural nature of the development, its location within agricultural fields and within the existing farmyard very little indigenous vegetation will be disturbed. However, certain freshwater crossings do constitute intact areas of indigenous vegetation.

Vegetation found within the affected freshwater features ranged from being in a largely natural state to being largely to seriously modified condition at places. Terrestrial riparian vegetation generally found within the healthier riparian areas included: Sandolien (*Dodonaea viscosa var. angustifolia*), Taaibos (*Rhus undulata*), Bittergombos (*Lycium ferocissimum*), Kraalbos (*Aizoon africanum L.*), Renosterbos (*Elytropappus rhinocerotis*), *Pteronia sp.* and Cotton Milkweed (*Gomphocarpus fruticosus*). Vegetation marking wetter areas included *Ischyrolepis gaudichaudiana, Platycaulos major, Cyperus congestus, Merxmuellera stricta, Juncus sp.* and the common reed (*Phragmites australis*).

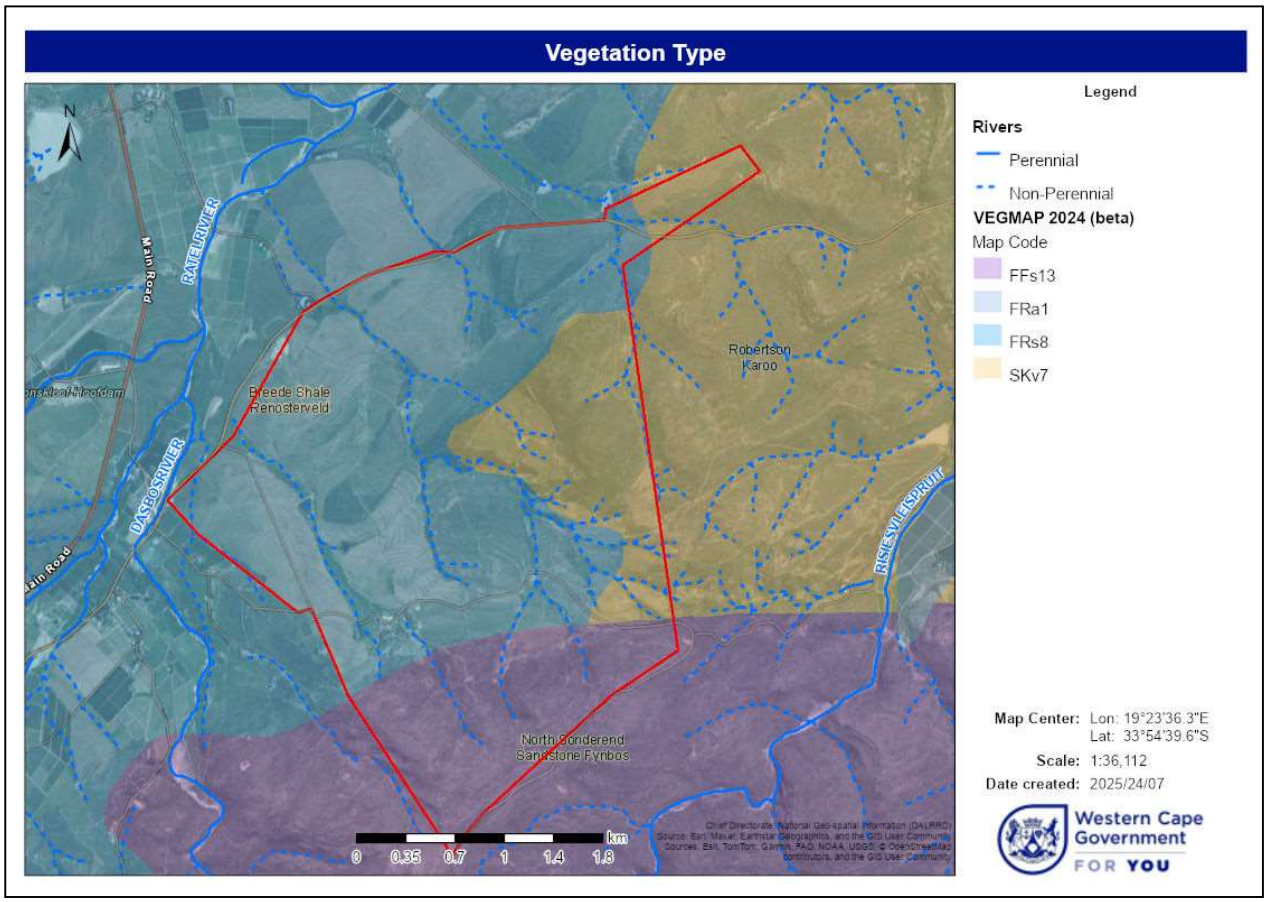

Figure 1: National Vegetation Map represented within the property boundaries of the site (red polygon) (CFM, 2025).

1.2.2 Faunal & Avifaunal:

The proposed activities are largely taking place within fallow agricultural fields, as confirmed by a site visit and aerial imagery. Considering the agricultural nature of the development, its location within agricultural fields and within the existing farmyard it is thus improbable that the faunal species listed would be present within the development site and the Animal Species Sensitivity of the site is considered LOW.

No aquatic-dependent fauna of special concern was observed during the field survey; however, several bird species were noted in the wetter areas. As the site borders a protected area to the southeast, the stream corridors are also expected to serve as migration routes for surrounding wildlife.

1.2.3 Freshwater:

Freshwater features found within the project site included several small seasonal tributaries of the Ratel River with their associated wet areas. The freshwater features on site are referred to as Streams A to D (shown in Figure 2). All four streams are primarily seasonal, with permanently wet areas observed along their channels, suggesting a degree of groundwater contribution to baseflow. They originate in the hills to the southeast and flow generally in a north-northwestern direction, where Streams A and B, and Streams C and D converge, respectively, before joining the Ratel River.

The upper reaches of these streams remain largely in a natural state; however, their condition deteriorates to varying degrees (moderately to seriously modified) upon entering farmed areas. In these sections, several historic impacts have been observed, including vegetation removal, agricultural encroachment into riparian zones, the construction of instream dams, and artificial canalisation, particularly in Streams A and B. Both converged stream systems terminate in large farm dams shortly before reaching the Ratel River.

A large portion of the Streams A and B system likely historically comprised an unchanneled valley-bottom wetland. However, this area has been so extensively modified that it has lost all ecological function. Only a small remnant of the wetland remains at the confluence of the two streams. In contrast, Streams C and D have been the least impacted, with large sections still ranging from largely natural to moderately modified in condition.

Due to their similar condition and geomorphological characteristics, as well as the fact that they form two distinct tributaries, Streams A and B were assessed as a single unit, as were Streams C and D. Please refer to Table 1 below for a summary of the River Assessment for the unnamed tributaries.

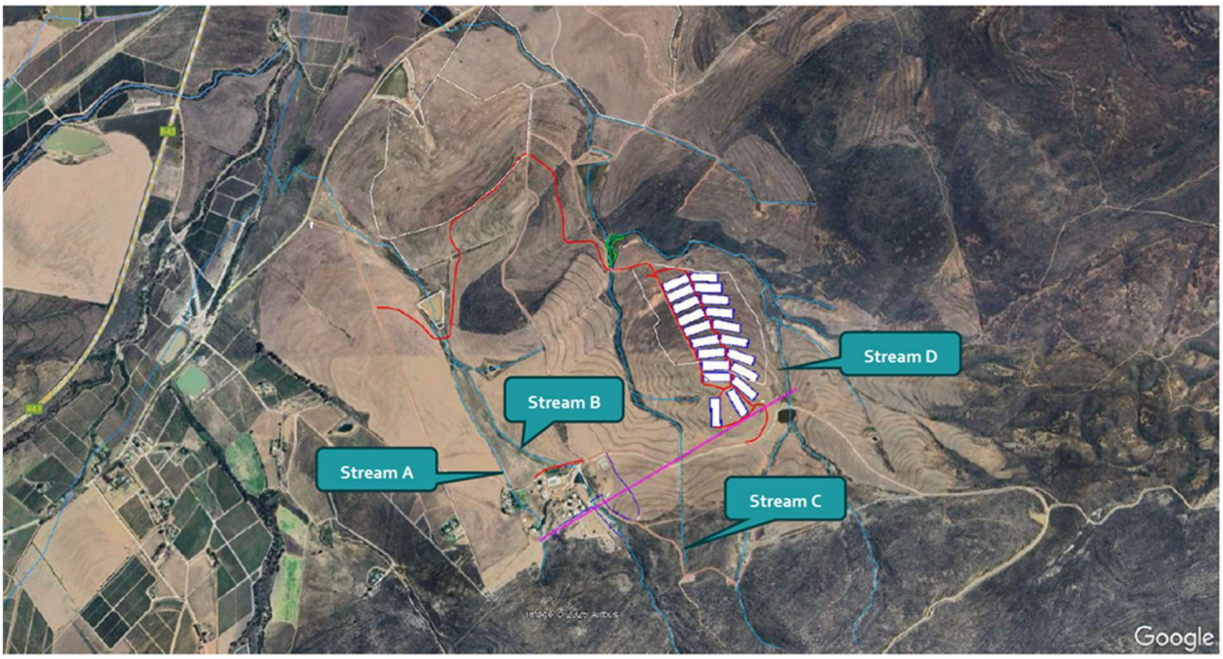

Figure 2: Satellite imagery indicating the project site with the proposed new roads (red lines), the broiler houses (white polygons) as well as the affected streams (blue lines) with their associated wetland areas (green polygons).

Table 1: Summary of the River Assessment for the unnamed tributaries.

	Stream A and B	Streams D and E
DWA catchment	H40F	
Vegetation type	Breede Shale Renosterveld (Critically Endangered)	
Rainfall region	Winter	
System	Inland System	
Regional Setting	Western Folded Mountains	
Landscape unit	Slope to Valley Floor	
Hydrogeomorphic Unit	Stream (Seasonal)	
Longitudinal zonation/Landform/ Outflow drainage	Foothill - Sand Bed	
Landform/Inflow drainage	Active Channel	
Substratum type	Loam and Clay	
Special conservational features (from desktop study)	WCSBP (2017)	Based on the 2023 WCBSP map (Figure 6), terrestrial Critical Biodiversity Areas (CBA's) were found around the remaining natural areas on the property Furthermore, aquatic Ecological Support Areas (ESA1: Ground Water Source) were also indicated specifically towards the south and east of the property.

1.2.4 Heritage:

A Heritage Screener was completed for input at an early stage. The screener confirmed that it is unlikely that significant heritage resources will be negatively impacted by the proposed development and as such, no further heritage studies were recommended. HWC confirmed that no Heritage resources are likely to occur on site and that no further studies will be required (**Annexure 6**).

1.3 ACTIVITY DESCRIPTION:

Elgin Free Range Chickens (EFRC Agri Operations (Pty) Ltd.) propose the development of a Free-Range Poultry Broiler Facility. The Broiler Facility will involve the establishment of 20 Broiler Houses (approx. 1044m^2 per facility). Each facility will house approximately 17 000 birds. An Ablution facility, Guard House, Spray Race and Refrigerated Container will be located at the entrance to the site. Furthermore, an additional Ablution Facility and Residential Dwelling will be located at the broiler facilities.

An existing access road will be utilised and numerous internal roads (6m width required) will be upgraded and realigned where applicable for biosecurity reasons, to improve traffic flow and safety, and to improve river crossings.

The Electrical Network Service Provider (NSP) for the site is Eskom. The site is being fed from the Haamanshof-Farmers 3 11kV overhead line (OHL) feeder which is then stepped down to the 400V voltage level via a 100kVA distribution transformer. As the electrical network of Eskom currently has insufficient capacity to supply the entire project with the necessary electricity, RenEnergy was tasked to design a plan where renewable energy is used to supply the electricity needs of the project.

Based on the electrical equipment that would be installed inside each one of the 20 broiler houses, the broiler houses will have a total peak power requirement of around 301.5kVA, including the new

infrastructure at the entrance of the farm and requirement of the existing infrastructure, the total load requirement for the farm is estimated to be 312kVA. Solar panels are proposed on the roofs of the chicken houses. At a designated area close to the delivery point of Eskom the containerised solar batteries will be placed, and a generator room will be built to house the backup generators. A bunded Diesel Tank (2200L) will also be located within close vicinity of the Generator Room and Eskom delivery point.

The existing Eskom supply will therefore be supplemented with Solar Energy which is more sustainable.

A Water Treatment Plant is proposed to treat the water from the existing Boreholes (BH1 & BH2) which will be fed via a pipeline from the boreholes to the Water Treatment Plant. Thereafter, treated water will be sent to two proposed reservoirs (300kl each) on site. Water will be sent from the main reservoir directly to the broiler houses. Water storage tanks will be located at each chicken house (1 x 5000 L & 1 x 1000 L). All water pipelines will run, as far as possible, on the side of existing and the new roads. The HT power distribution lines will be located within the same trench, where possible.

Underground collection/treatment tanks will be located at all new ablution and domestic houses to manage domestic sewage. Cold storage will be utilised as temporary storage for mortalities which will then be disposed of at a bio-approved landfill site. Domestic organic materials will be composted onsite as part of each household's composting arrangement. The remaining solid waste will be separated into recycled and non-recycled materials and removed from the site on a weekly basis to the local municipal waste facility.

Manure will be dry swept and cleaned out of the chicken houses whereafter high-pressure hoses will be used to clean the pens with any residual water washed onto the free-range pasture and lost through evaporation. Chicken Manure will be used directly in the agricultural industry to be collected by surrounding farmers for crop fertilisation.

Please refer to Figure 3 below.

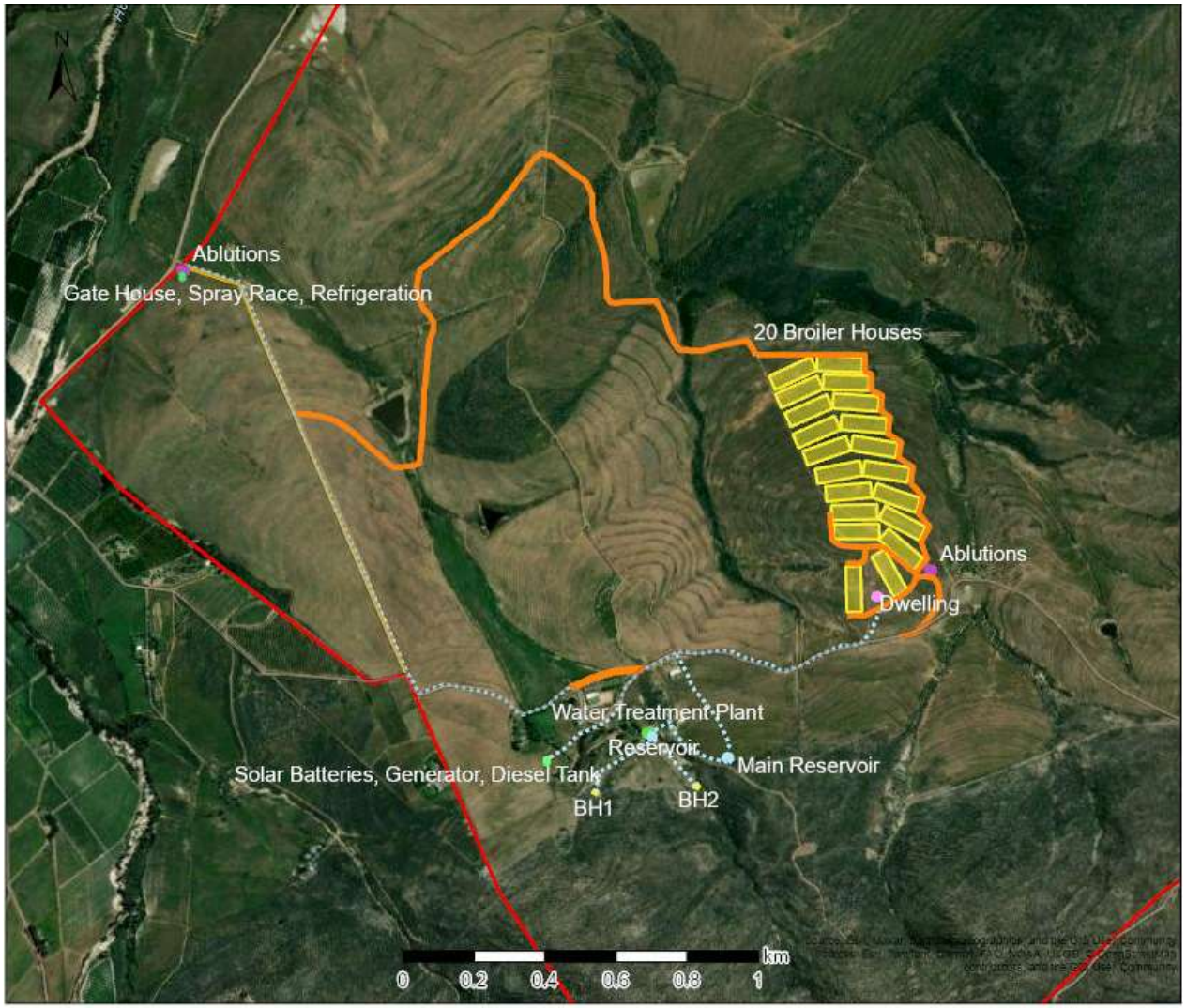

Figure 3: Showing the proposed activities within the property boundaries (red line). New realigned roads are shown in orange and any water pipelines/ electrical cables will run along the blue dotted line (alongside existing roads as far as possible).

Please refer to **Annexure 3B**, which includes a map showing the proposed activity components and associated infrastructure on the environmental sensitivities of the site including no-go areas for development.

1.4 ENVIRONMENTAL LEGISLATION:

1.4.1 National Environmental Management Act, 1998 (Act 107 of 1998), as amended ("NEMA")

NEMA makes provision for the identification and assessment of activities that are potentially detrimental to the environment and which require authorisation from the competent authority based on the findings of an Environmental Impact Assessment (EIA). NEMA is a national act, which is enforced by the Department of Environmental Affairs (DEA). In the Western Cape, these powers are delegated to the Department of Environmental Affairs & Development Planning (DEA&DP). According to the list of activities identified under the EIA Regulations, by Listing Notice 1 (GN. R. 327), Listing Notice 2 (GN. R. 325), and Listing Notice 3 (GN. R. 324), published in Gazette No. 40772 on the 07 April 2017, the following activities are triggered and require environmental authorisation:

Listing Notice 1 (BASIC ASSESSMENT):

1 - *The development of facilities or infrastructure for the generation of electricity from a renewable resource where—*
~~(i) the electricity output is more than 10 megawatts but less than 20 megawatts~~; or
(ii) the output is 10 megawatts or less but the total extent of the facility covers an area in excess of 1 hectare; excluding where such development of facilities or infrastructure is for photovoltaic installations and occurs—
(a) within an urban area; or
(b) on existing infrastructure.

5 - *The development and related operation of facilities or infrastructure for the concentration of –*
~~(i) more than 1 000 poultry per facility situated within an urban area, excluding chicks younger than 20 days~~;
(ii) more than 5 000 poultry per facility situated outside an urban area, excluding chicks younger than 20 days;
~~(iii) more than 5 000 chicks younger than 20 days per facility situated within an urban area; or~~
~~(iv) more than 25 000 chicks younger than 20 days per facility situated outside an urban area~~.

12 - *The development of—*
i) dams or weirs, where the dam or weir, including infrastructure and water surface area, exceeds 100 square metres; or
ii) infrastructure or structures with a physical footprint of 100 square metres or more;
where such development occurs—
(a) within a watercourse;
(b) in front of a development setback; or
(c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse;

excluding—
(aa) the development of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour;
(bb) where such development activities are related to the development of a port or harbour, in which case activity 26 in Listing Notice 2 of 2014 applies;
(cc) activities listed in activity 14 in Listing Notice 2 of 2014 or activity 14 in Listing Notice 3 of 2014, in which case that activity applies;
(dd) where such development occurs within an urban area;
(ee) where such development occurs within existing roads, road reserves or railway line reserves; or
(ff) the development of temporary infrastructure or structures where such infrastructure or structures will be removed within 6 weeks of the commencement of development and where indigenous vegetation will not be cleared.

19 - *The infilling or depositing of any material of more than 10 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10 cubic metres from a watercourse;*
but excluding where such infilling, depositing, dredging, excavation, removal or moving—
(a) will occur behind a development setback;
(b) is for maintenance purposes undertaken in accordance with a maintenance management plan;
(c) falls within the ambit of activity 21 in this Notice, in which case that activity applies;
(d) occurs within existing ports or harbours that will not increase the development footprint of the port or harbour; or
(e) where such development is related to the development of a port or harbour, in which case activity 26 in Listing Notice 2 of 2014 applies.

Listing Notice 3 (BASIC ASSESSMENT):

14 - *The development of—*
(i) dams or weirs, where the dam or weir, including infrastructure and water surface area exceeds 10 square metres; or
(ii) infrastructure or structures with a physical footprint of 10 square metres or more; where such development occurs—

(a) within a watercourse;
(b) in front of a development setback; or
(c) if no development setback has been adopted, within 32 metres of a watercourse, measured from the edge of a watercourse;

excluding the development of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour.

Western Cape
i. Outside urban areas:
(aa) A protected area identified in terms of NEMPAA, excluding conservancies;
(bb) National Protected Area Expansion Strategy Focus areas;
(cc) World Heritage Sites;
(dd) Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as adopted by the competent authority;
(ee) Sites or areas listed in terms of an international convention;
(ff) Critical biodiversity areas or ecosystem service areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans;
(gg) Core areas in biosphere reserves; or
(hh) Areas on the estuary side of the development setback line or in an estuarine functional zone where no such setback line has been determined.

1.4.2 National Heritage Resources Act, 1999 (Act No. 25 of 1999) ("NHRA")

The NHRA, provides for the management of national heritage resources, to set norms and maintain national standards for the management of heritage resources in South Africa, and to protect heritage resources of national significance, so that heritage resources may be bequeathed to future generations.

The proposed activity will not impact on any heritage resources and therefore no further action is required under Section 38 of the NHRA. However, should any heritage resources, including evidence of graves and human burials, archaeological material and paleontological material be discovered during the execution of the activities above, all works must be stopped immediately, and Heritage Western Cape must be notified without delay.

1.4.3 National Water Act, 1998 (Act No. 36 of 1998) ("NWA")

The NWA is the primary statute providing the legal basis for water management in South Africa and has to ensure ecological integrity, economic growth and social equity when managing and using water. The fundamental objective of the National Water Act (Act 36 of 1998) is to ensure the protection of the aquatic ecosystems of South Africa's water resources. The NWA includes provisions requiring that a water use license be issued by the Department of Water & Sanitation (DWS) before a landowner engages in any activity defined as a water use in terms of the NWA (e.g. taking of water from a resource (Section 21 a); Impact on freshwater resources (Section 21c & i); Storing of water (Section 21b); Disposing of waste in a manner which may detrimentally impact on a water resource (Section 21g)).

The Catchment Management Agency acting on behalf of DWS is known as the Breede Olifants Catchment Management Agency (BOCMA) within this region. The proponent has initiated the water use authorisation application process regarding the proposed S21 (a) for the abstraction from the 2 boreholes on site; S21(c) and (i) for the proximity of infrastructure and boreholes to regulated areas of wetlands and drainage lines. The ELU has been confirmed by BOCMA.

1.5 THE EMPr DOCUMENT

An Environmental Management Plan (EMPr) can be defined as "*an environmental management tool used to ensure that undue or reasonably avoidable adverse impacts of the construction, operation and decommissioning of a project are prevented; and that the positive benefits of the projects are enhanced*". EMPr's are therefore important tools for ensuring that the management actions arising from EIA processes are clearly defined and implemented through all phases of the project life cycle.

The EMPr forms part of the contract identifying and specifying the procedures to be followed by the Applicant to eliminate or reduce adverse impacts during the construction and operational phase. Should the owner or employee persistently fail to observe provisions of the EMPr, the Environmental Control Officer (ECO) should notify the relevant authority for a compliance audit, and possibly the prosecution of an individual or the removal of the individual from site.

The Environmental Contract ascribes legal status to the EMPr and any subsequent amendments thereto. The EMPr includes all relevant documentation within this report and/or referred to within it. NEMA, and the respective Regulations, are pertinent to this development. All activities on site must adhere and comply with the provisions of these Acts.

In general, the EMPr can consist of the following phases: ***planning & design***, ***pre-construction activities***, ***construction activities***, ***rehabilitation &/or decommissioning***, and lastly ***operational activities***. However, the need to include all the above phases is dependent on the scale and scope of each individual project. For the purposes of this application the following three categories are largely defined:

- **Planning, Design & Pre-construction Phase**: This section relates to the demarcating of the proposed activity footprint areas versus no-go areas.
- **Construction Phase**: This section relates to the construction of all buildings (dwellings, outbuildings, chicken pens, ablutions etc.), roads and associated infrastructure to accommodate services.
- **Operational Phase**: This section is intended to guide the operation and maintenance aspects associated with the infrastructure relating to the proposed Broiler Facility, dwellings and

infrastructure in line with relevant legislative requirements and the recommendations made by the specialist consultant (s).

Please note: The first two phases can overlap and are generally also referred to collectively as the CEMP (Construction Environmental Management Plan). The final phase can also be referred to as the OEMP (Operation Environmental Management Plan).

The EMPr will be reviewed by the ECO on an ongoing basis. Based on observations during site inspections and issues raised at site meetings, the ECO will determine whether any procedures require modification to improve the efficiency and applicability of the EMPr on site. Any such changes or updates will be registered in the ECO's monthly record, as well as being included as an annexure to this document. Annexures of this nature must be distributed to all relevant parties on site.

The following content is required in the EMPr in accordance with Appendix 4 of the EIA Regulations:

a) details of–
  (i) the EAP who prepared the ; and
  (ii) the expertise of that EAP to prepare an , including a curriculum vitae;
b) a detailed description of the aspects of the activity that are covered by and as identified by the project description;
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;
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–
  (i) planning and design;
  (ii) pre-construction activities;
  (iii) construction activities;
  (iv) rehabilitation of the environment after construction and where applicable post closure;&
  (v) where relevant, operation activities;
e) 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 —
  (i) avoid, modify, remedy, control or stop any action, activity or process which causes pollution or environmental degradation;
  (i) comply with any prescribed environmental management standards or practices;
  (ii) comply with any applicable provisions of the Act regarding closure, where applicable; &
  (iii) comply with any provisions of the Act regarding financial provision for rehabilitation, where applicable;
f) the method of monitoring the implementation of the impact management actions contemplated in paragraph (f);
g) the frequency of monitoring the implementation of the impact management actions contemplated in paragraph (f);
h) an indication of the persons who will be responsible for the implementation of the impact management actions;
i) the time periods within which the impact management actions contemplated in paragraph (f) must be implemented;
j) the mechanism for monitoring compliance with the impact management actions contemplated in paragraph (f);

k) a program for reporting on compliance, taking into account the requirements as prescribed by the Regulations;

l) an environmental awareness plan describing the manner in which—

(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

m) any specific information that may be required by the competent authority.

1.6 KEY TERMS AND ABBREVIATIONS

a) **Applicant**– The person or legal entity that has made application to the competent authority for environmental authorizations and who will have the overall responsibility to adhere to the relevant legislation and comply with the environmental authorization.

b) **Contractor/ Farm Manager –**

(i) the main or specialised contractors as engaged by the Applicant from time to time for the execution of the works, including all sub-contractors appointed by the main contractor of his own volition for the execution of parts of the works.

(ii) any other contractor from time to time engaged by the Applicant directly in connection with any part of the works which is not a nominated subcontractor or a subcontractor to the main contractor.

(iii) the main or specialised operator or farmer as engaged by the Applicant from time to time for the execution of the farm operation.

c) **Council** – the local municipal authority that operates or is responsible in said area.

d) **Days** – the days of the week excluding Sundays and legal public holidays.

e) **Environmental Authorization** also referred to as the ROD is the Record of Decision as issued by the Provincial Government Department arising from the application for Environmental Authorization through either a basic assessment or full EIA process.

f) **Environmental Management Programme (EMPr)** – this document as amended or varied from time to time, to control the implementation of the works on the site in such a way as to ensure that they do not result in undue or reasonably adverse impacts on the environment.

g) **Environmental Control Officer (ECO)** – a suitably qualified individual or site manager to be appointed by the Applicant, and his successor/s should he cease to hold such appointment for any reason, to oversee the implementation of the EMPr and environmental agreement until the completion of works on the site.

h) **Land Surveyor - (LS)**

i) **Resident Engineer (RE) –** the representative Engineer or specialist from the department of Agriculture present on site for that part of the works.

j) **Site Manager –** the employee of the main contractor or Applicant responsible for the day-to-day control of all activities and operation on site.

k) **Works –** the construction operations, all related and incidental works such as, but not limited to, site works, fencing, earthworks, roads, and ploughing of the authorised area.

SECTION 2: ENVIRONMENTAL IMPACTS

2.1 IMPACTS:

2.1.1 Botanical and Freshwater Ecosystems

Loss of biodiversity and ecological structure:
The proposed activities involve the installation of three new road crossings, two over Streams A and B, and one over Stream C, as well as one pipeline crossing over Stream B. The road crossings will require soil excavation, vegetation clearance, and in-stream construction, and are therefore expected to have a definite impact on biodiversity and ecological structure at the crossing points. In contrast, the pipeline crossing will consist of a treated timber pole spanning the watercourse, with the pipeline mounted above the stream. As this method avoids direct disturbance to the streambed and banks, it is expected to have minimal impact on the aquatic environment.

Streams A and B have already been assessed as being in a largely to seriously modified state with low EIS at the proposed crossing locations, with significant existing alterations to the streambed and banks, as well as extensive vegetation removal. Consequently, the construction of road crossings over Streams A and B is expected to result in a short-term, low negative impact.

Although the general condition of Stream C was found to be in a largely natural state with high EIS, the proposed road crossing will be located at an existing informal crossing that has already undergone vegetation clearance and soil compaction. The formalisation of this crossing, combined with the rehabilitation of the surrounding disturbed areas, is anticipated to result in a long-term, low to medium positive impact on the directly surrounding section of the stream.

Should all mitigation measures be taken into account, the general impact of the above activities would be **Short-term, Low Negative nature (Construction Phase)** and **Long Term, Low to Medium Positive nature (Operational Phase).**

Water quality impairment:
During the construction phase, vegetation clearing and physical disturbances to stream banks and wetland areas at freshwater crossings may increase the risk of erosion and subsequent sedimentation in downstream freshwater systems. Additionally, construction activities inherently carry a risk of general pollution, which could lead to the degradation of surface water quality in receiving freshwater features. This impact is expected to be of a short-term, low to medium negative nature, affecting the immediate surrounding freshwater environment.

Looking at operational phase impacts, the nature of the proposed development, a chicken broiler facility located on a slope, poses a potential risk of significant water quality degradation in nearby freshwater systems. Broiler litter is typically rich in nutrients, microbes, organics, and trace metals; therefore, runoff from the broiler site could lead to eutrophication in downstream areas, particularly following the first seasonal rains. If not properly mitigated, such runoff could substantially degrade water quality and indirectly impact aquatic biodiversity associated with the streams.

The client has indicated that management practices will include dry sweeping and the removal of manure, followed by high-pressure washing of broiler areas, with wash water directed into surrounding pastures. In addition, as part of a stormwater management plan, the construction of stormwater swales along access roads is proposed, designed to accumulate runoff in designated dry pans.

Should the above be applied, the operational phase of the project is expected to have a very low negative impact on water quality within Streams C and D.

If these mitigation measures are adhered to, the impact of the proposed upgrade works is expected to have a **Low to very low negative impact on the water quality of downstream freshwater features**.

Flow modification and change in sediment balance:
If flow is present during construction, activities within the streams and associated wetland areas may impede flow, resulting in short-term hydrological modifications to downstream wetland features and potentially causing prolonged inundation of upstream wetland areas. Although construction is planned for the drier summer months, the risk of flow disruption remains. Warm and dry conditions may exacerbate impacts by reducing the availability of low/baseflows, thereby affecting ecosystems downstream that rely on these flows for ecological functioning.

The initial design for the proposed stream crossings (now the alternative option), particularly at the confluence of Streams A and B and at the lower crossing over Stream C, did not accommodate subsurface flow. This would have impeded groundwater movement and likely caused fragmentation and possible desiccation of downstream wetland areas associated with these reaches. In response, the preferred option now incorporates subsurface drainage via a no-fines sub-soil drain and an embedded pipe network to maintain hydrological connectivity and lower any flow modification impacts associated with these structures.

Should all mitigation measures be taken into account, the general impact of the above activities would be **Short-term, Low Negative nature (Construction Phase)** and **Long Term, Low to Negligible Negative nature (Operational Phase).**

With the implementation of appropriate mitigation measures, the proposed activities with their expected operational phase are expected to result in a general short-term low negative impact on the site's freshwater features.

2.1.2 Socio-Economic

Direct and indirect employment opportunities (temporary and permanent) and skills transfer to new employees. Significant financial contribution to the local economy and a knock-on effect for trade in local economy. This will have a **medium – high positive impact.**

2.1.3 General Impacts

Nuisance Impacts (Dust, Noise & Odour) (LOW -)
Dust generation as a result of the construction phase and traffic generation during the operational phase.

Noise impacts should be limited due to the rural nature of the surrounding area and the nature of the existing activities being undertaken on site as well as the position of the Broiler Facility within the site. The

Broiler Facility is located centrally within the greater property and therefore is located well away from sensitive receptors.

Odour could result from mismanagement of chicken manure and pens. However, strict biosecurity protocols are to be put in place which would mitigate these impacts.

Waste (LOW -)
Waste generation from the construction and operational phases (including hazardous waste resulting from infectious mortalities).

Visual (LOW -)
Possible increase in visual intrusion within the agricultural landscape. Higher intensity agriculture could result in increased hardened surfaces within the agricultural landscape.

Traffic (LOW -)
Increased use of access roads and therefore generation of traffic.

2.2 IMPACT MITIGATION:

2.2.1 Botanical and Freshwater Ecosystems:

Loss of biodiversity and ecological structure:

Construction Phase:

- All road crossing structures must be designed to avoid obstruction of streamflow, including low flows.
- Construction activities directly involving freshwater features (i.e., road and pipeline crossings) should preferably be scheduled during the dry summer months—typically from December to March—when rainfall and runoff are at their lowest.
- If any flow is present within the streams during construction, appropriate measures must be taken to divert the water around the work area and ensure its release downstream.
- A buffer zone extending 6 meters upstream and downstream of the construction footprint should be clearly demarcated. No disturbance or activity should occur beyond these designated areas within the stream channel.
- The boundaries of this buffer zone must be physically demarcated using high-visibility fencing or flagging prior to the commencement of any construction activities.
- Work within the stream channels should be limited strictly to essential areas.
- Clearing of riparian or wetland vegetation must be avoided where possible or otherwise kept to a minimum. Where practicable, vegetation should be pruned or topped rather than grubbed or uprooted.
- All wetland/stream areas disturbed during construction must be rehabilitated and revegetated with appropriate indigenous wetland and riparian buffer species once construction is complete.

Operational Phase:

- All rehabilitated and revegetated areas within the wetland/stream areas should be monitored for the following 2 years, ensuring the establishment of good plant biodiversity.
- Monitoring of all stream crossings for signs of erosion, debris build-up or nuisance growth around the culverts, should be included and addressed in a formal Maintenance and Management Plan for the project.

- No use of machinery is allowed within any wetland/stream channels for the operational phase.
- All debris must be removed and properly disposed of.
- No dumping of debris should be allowed in the stream/wetland areas.
- Any wetland/ riparian or instream areas disturbed by Maintenance activities to be rehabilitated and revegetated (if necessary) after maintenance works

Water quality impairment:

Construction Phase

- As mentioned above, construction activities should preferably take place during the drier months, and special attention should be given to managing water quality impacts in the construction Environmental Management Programme (EMP).
- Temporary silt fencing, sandbags, or berms should be installed within downstream channels to prevent sediment generated during construction from entering downstream freshwater features.
- Implement a phased clearing approach, limiting vegetation clearance to areas required for active construction only.
- Designate stockpile locations at least 50 metres away from any watercourses or wetland areas.
- Prevent contaminated runoff from construction sites from entering adjacent streams or wetlands by using diversion drains and berms. Temporary detention basins or sediment traps should be constructed to capture excess sediment before it reaches wetland or stream areas.
- Good Site Management Practices include:
    - Portable chemical toilets must be provided at all work sites, or ensure that conveniently located site toilets are available. Toilet facilities must not be located within 100 metres of any stream or wetland areas.
    - Maintain and clean toilets regularly to ensure they remain in good working order and hygienic condition.
    - No waste or foreign materials may be dumped into streams or wetlands. These areas must also not be used for cleaning clothing, tools, or equipment.
    - Prevent the discharge of water containing polluting matter or visible suspended solids directly into streams or wetland areas.
    - Immediately clean any accidental oil or fuel spills or leaks. Do not hose or wash spills into the surrounding natural environment.
    - All operations involving the use of cement and concrete (outside of the batching plant) must be carefully controlled.
    - Limit cement and concrete mixing to designated sites wherever possible.

Flow modification and change in sediment balance:

Construction Phase

- All new culverts must be designed to accommodate anticipated peak flow volumes to prevent flow impedance and minimize the risk of erosion following high-rainfall events.
- Culverts should be installed at or slightly below the natural streambed level to avoid obstructing low flows and to facilitate the unimpeded movement of aquatic biota.
- As mentioned under “Loss of Biodiversity”, should flow be present during construction, temporary diversion structures should be implemented to reroute stream and wetland flow around the active work area, ensuring that low flows remain uninterrupted throughout the construction period.

- As the client proposes to include subsoil drainage in the low-water bridge structures, the following mitigation should be taken into account:
  - Drainage should consist of several pipes or a continuous stone layer.
  - The subsoil drain's cross-sectional area should roughly match or exceed the flow cross-section of the natural subsurface seepage path, both up and downstream of the bridge. This should be at a minimum 0.3–0.5 m depth and width.
  - The subsoil drain must be wrapped in geotextile or similar to keep fine wetland sediments out.
  - Stone size must be uniform and coarse to maintain voids for long-term flow.

Operational Phase

- Regular maintenance should be conducted to remove debris accumulation and control nuisance vegetation growth to prevent blockages and ensure continued flow through culverts.

2.2.2 Socio Economic:

The socio-economic impacts are positive, and no mitigation is proposed.

2.2.3 General:

General impacts include: nuisance factors (i.e. dust, odour and noise), waste management, visual impacts, traffic impacts and stormwater impacts. All general impacts would be mitigated through the implementation of the Environmental Management Programme (EMPr) (THIS DOCUMENT). Planning, Design, Construction and Operational phase impacts are addressed in Section 4 below.

Refer to Annexure 3B: Environmental Sensitivities Map.

SECTION 3: KEY STAKEHOLDERS

3.1 The Competent or Lead Authority

DEA&DP is the competent or lead authority in this instance. This Directorate has overall responsibility for ensuring that the Applicant complies with the conditions of its EA as well as this EMPr once approved. During the construction (and operational phases) of the EMPr the lead authority will have the following role to play:

- The authorities may perform random controls to check compliance.
- Review Monitoring and Audit reports, if required.
- Whenever necessary, the authorities are to aid in understanding and meeting the specified requirements.
- Recommend suitable corrective measures are undertaken by the Applicant where non-compliance has been reported.
- Enforcing compliance by the Applicant.

3.2 The Applicant

The Holder of the EA (e.g. the Applicant) is accountable for the potential impacts of the activities that are undertaken and is responsible for managing these impacts, both in the construction and operational phases. The Applicant therefore has overall and total environmental responsibility to ensure that the EMPr is implemented and that both the EMPr and the EA are complied with at all times. The Applicant is also responsible for ensuring that all other environmental related legislation is complied with (i.e. NWA). The Applicant is responsible for the development and implementation of the conditions of the EA in terms of the planning and design of the development and construction thereof.

Amongst the general responsibilities above the Applicant is also responsible for:

- Appointing an ECO and where required an environmental auditor.
- Take the necessary action in terms of non-compliances.
- Ensuring that all of the Applicant's, staff, representatives, contractors, consultants and any other agent operating under the employ of the Applicant comply with the EA.
- Considering the ECO's observations and recommendations and acting where required.

3.3 Environmental Control Officer (ECO)

A suitably qualified individual will be designated to fulfil the role of Environmental Control Officer, to ensure and oversee the implementation of the EMPr in its entirety on site during construction and earthworks on the entire site.

The role of the ECO is essentially seen as an interactive one which involves site visits approximately once a month at the start of construction. Site visits may need to be less frequently during certain stages of the development, depending on the sensitivity of the area in which construction is taking place.

The responsibilities of the ECO or designated person during the construction phase of the project will include:

- To environmentally educate and raise the awareness of the Contractors and their staff as to the sensitivity of the site and to target responsible individuals as key players for environmental education, to facilitate the spread of the correct environmental attitude during the contract work.

- To review method statements and to determine the most environmentally sensitive options of modus operandi for the development tasks.
- To oversee the implementation of environmental procedures set out in this document.
- To attend site contractor's meetings and report on environmental issues.
- To receive notices and minutes of all site meetings.
- To maintain an open and direct channel of communication with the RE, who will be immediately aware of the actions of the ECO at all times, especially as they relate to implementation policy and corrective actions as detailed in this document.
- To take immediate action on site where clearly defined no-go areas are violated, or in danger of being violated, and to inform the RE and Site Manager immediately of the documents and the action taken.
- To keep an up-to-date record of works on site, as they relate environmental issues in the site diary.
- To be contactable by the public regarding matters of environmental concern as they relate to the development. Such matters shall be recorded in the Site Diary.
- To be responsible for auditing and reporting.

3.4 Contractor / Farm Manager

The Contractor/ Farm Manager (as per definition this can be the Applicant as well) will be required, where specified, to provide Method Statements setting out in detail how the management actions contained in an EMPr will be implemented in order to ensure that the environmental management objectives are achieved. The responsibilities will include:

- Demarcating the no-go areas within the vicinity of the proposed activities through the appropriate fencing as discussed and agreed upon with the ECO.
- Complete Site Inspection Forms on a regular basis (eg. weekly).
- Provide inputs to the regular (eg. monthly) environment report to be prepared by the ECO.
- Liaise with the 'construction team' on issues related to implementation of, and compliance with, the EMPr.
- To oversee the implementation of environmental procedures set out in this document.
- Compilation of a maintenance routine, with tasks and budget and timing factors.
- Compilation of a monitoring plan.

3.5 The Environmental Auditor

Where required by the EA an environmental auditor will be appointed by the Applicant. The auditor will be an independent environmental consultant. The auditor will carry out a compliance audit based on the EA and of all of the activities being undertaken.

SECTION 4: IMPACT MANAGEMENT OUTCOMES AND ACTIONS

This section includes a description of proposed impact management actions, identifying the manner in which the impact management outcomes will be achieved and, where applicable, include actions to avoid, modify, remedy, control or stop any action, activity or process which causes pollution or environmental degradation & comply with any prescribed environmental management standards or practices.

4.1 Pre-Construction Management Plan

The pre-construction or planning management plan is to be used as a guide during the planning, design and detailing of the development activity.

4.1.1 General Requirements:

A. Contractual Communication Procedures on Site

A logbook will be kept on site for the purposes of recording on-site instructions and as a general record of environmental issues. The diary must be kept for a minimum of two years after the activity is completed for the relevant authority to review if deemed necessary. A photographic record of before and after construction will be kept for visual reference purposes. The logbook will consist of three sections:

Environmental Site Instruction Section
The Environmental Site Instruction Section will be used for the recording of general site instructions relating to the protection of environmentally sensitive or potentially impacted areas or features on the site, by the ECO, to facilitate the issuing of the site instruction by the RE.

Site Diary Section
The purpose of this section will be to record the comments of the ECO as they relate to activities on the site, any problems encountered, or comments or complaints received from the public about works from the site.

Monitoring Section
The purpose of this section will be to record the comments of the ECO during Construction and the effective implementation of all mitigation measures (including: waste, recycling, landscaping and renewable energy measures etc.) used during the life cycle of project.

This book is to remain on site at all times and is to be made available for monitoring purposes by the local authority as required.

B. Communication/Contractual Network

There is to be continual communication between the Applicant; RE, Contractor, Site Manager and the ECO. The ECO will advise all on factors relating to the EMPr and all environmental matters on site.

The ECO is empowered to order the Contractor immediately to cease any activities or operations that are required to be stopped as a matter of urgency to prevent serious adverse environmental impacts or potential impacts on the site or any of the adjacent properties or areas outside the boundaries of the site. The ECO shall without delay report any such actions to the Competent Authority. The suspension will be enforced until corrective action has been taken, with no extension of time for such delays. In such a case, all costs are to be borne by the Contractor.

C. Method Statement Format

For any activity the Contractor is requested to submit a method statement for comment by the ECO, the format should clearly indicate the following:

- What: a brief description of the work to be undertaken;
- How: a detailed description of the process of work, methods and materials;
- Where: a description/sketch map of the locality of work; and
- When: the sequencing of actions with due commencement dates and completion date estimates.

The Contractor must submit the method statement to the ECO prior to the start of any construction activity. Work may not commence until the comments of the ECO have been received and taken into consideration.

D. Programming of Construction Events

The ECO must be supplied with a detailed program of all construction events to allow for proper monitoring and planning on site. Any amendments to the program of construction events for any reason must be forwarded to the ECO.

E. Bylaws and Regulations

All national and provincial laws and regulations, as well as all local authority bylaws and regulations which apply to the development of this site are to be adhered to.

Consent Use is required in terms of the Breede River Municipality Zoning Scheme By-Law, a Consent Use on Agriculture for 'Intensive Animal farming'. A **Water Use Licence** is required from BOCMA.

F. Safety

The Contractor is to appoint a safety steward, who will be responsible for safety of the labour force, construction activities and handling emergency situations on site during construction hours.

G. Emergency

All accidents and emergency situations are to be reported to the ECO and Site Manager and full details included in the monthly environmental report.

<u>Fire</u>
The contractor must take appropriate measures to guard against accidental fire, and it will be presumed that any bush fire which starts on the site, or within 100m thereof during the construction period would be the responsibility of the applicant.

In the case of a fire occurring on site, the Applicant and Site Manager (safety steward) are to be notified immediately. If fairly localised and effort should be made to extinguish the fire immediately and if required, the assistance of the local fire department should be sought by the safety steward.

Fire beaters and "bakkie sakkie" are to be kept on site, and easily accessible at all times, and not locked away. No open fires may be lit anywhere on the construction site, except at locations approved by the ECO

and Site Manager. The burning of refuse or vegetation material on site as a means of disposal will not be allowed unless a permit for burning is issued by the competent authority.

First Aid
The Contractor must provide and maintain a suitable first aid kit on site, with a member of staff suitable qualified in first aid on site during working hours, in accordance with the Occupational Health and Safety Act.

H. Public Complaints

All public complaints received are to be registered by the ECO or Site Manager and addressed immediately. Public complaints and responses are to be recorded in the Site Diary and included in the monthly environmental report by the ECO.

4.1.2 Design Requirements

A. Low-water bridge structures

Drainage should consist of several pipes or a continuous stone layer.

The subsoil drain's cross-sectional area should roughly match or exceed the flow cross-section of the natural subsurface seepage path, both up and downstream of the bridge. This should be at a minimum 0.3–0.5 m depth and width.

The subsoil drain must be wrapped in geotextile or similar to keep fine wetland sediments out.

Stone size must be uniform and coarse to maintain voids for long-term flow.

B. Visual Screening

Use earth tones or muted colours to reflect the local landscape on all buildings.
Use rows of indigenous and fast-growing trees or shrubs inside the free-range pastures to screen buildings.

C. Waste, Water & Energy Guidelines

During the lifespan of human habitation people generally waste on a daily basis. Examples of additional wastage are excessive electricity consumption for lighting and air-conditioning and excessive water usage.

Water Measures
The following Water Efficiency Measures will be implemented:

- Ensure that only water efficient devices such as low-flow taps, low-flow showerheads, washing machines and dishwashers are used.
- Ensure that all toilets are low volume (9.5 litres or less), with dual-flush or multi-flush.
- Ensure that outbuildings and outside taps and showers are fitted with metering tap buttons, which have set timers to prevent taps being left on or dripping.
- Design the layout of the plumbing system to avoid long pipe runs between the geyser and supply points.
- Reduce hard surfacing to encourage rainwater to seep back into the ground.

- Design paved areas so that water run-off is slowed down and where possible use soak-aways and permeable paving that allows water to filter into the ground.
- Ensure that the optimum pipe size and water pressure is used. A pressure reducing valve can be installed at a point nearest to where the supply enters the building to ensure that all water supplies in the building are balanced.
- Ensure all buildings are harvesting rainwater and encourage the re-use of grey water where appropriate. However, ensure that the local ecological system is not polluted and that it is managed correctly.
- To keep the volume of polluted water to be disposed of to a minimum, stormwater should not be mixed with greywater (e.g. from baths, showers, sinks, washing machines etc.).
- Ensure the use of indigenous planting and efficient irrigation methods, such as drip irrigation.

Energy Efficiency

Reducing the energy consumption of a building not only saves the environment but will also save on the running costs of the building. By designing energy efficient or renewable energy options into a building, the demand for electricity during peak consumption times is reduced. The following Energy Efficiency Measures will be implemented:

- The proposed dwellings and agricultural water pumps will be supplied with electricity generated on the farm by means of solar panels that will be affixed to the roofs of each dwelling unit and other structures connected to electricity storage devices and inverters.
- Install properly insulated ceilings.
- Place and size windows to make optimal use of natural light, winter heating and ventilation without creating draughts, or gaining too much heat in summer or losing heat in winter.
- Avoid the use of air conditioning, or at least ensure that the correct size is installed and that use of the unit is minimised.
- Use air conditioners with a seasonal energy efficiency ratio of 10 or more (ratio of the seasonal energy output to the seasonal energy input).
- Ensure that the building is constructed so as to be tightly sealed, to prevent unwanted air flows. Doors and windows must be appropriately sized and fitted with seals.
- Energy efficient electrical installations must be used.
- Ensure that artificial lighting is designed so that light is focused where necessary, such as brighter areas where tasks are being performed and more ambient light elsewhere.
- Avoid the use of outdoor 'up-lighting' to reduce light pollution.
- Ensure that energy efficient light bulbs, such as CFLs or LEDs, are used.
- Reduce the electrical energy used to heat water by installation of solar water heaters, or at least geyser blankets, pipe insulation and a geyser timer.

Waste

Methods to reduce, reuse and recycle waste need to be encouraged through all aspects of the development:

- Aim for and promote Zero Waste in the planning, operation, management and maintenance of a building. Zero Waste emulates the closed loop processes found in nature, taking a 'cradle –to – cradle' approach to designing products and buildings.
- Build waste avoidance into the process at a design phase, by specifying products and materials that have less wasteful production processes and don't create wasteful emissions during construction and maintenance of a building.

- If waste is created, consider how this can firstly be re-used and then recycled to recover the value invested in these materials, rather than losing this value when the resource is dumped in a landfill or incinerated.
- Facilitate the separation of waste at the source for composting, re-use and recycling when designing waste management systems. People should be encouraged to recycle their household waste.
- Material used during construction or in the life-cycle of the project should be focused on renewable and recyclable elements:
  - Select building materials for durability to minimise maintenance or replacement;
  - Use standard materials to increase the potential for re-use and re-cycling;
  - Materials should be sourced locally where possible; and
  - Use recycled material where possible.

4.1.3 Site Establishment Requirements

A. Environmental Awareness Training for Site Personnel

All contractors/ sub-contractors involved in work on the development are to be briefed on their obligations towards the environmental controls and methodologies. The briefing will usually take the form of an on-site talk and demonstration by the ECO. The education program should be aimed at all levels of management within the Contractor team.

The environmental awareness education program should commence with entry onto the site, prior to any construction activities taking place by each team and is likely to be an ongoing process. All personnel are to be made aware of the details of the EMPr which will be applicable to them, in the languages of the site staff. Contractor teams must also be aware of penalties issued by the ECO in terms of environmental conduct on site, as well as safety and emergency procedures to be followed.

An initial environmental induction must occur to all sub-contractors and associated workers on environmental awareness, including minimisation of disturbance to areas of increased ecological sensitivity (i.e. freshwater ecosystems), as well as fauna and flora with a no poaching policy, management of waste and prevention of water pollution.

A regularly updated record is to be kept of all personnel attending the Environmental Awareness training sessions.

B. Site Definition and Demarcation

Prior to any works commencing on site a site survey is to be undertaken and the placement of boundary pegs (i.e. white stakes) along the areas proposed for development activities are to be erected. Peg coding is to be communicated to the Contractor and all other relevant parties as they may be identified. The approved new development footprints on site must be surveyed and demarcated prior to any site development or vegetation loss (refer to Section C & D below). Areas beyond the white stakes are to be considered no-go areas. All areas outside the boundary of the property are naturally considered no-go areas and boundary fencing is to be secured in areas where work is to take place.

All 'fencing' is to be erected prior to construction works commencing on site and is to remain in position and in good repair for the duration of the construction phase. Once this has been done, all works, including stockpiling of construction materials are to be strictly confined to the demarcated area.

All footprint areas must remain as small as possible and vegetation clearing to be limited to the approved development footprint. Implement a phased clearing approach, limiting vegetation clearance to areas required for active construction only.

Work within the stream channels should be limited strictly to essential areas. Clearing of riparian or wetland vegetation must be avoided where possible or otherwise kept to a minimum. Where practicable, vegetation should be pruned or topped rather than grubbed or uprooted.

C. Protection of Sensitive Features

Sensitive areas within the development area, as identified by the ECO, should be fenced off prior to the start of construction on site (where applicable), to ensure minimum disturbance to these areas during construction activities. Any required buffer areas or no-go areas should be marked prior to the start of construction on site and communicated to the Site Manager.

Vegetation

All protected elements/areas located on the site, will be clearly marked, and care should be taken by the ECO to ensure that they are not unnecessarily disturbed during construction works on site. All alien vegetation must be removed according to standard legislated alien clearing methods.

Apart from the vegetation identified by the project team for removal from the site prior, no indigenous vegetation is to be removed without the written permission of the ECO during the construction phase. Damage to the indigenous vegetation anywhere on the site (outside of the approved area) will be subject to penalties.

Avoid unnecessary trampling of vegetation irrespective of the vegetation being associated with wetland habitats or the surrounding terrestrial area. Retain as much indigenous vegetation as possible (wetland and terrestrial).

Rivers, Riparian Habitat & Wetlands

Construction activities directly involving freshwater features (i.e., road and pipeline crossings) should preferably be scheduled during the dry summer months—typically from December to March—when rainfall and runoff are at their lowest.

A buffer zone extending 6 meters upstream and downstream of the construction footprint should be clearly demarcated. No disturbance or activity should occur beyond these designated areas within the stream channel. The boundaries of this buffer zone must be physically demarcated using high-visibility fencing or flagging prior to the commencement of any construction activities.

Work within the stream channels should be limited strictly to essential areas.

Clearing of riparian or wetland vegetation must be avoided where possible or otherwise kept to a minimum. Where practicable, vegetation should be pruned or topped rather than grubbed or uprooted.

No pollutants must be allowed to enter any river system or any other ecologically sensitive areas during the construction phase. No waste or foreign materials may be dumped into streams or wetlands. These areas must also not be used for cleaning clothing, tools, or equipment.

Reptiles, birdlife and mammals

Due to the fact that there are vegetated areas next to the site reptiles, birdlife and mammals occur and move through the system. Any living organism needs to be respected during the construction phase and should not be killed or ran over. Every effort should be made to save and relocate any mammal, reptile, amphibian, bird, or invertebrate that cannot flee of its own accord, encountered during site preparation (i.e., to avoid and minimise the direct mortality of faunal species). These animals should be relocated to a suitable habitat area immediately outside the project footprint (in the adjoining natural habitats of the site), but under no circumstance to an area further away.

No illegal hunting (either through illegal methods or of rare or threatened species) should be allowed on the site.

Archaeological remains (**Annexure 4: Fossil Finds**)

If any heritage remains are found Heritage Western Cape (HWC) needs to be informed. If heritage remains are disturbed it should be left and demarcated for inspection by HWC. If any archaeological remains (including but not limited to fossil bones and shells, coins, ceramics, antique, marine shell heaps, stone artefacts and bone remains) are discovered HWC need to be notified. If any graves or human remains are discovered HWC need to be notified.

The no-go areas for development are indicated on the Environmental Sensitivities Map (Annexure 3B).

D. Vegetation Clearance

Clearing of riparian or wetland vegetation must be avoided where possible or otherwise kept to a minimum. Where practicable, vegetation should be pruned or topped rather than grubbed or uprooted.

Implement a phased clearing approach, limiting vegetation clearance to areas required for active construction only to prevent unnecessary exposure of bare ground (vulnerable to erosion). Establish pastureland and boundary landscaping as soon as possible after clearing.

Vegetation to be removed from the site to facilitate development needs to be identified by the ECO, indicated on a site plan and clearly marked prior to any other works on site. Alien vegetation directly adjacent or in close proximity to the construction area should be removed in line with alien clearing methods.

No vegetation may be removed using fires, and no excess vegetation material may be burned on site. No natural vegetation outside of the site may be removed without approval of the ECO, apart from invasive plant species which are to be removed according to a controlled program.

Once all vegetation clearing is complete, all vegetation and any removed excess material must be disposed of at a licensed refuse facility and may not be mulched or burned on site (unless all approvals have been obtained).

E. Contractor's Camp

As the property is already operating as a working farm the contractors camp would be in line with the current area (Farmyard) being utilised for the purposes of equipment storage and maintenance etc.

F. Toilet Facilities

Suitable sanitary facilities must be provided by the contractor for all staff on site. The Contractor should ensure that ablutions are restricted to the sanitary facilities. Where chemical toilets are provided, the Contractor should ensure that they are kept in hygienic condition and emptied on a regular basis. Waste from the toilets should be disposed of to the satisfaction of the ECO.

Chemical Toilet facilities must not be located within 100 metres of any stream or wetland areas

Care must be taken that no spillage occurs when chemical toilets are cleaned, and their contents are properly stored and removed off site. A contingency plan for spills must be supplied by the contractor and approved by the ECO. Toilets should be located where their use would result in minimal impact on the surrounding environment and may not be in areas of running or standing water during winter and must be secured to prevent them from blowing over.

G. Noise Management

The contractor must take appropriate measures to limit the impact of unreasonable noise from construction activities on the neighbouring land users.

Restrict working hours to weekdays and half day Saturday. No work (apart from vital tasks) on Sundays and public holidays. Create awareness on site of workers to keep noise levels down outside of working hours.

All transport vehicles and machinery/equipment used onsite must be regularly maintained and kept in good working order to prevent excessive noise.

4.2 Construction Management Plan

4.2.1 Material handling and storage

Fuels and flammable materials are to be stored in suitably equipped storage areas. These areas shall comply with general fire safety requirements. Impervious materials are to be used in these storage areas to prevent contamination of the ground in the event of spillages or leaks. Quantities of fuels and hazardous materials stored on site should be appropriate to the requirement for these substances on site.

Immediately clean any accidental oil or fuel spills or leaks. Do not hose or wash spills into the surrounding natural environment.

Bulk fuel depots are to be placed within hardened bunded areas. Bunds are to have a holding capacity equal to 110% of the largest fuel container. The Contractor is to ensure that he is aware of the effects of all substances on staff and the environment, with the correct action to take in the case of any incident involving these materials.

Contractor laydown areas, vehicle re-fuelling areas, stockpiles and material storage facilities to remain outside of all no-go / sensitive areas. A designated contractor laydown area must be approved by the Environmental Control Officer (ECO) prior to use. Protect exposed soils by means of a geotextile fabric such as hessian sheeting. Site clearing activities (including for contractor laydown areas) are to remain within

the authorised footprint and vegetation clearing is to be limited to what is essential within that active footprint.

All operations involving the use of cement and concrete (outside of the batching plant) must be carefully controlled. Limit cement and concrete mixing to designated sites wherever possible.

4.2.2 Waste Management

Management of overburden generated during the construction phase is the responsibility of the Contractor/Owner. Overburden to be re-used as fill for roads on the farm.

The Contractor will be responsible for materials to be re-used on site or removed to a Municipal Transfer Facility and for materials to be disposed of at the municipal landfill site. Management of building material to be sold to the building industry will be the responsibility of the Contractor/Owner.

Waste management during the construction phase is the responsibility of the Contractor. The Contractor must establish a system acceptable to the ECO for control during execution of the works. Refuse refers to all construction debris (cement bags, rubble, timber, cans, nails, wire, spilt bitumen, glass, packaging, plastic, organic matter, etc.). Refuse generated during the execution phase of the works should be stored in an appropriate area on site, protected against wind dispersion and removed on a regular basis for disposal of at a permitted disposal site. No burning or burying of refuse on site should be allowed. Refuse bins must be watertight and wind-proof. Materials suitable for recycling to be sorted and stored in a marked bin to be disposed of at the municipal transfer facility.

Pollution of the development footprints (either through the leaking of chemicals such as oil and fuel, or through discarding of waste), as well as any areas adjacent to these footprints, should be monitored and avoided.

The Contractor shall provide adequate refuse bins at all eating areas and ensure that they are used. Bins are to be cleared on a daily basis.

4.2.3 Maintenance of equipment

All mechanical equipment and work vehicles which may be kept on site are to be stored, serviced and refuelled only at designated areas within the Contractor's Camp. Within these areas drip trays and other impervious materials, for example plastic or metal sheeting are to be used to prevent contamination of the ground in any way.

The RE or ECO may order the removal of equipment that is causing continual environmental damage by leaking oil or diesel for example, until such equipment has been repaired.

4.2.4 Topsoil Removal and Stockpiling

Management of Topsoil is the responsibility of the Owner and should be re-used on the farm.

Designate stockpile locations at least 50 metres away from any watercourses or wetland areas.

Where services are to be installed, topsoil is to be removed from the work areas, stockpiled separately from subsoil, and must be stabilised within a day of stockpiling. Stockpiles should be convex at the top to promote run- off, so that water is not able to accumulate and result in leaching of nutrients from the soil.

4.2.5 Stormwater and Erosion Control/Management

The operator/farm manager, as part of a stormwater management plan, will construct stormwater swales along access roads. These will be designed to accumulate runoff in designated dry pans to prevent stormwater run-off.

Construction activities directly involving freshwater features (i.e., road and pipeline crossings) should preferably be scheduled during the dry summer months—typically from December to March—when rainfall and runoff are at their lowest.

If any flow is present within the streams during construction, appropriate measures must be taken to divert the water around the work area and ensure its release downstream. Temporary diversion structures should be implemented to reroute stream and wetland flow around the active work area, ensuring that low flows remain uninterrupted throughout the construction period.

Temporary silt fencing, sandbags, or berms should be installed within downstream channels to prevent sediment generated during construction from entering downstream freshwater features.

Prevent contaminated runoff from construction sites from entering adjacent streams or wetlands by using diversion drains and berms. Temporary detention basins or sediment traps should be constructed to capture excess sediment before it reaches wetland or stream areas.

Silt traps must be installed at any stormwater release areas and energy dissipating structures to ensure that erosion of the area does not occur.

Care must be taken at all times to prevent erosion of soils on the construction site. Should any erosion be detected on site, the ECO, RE or Site Manager must identify the cause of such erosion and ensure that the most appropriate method of mitigation or stabilisation is employed as soon as possible.

4.2.6 Dust Control

Areas where dust will impact on neighbouring properties should be cleared during low wind conditions to avoid dust impact. Minimise area to be cleared around each unit and clear land areas in phases as required to minimize unnecessary exposure of bare ground.

Establish planted pastures between units and boundary landscaping to assist in shielding dust blowing onto roads and adjacent land users.

A suitable speed limit (20-40km/h) must be enforced on all access roads.

All exposed soils must be protected for the duration of the construction phase with a suitable geotextile (e.g. Geotextile or hessian sheeting) to prevent dust generation that could potentially result in vegetation smothering.

Suitable dust suppression techniques must be utilised. Regularly wet down exposed soils, haul roads and/ or stockpiles using water trucks or sprinklers (but AVOID water logging and run-off). Water can be obtained from the existing Dams on site in this regard.

4.2.7 Earth Shaping

Any major earth works are to be restricted to the site boundaries. Bulldozer and heavy machinery operations are to be under constant supervision and must be aware of all the environmental obligations and penalties for transgressions, as they have the potential to inflict severe damage to the surrounding environment.

The use and excessive movement of heavy machinery should be avoided in particularly sensitive areas with great environmental value, or high erosion potential.

4.2.8 Construction Traffic Management

Movement of all construction vehicles on site is to be strictly limited to existing/ approved haul and access routes at all times. Should deviation from these routes be necessary for any reason, this is to be with approval of the ECO who is to ensure that no significant environmental damage results. No indiscriminate movement of vehicles through the freshwater ecosystems may be permitted.

Vehicles must be regularly inspected for leaks and be refuelled on sealed surfaces to prevent ingress into soils. All spills are to be immediately cleaned up and must be treated accordingly. Dedicated parking area for construction vehicles must be located away from sensitive areas, and drip trays must be located beneath any leaking equipment and lubricant/fuel absorbing media (moss/peat type products) within drip trays must be used to contain spilled material.

4.2.9 Site Clean Up

The Contractor must ensure that all structures, equipment materials and facilities used on site are removed once the project has been completed. The construction site shall be cleared and cleaned to the satisfaction of the ECO.

All wetland/stream areas disturbed during construction must be rehabilitated and revegetated with appropriate indigenous wetland and riparian buffer species once construction is complete.

4.2.10 Alien Clearing

Invasive alien plants/ trees are to be removed and treated according to standard alien control methods.

According to Regulation 15E of the Conservation of Agricultural Resources Act, 1983 (Act 43 of 1983) Regulations: Where category 1, 2 or 3 plants occur contrary to the provisions of these regulations, a land user shall control such plants by means of one or more of the following methods of control as is appropriate for the species concerned and the ecosystem in which it occurs:

a. *Uprooting, felling, cutting ~~or burning~~;*
b. *Treatment with a weed killer that is registered for use in connection with such plants in accordance with the directions for the use of such a weed killer;*

c. *Biological control carried out in accordance with the stipulations of the Agricultural Pests Act, 1983 (Act No. 36 of 1983), the Environment Conservation Act, 1989 (Act No. 73 of 1989) and any other applicable legislation;*
d. *Any other method of treatment recognised by the executive officer that has as its object the control of the plants concerned, subject to the provisions of sub-regulation (4);*
e. *A combination of one or more of the methods prescribed in paragraphs (a), (b), (c), and (d), save that biological control reserves and areas where biological control agents are effective shall not be disturbed by other control methods to the extent that the agents are destroyed or become ineffective.*

Alien vegetation, specifically invasive and pioneer species which may find a niche to encroach disturbed areas, must be monitored and controlled.

Please refer to **Annexure 5: A Practical Guide to Managing Invasive Alien Plants, WWF**.

4.2.11 Fire Prevention/ Management

The Contractor/Farm Manger shall ensure that basic fire-fighting equipment is available at all 'construction' areas and facilities. The workforce should be appropriately trained in the use of all equipment. Fire beaters and "bakkie sakkie" are to be kept on site, and easily accessible at all times, and not locked away.

Smoking shall not be permitted in areas where it is a fire hazard. Such areas shall include any workshop and fuel storage areas and areas where the vegetation or other material may promote the rapid spread of an initial flame. A fire extinguisher of the appropriate type must be present when welding or other "hot" activities are undertaken.

Any work that requires the use of fire or open flame may only take place at a designated area approved by the Farm Manager and must be supervised at all times. Serviced fire-fighting equipment shall be available.

4.2.12 Environmental Control Sheets

A. Communications

TASK	MITIGATION AND ENVIRONMENTAL CONTROLS	ACTION
Site Diary and Site Instruction Book	• To be updated on a regular basis	ECO, Farm Manager
Public complaints	• To be recorded, along with records of responses to them in the Site Diary	ECO/Farm Manager
Environmental Awareness/ Education	• Each contractor team to attend a training session prior to commencing work on site Record of members attending training sessions to be kept and updated regularly	ECO
Method Statements	• Method statements to indicate: What, How, Where and When activities are to take place. • Method statements for each relevant activity to be submitted to ECO prior to the start of that activity on site. • Work is not to commence until method statement approved by ECO and Site Manager if necessary.	Contractor/ Farm Manager
Pre-Construction and Planning Implementation	• Programming of construction events • By-laws and Regulations • Protection of Sensitive Features • Emergency, Safety and Fire control • Waste, Waster & Energy Guidelines • Design requirements	Contractor/ Farm Manager/ECO

COMMENTS/ UPDATE

RECORD OF PERFORMANCE

Acceptable		Details of Transgression	Responsible Party	Action Taken	Date
Yes	No				

B. Site Preparation

TASK	MITIGATION AND ENVIRONMENTAL CONTROLS	ACTION
Site definition	• Prior to any works commencing on site a site survey is to be undertaken and the placement of boundary pegs (i.e. white stakes) along the areas proposed for development activities are to be erected. Peg coding is to be communicated to the Contractor and all other relevant parties as they may be identified. The approved new development footprints on site must be surveyed and demarcated prior to any site development or vegetation loss (refer to Section C & D below). Areas beyond the white stakes are to be considered no-go areas. All areas outside the boundary of the property are naturally considered no-go areas and boundary fencing is to be secured in areas where work is to take place. • All 'fencing' is to be erected prior to construction works commencing on site and is to remain in position and in good repair for the duration of the construction phase. Once this has been done, all works, including stockpiling of construction materials are to be strictly confined to the demarcated area. • All footprint areas must remain as small as possible and vegetation clearing to be limited to the approved development footprint. Implement a phased clearing approach, limiting vegetation clearance to areas required for active construction only. • Work within the stream channels should be limited strictly to essential areas. Clearing of riparian or wetland vegetation must be avoided where possible or otherwise kept to a minimum. Where practicable, vegetation should be pruned or topped rather than grubbed or uprooted.	ECO
Sensitive features	• Sensitive areas within the development area, as identified by the ECO, should be fenced off prior to the start of construction on site (where applicable), to ensure minimum disturbance to these areas during construction activities. Any required buffer areas or no-go areas should be marked prior to the start of construction on site and communicated to the Site Manager.	Surveyor/Contractor/ ECO
<u>Vegetation</u>	• All protected elements/areas located on the site, will be clearly marked, and care should be taken by the ECO to ensure that they are not unnecessarily disturbed during construction works on site. All alien vegetation must be removed according to standard legislated alien clearing methods. • Apart from the vegetation identified by the project team for removal from the site prior, no indigenous vegetation is to be removed without the written permission of the ECO during the construction phase. Damage to the indigenous vegetation anywhere on the site (outside of the approved area) will be subject to penalties. • Avoid unnecessary trampling of vegetation irrespective of the vegetation being associated with wetland habitats or the surrounding terrestrial area. Retain as much indigenous vegetation as possible (wetland and terrestrial).	
<u>Rivers, Riparian Habitat & Wetlands</u>	• Construction activities directly involving freshwater features (i.e., road and pipeline crossings) should preferably be scheduled during the dry summer months—typically from December to March—when rainfall and runoff are at their lowest. • A buffer zone extending 6 meters upstream and downstream of the construction footprint should be clearly demarcated. No disturbance or activity should occur beyond these designated areas within the stream	

	channel. The boundaries of this buffer zone must be physically demarcated using high-visibility fencing or flagging prior to the commencement of any construction activities. • Work within the stream channels should be limited strictly to essential areas. • Clearing of riparian or wetland vegetation must be avoided where possible or otherwise kept to a minimum. Where practicable, vegetation should be pruned or topped rather than grubbed or uprooted. • No pollutants must be allowed to enter any river system or any other ecologically sensitive areas during the construction phase. No waste or foreign materials may be dumped into streams or wetlands. These areas must also not be used for cleaning clothing, tools, or equipment.	
<u>Reptiles, birdlife and mammals</u>	• Due to the fact that there are vegetated areas next to the site reptiles, birdlife and mammals occur and move through the system. Any living organism needs to be respected during the construction phase and should not be killed or ran over. Every effort should be made to save and relocate any mammal, reptile, amphibian, bird, or invertebrate that cannot flee of its own accord, encountered during site preparation (i.e., to avoid and minimise the direct mortality of faunal species). These animals should be relocated to a suitable habitat area immediately outside the project footprint (in the adjoining natural habitats of the site), but under no circumstance to an area further away. • No illegal hunting (either through illegal methods or of rare or threatened species) should be allowed on the site.	
<u>Archaeological remains</u>	• If any heritage remains are found Heritage Western Cape (HWC) needs to be informed. If heritage remains are disturbed it should be left and demarcated for inspection by HWC. • If any archaeological remains (including but not limited to fossil bones and shells, coins, ceramics, antique, marine shell heaps, stone artefacts and bone remains) are discovered HWC need to be notified. • If any graves or human remains are discovered HWC need to be notified.	
Vegetation clearance	• Clearing of riparian or wetland vegetation must be avoided where possible or otherwise kept to a minimum. Where practicable, vegetation should be pruned or topped rather than grubbed or uprooted. • Implement a phased clearing approach, limiting vegetation clearance to areas required for active construction only to prevent unnecessary exposure of bare ground (vulnerable to erosion). Establish pastureland and boundary landscaping as soon as possible after clearing. • Vegetation to be removed from the site to facilitate development needs to be identified by the ECO, indicated on a site plan and clearly marked prior to any other works on site. Alien vegetation directly adjacent or in close proximity to the construction area should be removed in line with alien clearing methods. • No vegetation may be removed using fires, and no excess vegetation material may be burned on site. No natural vegetation outside of the site may be removed without approval of the ECO, apart from invasive plant species which are to be removed according to a controlled program. • Once all vegetation clearing is complete, all vegetation and any removed excess material must be disposed of at a licensed refuse facility and may not be mulched or burned on site (unless all approvals have been obtained).	ECO/ Contractor

Contractor's Camp	• As the property is already operating as a working farm the contractors camp would be in line with the current area (Farmyard) being utilised for the purposes of equipment storage and maintenance etc. • Suitable sanitary facilities must be provided by the contractor for all staff on site.	ECO/ Contractor
Toilet Facilities	• Chemical Toilet facilities must not be located within 100 metres of any stream or wetland areas • Toilets should be located where their use would result in minimal impact on the surrounding environment and may not be in areas of running or standing water during winter and must be secured to prevent them from blowing over.	ECO/ Contractor
Noise Management	•The contractor must take appropriate measures to limit the impact of unreasonable noise from construction activities on the neighbouring land users. •Restrict working hours to weekdays and half day Saturday. No work (apart from vital tasks) on Sundays and public holidays. Create awareness on site of workers to keep noise levels down outside of working hours. •All transport vehicles and machinery/equipment used onsite must be regularly maintained and kept in good working order to prevent excessive noise.	ECO/ Contractor

COMMENTS/ UPDATE

RECORD OF PERFORMANCE

Acceptable		**Details of Transgression**	**Responsible Party**	**Action Taken**	**Date**
Yes	**No**				

C. Site Procedures

TASK	MITIGATION AND ENVIRONMENTAL CONTROLS	ACTION
Toilet facilities	• Where chemical toilets are provided, the Contractor should ensure that they are kept in hygienic condition and emptied on a regular basis. Waste from the toilets should be disposed of to the satisfaction of the ECO. • Care must be taken that no spillage occurs when chemical toilets are cleaned, and their contents are properly stored and removed off site. A contingency plan for spills must be supplied by the contractor and approved by the ECO.	Contractor/ Farm Manager
Fire control	• Required fire-fighting equipment is available on site, and in working order. • The workforce should be appropriately trained in the use of all equipment. Fire beaters and "bakkie sakkie" are to be kept on site, and easily accessible at all times, and not locked away. • Smoking shall not be permitted in areas where it is a fire hazard. Such areas shall include any workshop and fuel storage areas and areas where the vegetation or other material may promote the rapid spread of an initial flame. A fire extinguisher of the appropriate type must be present when welding or other "hot" activities are undertaken. • Any work that requires the use of fire or open flame may only take place at a designated area approved by the Farm Manager and must be supervised at all times. Serviced fire-fighting equipment shall be available.	Contractor/ Farm Manager
Material handling and storage	• Fuels and hazardous materials to be stored in suitably equipped storage areas in the Contractor's camp. These areas shall comply with fire safety requirements. • Impervious materials are to be used to prevent contamination of the ground in the event of spillages or leaks. Immediately clean any accidental oil or fuel spills or leaks. Do not hose or wash spills into the surrounding natural environment. • Bulk fuel depots are to be placed within hardened bunded areas. Bunds are to have a holding capacity equal to 110% of the largest fuel container. The Contractor is to ensure that he is aware of the effects of all substances on staff and the environment, with the correct action to take in the case of any incident involving these materials. • Contractor laydown areas, vehicle re-fuelling areas, stockpiles and material storage facilities to remain outside of all no-go / sensitive areas. A designated contractor laydown area must be approved by the Environmental Control Officer (ECO) prior to use. • Site clearing activities (including for contractor laydown areas) are to remain within the authorised footprint and vegetation clearing is to be limited to what is essential within that active footprint. • All operations involving the use of cement and concrete (outside of the batching plant) must be carefully controlled. Limit cement and concrete mixing to designated sites wherever possible.	Contractor
Waste management	• Management of overburden generated during the construction phase is the responsibility of the Contractor/Owner. Overburden to be re-used as fill for roads on the farm. • The Contractor will be responsible for materials to be re-used on site or removed to a Municipal Transfer Facility and for materials to be disposed	Contractor/ ECO

	of at the municipal landfill site. Management of building material to be sold to the building industry will be the responsibility of the Contractor/Owner. • The Contractor must establish a waste management system acceptable to the ECO for control during execution of the works. • Refuse refers to all construction debris (cement bags, rubble, timber, cans, nails, wire, spilt bitumen, glass, packaging, plastic, organic matter, etc.). Refuse generated during the execution phase of the works should be stored in an appropriate area on site, protected against wind dispersion and removed on a regular basis for disposal of at a permitted disposal site. No burning or burying of refuse on site should be allowed. Refuse bins must be watertight and wind-proof. Materials suitable for recycling to be sorted and stored in a marked bin to be disposed of at the municipal transfer facility. • Pollution of the development footprints (either through the leaking of chemicals such as oil and fuel, or through discarding of waste), as well as any areas adjacent to these footprints, should be monitored and avoided. • The Contractor shall provide adequate refuse bins at all eating areas and ensure that they are used. Bins are to be cleared on a daily basis.	
Maintenance of equipment	• All mechanical equipment and work vehicles to be stored serviced and refuelled at designated areas in the contractor's camp. • Drip trays or impervious materials to be used to prevent contamination of ground. • The RE or ECO may order the removal of equipment that is causing continual environmental damage by leaking oil or diesel for example, until such equipment has been repaired.	Contractor
Topsoil Removal and Stockpiling	• Management of Topsoil is the responsibility of the Owner and should be re-used on the farm. • Designate stockpile locations at least 50 metres away from any watercourses or wetland areas. • Where services are to be installed, topsoil is to be removed from the work areas, stockpiled separately from subsoil, and must be stabilised within a day of stockpiling. Stockpiles should be convex at the top to promote run- off, so that water is not able to accumulate and result in leaching of nutrients from the soil.	Contractor/ ECO
Stormwater and Erosion Control/ management	• The operator/farmer may need to maintain contour furrows or construct berms or similar control measures to prevent stormwater washing soil from ploughed areas. • Construction activities directly involving freshwater features (i.e., road and pipeline crossings) should preferably be scheduled during the dry summer months—typically from December to March—when rainfall and runoff are at their lowest. • If any flow is present within the streams during construction, appropriate measures must be taken to divert the water around the work area and ensure its release downstream. Temporary diversion structures should be implemented to reroute stream and wetland flow around the active work area, ensuring that low flows remain uninterrupted throughout the construction period.	Contractor/ ECO/ Farm Manager

	• Temporary silt fencing, sandbags, or berms should be installed within downstream channels to prevent sediment generated during construction from entering downstream freshwater features. • Prevent contaminated runoff from construction sites from entering adjacent streams or wetlands by using diversion drains and berms. Temporary detention basins or sediment traps should be constructed to capture excess sediment before it reaches wetland or stream areas. • Silt traps must be installed at any stormwater release areas and energy dissipating structures to ensure that erosion of the area does not occur. • Care must be taken at all times to prevent erosion of soils on the construction site. Should any erosion be detected on site, the ECO, RE or Site Manager must identify the cause of such erosion and ensure that the most appropriate method of mitigation or stabilisation is employed as soon as possible.	
Dust control	• Areas where dust will impact on neighbouring properties should be cleared during low wind conditions to avoid dust impact. Minimise area to be cleared around each unit and clear land areas in phases as required to minimize unnecessary exposure of bare ground. • Establish planted pastures between units and boundary landscaping to assist in shielding dust blowing onto roads and adjacent land users. • A suitable speed limit (20-40km/h) must be enforced on all access roads. • All exposed soils must be protected for the duration of the construction phase with a suitable geotextile (e.g. Geotextile or hessian sheeting) to prevent dust generation that could potentially result in vegetation smothering. • Suitable dust suppression techniques must be utilised. Regularly wet down exposed soils, haul roads and/ or stockpiles using water trucks or sprinklers (but AVOID water logging and run-off). Water can be obtained from the existing Dams on site in this regard.	Contractor/ ECO
Earth Shaping	• Any major earth works are to be restricted to the site boundaries. Bulldozer and heavy machinery operations are to be under constant supervision and must be aware of all the environmental obligations and penalties for transgressions, as they have the potential to inflict severe damage to the surrounding environment. • The use and excessive movement of heavy machinery should be avoided in particularly sensitive areas with great environmental value, or high erosion potential.	Contractor
Construction traffic management	• Movement of all construction vehicles on site is to be strictly limited to existing/ approved haul and access routes at all times. Should deviation from these routes be necessary for any reason, this is to be with approval of the ECO who is to ensure that no significant environmental damage results. No indiscriminate movement of vehicles through the freshwater ecosystems may be permitted. • Vehicles must be regularly inspected for leaks and be refuelled on sealed surfaces to prevent ingress into soils. All spills are to be immediately cleaned up and must be treated accordingly. Dedicated parking area for construction vehicles must be located away from sensitive areas, and drip trays must be located beneath any leaking equipment and lubricant/fuel	Contractor/ ECO

	absorbing media (moss/peat type products) within drip trays must be used to contain spilled material.	
Site Clean up	• All structures, equipment materials and facilities are to be removed from site on completion of the project. • Construction site shall be cleared and cleaned to the ECO's satisfaction. • All wetland/stream areas disturbed during construction must be rehabilitated and revegetated with appropriate indigenous wetland and riparian buffer species once construction is complete.	Contractor/ ECO
Alien Clearing	• Invasive alien plants/ trees are to be removed and treated according to standard alien control methods (**Annexure 5**: A Practical Guide to Managing Invasive Alien Plants, WWF.)	Farm Manager
TASK	**MITIGATION AND ENVIRONMENTAL CONTROLS**	**ACTION**
COMMENTS/ UPDATE		

RECORD OF PERFORMANCE

Acceptable		**Details of Transgression**	**Responsible Party**	**Action Taken**	**Date**
Yes	**No**				

4.3 Operational Management Plan

The Basic Assessment identified various issues and concerns that were addressed through the process. Many of the issues need to be mitigated by management procedures and therefore goals need to be set to ensure implementation of these measures during the operational phase. Management activities are described to achieve the objectives together with monitoring and target criteria.

4.3.1 Components of Operational Management

- Goals: The key environmental goals are set for the operation of the development
- Objectives: These are set to meet the goals.
- Risk: If the goal is not achieved.
- Actions: Measures put in place to achieve objectives.
- Monitoring: To check if the objectives are achieved.
- Targets: Indicators of the effectiveness of the programme.
- Remedial Action: If targets are not met.

4.3.2 Daily Operations

Measures pointed out below should be integrated in the operation of the chicken rearing facility daily:

Water will be supplied from an existing registered source. The water from the source should be managed according to water saving principles identified in **Goal 5: Sustainable Energy and Water Efficiency** below. Through the water saving mechanisms the load on the general sewage flow will also be reduced and therefore limit the load on the existing and proposed sewage system.

Electricity is supplied by Eskom but will largely be supplemented with solar energy**.** Energy saving mechanisms should be implemented in accordance with **Goal 5: Sustainable Energy and Water Efficiency** below.

Material used in the life-cycle of the project should be focused on renewable and recyclable elements as per **Goal 4: Waste Management**.

Waste management as per **Goal 4** addressing General Waste, Manure and Mortalities (Hazardous and Non-Hazardous).

NOTE: PRACTICE SPECIFIC OPERATIONAL REGULATIONS AND GUIDELINES FOR OPERATION OF CHICKEN REARING FARMS IN SOUTH AFRICA SHOULD BE ADHERED TO AT ALL TIMES.

Operational Bio-security Guidelines
This should focus on mechanisms that need to be implemented by the landowners.

Mortalities

- Mortalities will be placed in the refrigerated unit on site for removal from site.

Disposal of Infectious carcasses / Disease Outbreak Procedure

- If a notifiable disease is detected (List of controlled and notifiable animal diseases in terms of the animal diseases Act, 1984 (Act No 35 of 1984)), waste and carcasses must be removed under the strict supervision of the state.
- If any form of disease challenge becomes evident in any of the chicken Houses, Management to contact the consulting veterinarian to advise him of the situation, what the symptoms are and the level of mortalities are being experienced
- If necessary, take samples of live birds and mortalities to an accredited laboratory for analysis to get specific results on the disease.
- If required the veterinarian will prescribe an appropriate medication treatment programme to address the problem – the ERFC forms regarding the approvals to use medication, the dosages and relevant withdrawal periods to be completed accordingly.
- All bio-security measures to be even more strictly enforced to prevent the spread of the problem between Houses – visitors to the farm shall not be permitted unless deemed absolutely necessary.
- Movement of personnel between the Houses to be minimised in order to prevent the spread of diseases to other Houses – if necessary, the affected House to be quarantined completely.

Planning

Planning will entail:

- Operational logistics and improvement of the various operational techniques.
- Preparation and finalisation of time schedules for production.
- Implementation of the Environmental Management Programme (this document).

Training

- All contractors (including workers) and/or any other persons directly involved in any forms of activity or actions related to the project will be trained in basic on-site environmental management before being permitted on site.
- An ECO may be present on site to advise and monitor all activities and actions taking place.
- Training is to be an ongoing process to ensure that contractors and new staff are familiar with the general environmental status of the site.
- Responsibilities for mitigation and monitoring actions should be clearly defined.
- These responsibilities will be delegated by management to the workers.

Bio-security

- Bio-security is standard procedure at any chicken rearing farm facility, in order to avoid the outbreak and spread of possible avian diseases.
- Standard procedures include the screening and washing of staff, vehicles and machinery.
- Bio-security measures specific to the chicken rearing facility should be implemented at all times, staff should be aware of all requirements and the bio-security of the farm should be monitored continuously.
- Bio-security should be strictly monitored at all times.

Environmental Monitoring:

The implementation of regular monitoring will ensure that environmental impacts can be detected early and remedial action implemented.

The following needs to be monitored on a weekly basis:

- Removal of manure from site;

- Pen cleaning procedures;
- The water source and watercourses on site (drainage lines);
- Landscaping and soil conditions;

The above listed categories need to be linked to evaluate if the one triggers the other.

Indicators which need to be measured:

Manure supply and cleaning procedures in permanent chicken houses

- Removed from pen and collected by owner
- No composting or storage on site
- If re-used it need to be in line with the provisions of NEM: WA
- Minimum standard for leftovers after removal from pens
- Wash down procedures and water amount control.

Water sources and watercourses

- Stay within the water registered totals
- Test water source on an annual basis for quality.

Landscape and soil conditions

- Planting tempo
- Growth evaluation
- Visual evaluation

Schedules and Reporting

Each of the above components needs to be evaluated and a schedule must be drafted by management with the following headings:

- Timing
- Frequency
- Duration of Mitigation
- Progress
- Results of mitigation

4.3.3 Goals (Management Outcomes and Actions):

Goal 1: Protection of sensitive and surrounding environments			
Objective	**Implement Bio-security measures** [Responsibility: Manager/ECO]		
Risk	**Actions**	**Monitoring**	**Targets**
Contamination of wild birds Contamination of chickens Pollution of Stormwater run-off	• Train all staff and contractors to ensure an understanding of bio-security measures • Set strict bio-security guidelines to be adhered to • Implement strict schedule and allow time for bio-security measures • Determine baseline for regarding cleanliness of chicken pens • Delegate responsibility to specific members of staff for aspects of bio-security • Remove manure every seven days from permanent chicken houses • Ensure that no run-off from the units ends up in freshwater features: – Dry-sweep pens and minimise usage of water inside units for washing. Units are to be washed (with high pressure hoses) only once dry matter has been removed. – No wash water from inside units to reach outside environment and possibly pollute stormwater. – No water used during washing of units to be re-used on site. – Contain all sweepings and dispose of to the relevant re-use location. – As part of a stormwater management plan, the construction of stormwater swales along access roads and around the perimeter of the broiler facility is proposed, designed to accumulate runoff (potentially nutrient enriched stormwater) in designated dry pans. – Implement erosion control measures, such as silt fences or erosion blankets along slopes, to prevent soil runoff. – Refuelling or maintenance of vehicles may only take place on designated, bunded surfaces. – Maintain vegetation around the facility to enhance soil stability, minimize erosion, and provide natural filtration of any runoff.	• Monitor management's bio-security guidelines • Monitor staff training and actions • Monitor staff's adherence to bio-security measures • Monitor river to ensure that no pollution of water takes place	Ensure environmental health – for surrounding environment as well as for chickens Ensure that staff understands importance of bio-security measures.
Remedial Action	Owner to take immediate action against non-compliance Penalise individuals who do not comply to bio-security measures which have been implemented Deviation from job description must be dealt with in terms of contractual or employment terms of reference.		

Objective	**Safeguarding the Freshwater Ecosystems** [Responsibility: Owner/ Manager/ECO]		
Risk	**Actions**	**Monitoring**	**Targets**
-Loss of biodiversity, aquatic habitat and ecological structure. -Potential hydrology modification and change in sediment balance. -Potential Water Quality impacts.	• Management practices will include dry sweeping and the removal of manure, followed by high-pressure washing of broiler areas, with wash water directed into surrounding pastures. • In addition, as part of a stormwater management plan, the construction of stormwater swales along access roads is proposed, designed to accumulate runoff in designated dry pans. • All wetland/stream areas disturbed during construction must be rehabilitated and revegetated with appropriate indigenous wetland and riparian buffer species once construction is complete. • Regular maintenance should be conducted to remove debris accumulation and control nuisance vegetation growth, to prevent blockages and ensure continued flow through culverts. • No use of machinery is allowed within any wetland/stream channels for the operational phase. • All debris must be removed and properly disposed of. • No dumping of debris should be allowed in the stream/wetland areas. • Any wetland/ riparian or instream areas disturbed by Maintenance activities to be rehabilitated and revegetated (if necessary) after maintenance works	All rehabilitated and revegetated areas within the wetland/stream areas should be monitored for the following 2 years, ensuring the establishment of good plant biodiversity.	Improved functioning of the freshwater ecosystems.
Remedial Action	Non-compliance to be reported to the Applicant and the Competent Authority. Penalise individuals who deviate from the targets.		
Objective	**Alien vegetation management** [Responsibility: Owner/ Manager/ECO]		
Risk	**Actions**	**Monitoring**	**Targets**
-Loss of biodiversity -Alien overgrowth -Fire	• Clear all alien vegetation and new growth by means of pulling, cutting and approved herbicide. • No stockpiling of aliens after removal, it will increase fire risk. • Alien invasive vegetation management within the site must be done according to the guidelines in **Annexure 6**.	Monitor natural vegetation for Alien Invasives and ensure that no fire hazards are created by	Preservation of indigenous vegetation

		stockpiling alien vegetation.	
Remedial Action	Non-compliance to be reported to Applicant and the Competent Authority		
Objective	**Faunal Management** [Responsibility: Owner/ECO]		
Risk	**Actions**	**Monitoring**	**Targets**
-Mobile species moving off the site if the site cannot support these species. -Wildlife suffers disturbance during operation.	• No feeding of wild animals. • No rubbish to be left out to attract scavengers. • Plant indigenous & endemic flora around chicken houses to increase on-site biodiversity. • Pest management is to be done under an integrated pest management programme where the use of chemicals is considered as a last option, and where these chemicals are placed in such a way where it does not lead to the accidental poisoning of non-target species. • No illegal hunting (either through illegal methods or of rare or threatened species) should be allowed on the site.	-faunal and avi-faunal species on site -littering -encroachment of development into sensitive areas -encroachment of alien vegetation	-To increase bio-diversity -Litter free site -No disturbance of fauna and flora -Ongoing Alien Management
Remedial Action	Non-compliance to be reported to Applicant and the Competent Authority Institute a litter collection programme Increase awareness of fauna and flora		
Objective	**Fire Management** [Responsibility: Owner/Manager]		
Risk	**Actions**	**Monitoring**	**Targets**
Impact on natural Fire Cycles Liability	• Ensure that basic serviced fire-fighting equipment is available at all times in areas in which work is being undertaken. The workforce must be appropriately trained in the use of all equipment. Fire beaters are to be kept on site, and easily accessible at all times, and not locked away. • Smoking shall not be permitted in areas where it is a fire hazard. Such areas shall include any workshop and fuel storage areas and areas where the vegetation or other material may promote the rapid spread of an initial flame.	Contractor/ Farm Manger to ensure Fire Fighting Equipment are in place and serviced regularly.	Zero liability

	• A fire extinguisher of the appropriate type must be present when welding or other "hot" activities are undertaken. • Any work that requires the use of fire or open flame may only take place at a designated area approved by the Farm Manager and must be supervised at all times.	Be part of the Fire Protection Association programme	
Remedial Action	Non-compliance to be reported to Applicant and the Competent Authority		
Objective	**Management of Agricultural Activities and Fertilizing** [Responsibility: Owner/Manager]		
Risk	**Actions**	**Monitoring**	**Targets**
Pollution and contamination	Pollution of the development footprints, as well as any areas adjacent to these footprints, should be monitored and avoided. Ensure fertiliser is utilised responsibly across the entire development site: • Develop and implement nutrient management plans that consider soil testing, crop nutrient requirements, and appropriate application rates to prevent over-application. • Avoid application of fertilisers prior to heavy rainfall events • Refrain from applying fertilizers on steep slopes to minimize the potential for runoff, especially during heavy rainfall events. • Correct application of the right fertiliser product in the right quantities and at the right time (as determined by crop needs) can minimize nutrient loss from agricultural fields. Implement water-wise irrigation practices such as drip irrigation and ensure that over-watering is avoided as this will minimise the generation of potentially contaminated agricultural runoff. Ensure that all nutrient enriched agricultural waste (e.g. manure) is suitably stored and utilized onsite or disposed offsite to prevent runoff contamination. The Applicant must adhere to standard "best practice" measures regarding the use, storage and disposal of any chemicals or fertilizers etc. required to undertake standard agricultural activities on site.	Monitor the effectiveness of methods used.	Efficient management and use of chemicals or fertilizers.

	Pest management is to be done under an integrated pest management programme where the use of chemicals is considered as a last option.		
Remedial Action	Refer non- compliance to the Farm Manager/ Contractor		

PERFORMANCE					
Acceptable Yes	**Acceptable Yes**	**Details of Transgression**	**Responsible Party**	**Action Taken**	**Date**

Goal 2: To ensure aesthetic appeal of the site and reduce nuisance impacts			
Objective	**Reduce nuisance impacts on neighbouring landowners** **Maintain a neat and well-organized working environment** [Responsibility: Owner/Operator]		
Risk	**Actions**	**Monitoring**	**Targets**
Inappropriate landscaping Development areas not properly screened Nuisance aspects	• No naked light sources should be visible from outside units, only reflected light to be visible • Lighting to be sufficient for safety and clarity of movement only • Only low voltage lights to be used. • Use earth tones or muted colours to reflect the local landscape. • Use rows of indigenous and fast-growing trees or shrubs to screen buildings, provide sound barriers as well as filter and disperse odours. • Use only indigenous/ endemic water wise plants • Establish and monitor planted pastures between units and boundary landscaping to shield dust blowing onto roads and adjacent land users. • A suitable speed limit (20-40km/h) must be enforced on all access roads. • Position noisy activities (e.g. vehicle loading) as far away from neighbouring activities and restrict during daytime hours only. • Keep machinery well maintained (e.g. generators, fans etc.) to reduce mechanical noise. • Install silencers/mufflers on ventilation fans and generators – where need be. • Suitable dust suppression techniques must be utilised. • Maintain all onsite roads in a good condition. • Removal of manure directly to suitable re-use location. • All manure must be covered during transport to neighbouring land users. • Maintain optimal house ventilation to prevent ammonia build-up • Mortalities (not infectious) must be transported in sealed containers. • Standard Biosecurity procedures to be followed. • Restrict working hours to weekdays and half day Saturday. No work (apart from vital tasks) on Sundays and public holidays. Create awareness on site of workers to keep noise levels down outside of working hours.	• Monitor the success of the applicable landscaping • Regularly monitor roads for damage, dust or erosion and addressed immediately. • Monitor and keep a record of: -Manure -Mortalities • Monitor water use on site	Ensure effective screening of development Ensure optimal & effective water use Ensure landscaped areas act as buffers Ensure landscaped areas are alien free
Remedial Action	Owner to take immediate action against non-compliance.		

PERFORMANCE					
Acceptable Yes	**Acceptable Yes**	**Details of Transgression**	**Responsible Party**	**Action Taken**	**Date**

Goal 3: Maintenance Aspects			
Objective	**Maintenance of water crossings** [Responsibility: Owner/Operator]		
Risk	**Actions**	**Monitoring**	**Targets**
Soil Erosion Flooding Infrastructure Damage Vegetation destruction	• All rehabilitated and revegetated areas within the wetland/stream areas should be monitored for the 2 years (post construction), ensuring the establishment of good plant biodiversity. •No use of machinery is allowed within any wetland/stream channels for the operational phase. •All debris must be removed and properly disposed of. •No dumping of debris should be allowed in the stream/wetland areas. •Any wetland/ riparian or instream areas disturbed by Maintenance activities to be rehabilitated and revegetated (if necessary) after maintenance works.	Monitoring of all stream crossings for signs of erosion, debris build-up or nuisance growth around the culverts.	Ensuring that regular maintenance takes place to prevent failure of the water crossing or disturbance to the surrounding area.
Remedial Action	Owner to take immediate action against non-compliance.		
Objective	**Security Control** [Responsibility: Owner/Operator]		
Risk	**Actions**	**Monitoring**	**Targets**
Security breach & Safety of Property Owners	- Limit site access to authorised personnel only. - Use a single entry and exist point to monitor movements. - Limit staff movement to work related areas only. Install clear signage marking no-go areas for workers. - Maintain secure perimeter fencing to prevent unauthorised entry. - Manage traffic safety on farm access roads especially for larger trucks. - Minimise unnecessary traffic movement during early mornings and late evenings. - Implement strict bio-security measures. - Implement a strict Code of Conduct for all employees and contractors (incl. noise, littering, trespassing and respect of neighbouring properties). - Enforce rules against playing loud music, shouting or using offensive language on site. - Provide adequate on-site rest areas, toilets and eating spaces so workers don't need to use roadside or neighbouring land.	Monitoring perimeter fencing, access and traffic management. Appoint a site supervisor responsible for monitoring employee conduct. Particularly near sensitive boundaries. Keep a log of any complaints received and action taken.	Ensuring that regular maintenance takes place to prevent Safety and Security Risks.

	- Ensure waste bins are available and emptied regularly to prevent litter blowing onto adjacent properties.		
Remedial Action	Owner to take immediate action against non-compliance.		

PERFORMANCE					
Acceptable Yes	**Acceptable Yes**	**Details of Transgression**	**Responsible Party**	**Action Taken**	**Date**

Goal 4: Waste Management			
Objective	**Reduce, Reuse, Recycle Waste** **Good Waste Management Practices** [Responsibility: Owner/Operator]		
Risk	**Actions**	**Monitoring**	**Targets**
Irresponsible waste management Unsightly and smell Attraction of pests Biosecurity Risk Litter and wasteful use of resources.	<u>Mortalities (Non-Hazardous):</u> • All daily mortalities will be collected out of the units by farm staff. Mortalities will be assessed and counted. A register containing information on possible cause of death, number and mass of mortalities should be kept. Bio-security and optimum hygiene practices should be applied throughout the daily collection process and all the containers and instruments used to transfer deceased birds should be washed and disinfected after use. • Mortalities will be placed in box freezers to freeze away mortalities throughout the growth phases with a licensed and registered waste service provider to remove the frozen mortalities at the end of the cycle when the cleaning starts on site. <u>General:</u> • All standard refuse from the operation to be contained and removed from site weekly and disposed of at the closest local Waste Disposal site. Recycling will be in place on site. • All standard refuse to be sorted according to accepted municipal standards. • Onsite bins for different wastes to be provided, which will encourage sorting at the source. • No household waste, cement, alien vegetation or soil to be dumped into and aquatic features. • No burning or burying of waste on site • Methods to reduce, reuse and recycle waste need to be encouraged through all aspects of the development. • Aim for and promote Zero Waste in the operation, management and maintenance of all buildings. Zero Waste emulates the closed loop processes found in nature, taking a 'cradle –to –cradle' approach to designing products and buildings.	Check operational components if recycling is followed Monitor the level and effectiveness of Waste Management within the property.	Recycling to be actively implemented by the owner, manager and staff Aim for Zero Waste in the life-cycle of the development.

	• Build waste avoidance into the process at a design phase, by specifying products and materials that have less wasteful production processes and don't create wasteful emissions during construction and maintenance of a building. • If waste is created, consider how this can firstly be re-used and then recycled to recover the value invested in these materials, rather than losing this value when the resource is dumped in a landfill or incinerated. • Facilitate the separation of waste at the source for composting, re-use and recycling when designing waste management systems. People should be encouraged to recycle their household waste. Refer to the recycling image below and ensure people understand what can or cant be recycled. • Material used during the life-cycle of the project should be focused on renewable and recyclable elements: - Select building materials for durability to minimise maintenance or replacement; - Use standard materials to increase the potential for re-use and re-cycling; - Materials should be sourced locally where possible; and - Use recycled material where possible.		

Remedial Action	Non-compliance to be reported to Applicant and the Competent Authority Implement incentive programme for employees. A Waste Management Plan should be compiled for the property.

Objective	**Manage operational waste (manure)** [Responsibility: Owner]		
Risk	**Actions**	**Monitoring**	**Targets**
Unsightly Odour Attraction of pests	All dry matter is to be swept from the permanent chicken houses every seven days. All dry matter is to be removed from site and collected by neighbouring farmers as per contractual agreement. No manure can be composted or stored on site. If manure is used by the owner, it needs to be in line with provisions of NEM: WA.	Manure leaving the site should be monitored to ensure transportation is sufficiently covered and contained. Manure being utilised on the property as fertiliser must be kept on record regarding the amount and location distributed.	Prevent manure spilling onto roads and any nuisance complaints.
Remedial Action	Refer non- compliance to the owner and site operator/manager		
Objective	**Manage operational waste (hazardous mortalities)** [Responsibility: Owner/Operator - under strict guidance from the State Veterinarian]		
Risk	**Actions**	**Monitoring**	**Targets**
Biosecurity Risk	Should the farm detect any disease (List of controlled and notifiable animal diseases in terms of the animal diseases Act, 1984 (Act No 35 of 1984)), the bio-security procedure must be followed: -If any form of disease challenge becomes evident in any of the chicken Houses, Management to contact the consulting veterinarian to advise him of the situation, what the symptoms are and the level of mortalities are being experienced	Bio-security measures must be implemented at all times and staff should be aware of all requirements.	Adhere to the Animal Diseases Act, 1984 and enforce all Biosecurity pocedures.

	-If necessary, take samples of live birds and mortalities to an accredited laboratory for analysis to get specific results on the disease. - If required the veterinarian will prescribe an appropriate medication treatment programme to address the problem – the ERFC forms regarding the approvals to use medication, the dosages and relevant withdrawal periods to be completed accordingly. -All bio-security measures to be even more strictly enforced to prevent the spread of the problem between Houses – visitors to the farm shall not be permitted unless deemed absolutely necessary. -Movement of personnel between the Houses to be minimised in order to prevent the spread of diseases to other Houses – if necessary, the affected House to be quarantined completely. -No infectious carcasses are allowed to be disposed of with general waste destined for the land-fill site. -Safe disposal certificates for hazardous waste removed from the facility will be kept on record for a minimum period of 5 years.	Bio-security should be strictly monitored at all times. Standard procedures include the screening and washing of staff, vehicles and machinery.	
Remedial Action	Any non-compliance to be referred to Owner/state vet. NOTE: PRACTICE SPECIFIC OPERATIONAL REGULATIONS AND GUIDELINES FOR OPERATION OF CHICKEN REARING FARMS IN SOUTH AFRICA SHOULD BE ADHERED TO AT ALL TIMES.		

PERFORMANCE					
Acceptable Yes	**Acceptable Yes**	**Details of Transgression**	**Responsible Party**	**Action Taken**	**Date**

Goal 5: Sustainable Energy and Water Efficiency			
Objective	**A. Energy Efficiency** [Responsibility: Owner/ECO]		
Risk	**Actions**	**Monitoring**	**Targets**
Financial costs Load shedding Depletion of non-renewable resources	Reducing the energy consumption of a building not only saves the environment but will also save on the running costs of the building. By designing energy efficient or renewable energy options into a building, the demand for electricity during peak consumption times is reduced. The following Energy Efficiency Measures must be encouraged where possible: • All proposed and existing dwellings, agricultural water pumps etc. should be supplied with electricity generated on the farm by means of solar panels. • All dwellings are to be built/ renovated in accordance with the "*NHBRC Guidelines for Building an Energy Efficient Home*". • Install properly insulated ceilings. • Place and size windows to make optimal use of natural light, winter heating and ventilation without creating draughts, or gaining too much heat in summer or losing heat in winter. • Avoid the use of air conditioning or at least ensure that the correct size is installed and that use of the unit is minimised. Use air conditioners with a seasonal energy efficiency ratio of 10 or more (ratio of the seasonal energy output to the seasonal energy input). • Ensure that the building is constructed so as to be tightly sealed, to prevent unwanted air flows. Doors and windows must be appropriately sized and fitted with seals. • Energy efficient electrical installations must be used. • Ensure that artificial lighting is designed so that light is focused where necessary, such as brighter areas where tasks are being performed and more ambient light elsewhere. • Avoid the use of outdoor 'up-lighting' to reduce light pollution. • Ensure that energy efficient light bulbs, such as CFLs or LEDs, are used.	Monitor the level and effectiveness of Green Energy utilised within the property.	Aim to be a fully self-sustaining, off the grid farming unit.

	• Reduce the electrical energy used to heat water by installation of solar water heaters, or at least geyser blankets, pipe insulation and a geyser timer. • Use proper insulation to reduce the need for air conditioning. • Solar glazing or energy efficient windows to reduce the need for air conditioning. • Maximise the use of solar heating where viable. • Structures should be orientated to optimise use of ambient weather and climate conditions for heating and cooling. • Programmed lighting. • Cold rooms and freezers fitted with counter-weight doors to ensure that they cannot be left open unnecessarily. • Use of solar heating maximised where possible.		
Remedial Action	Replace any existing non energy efficiency equipment or infrastructure with energy efficient alternatives.		
Objective	**B. Sustainable Water Usage and Efficiency** [Responsibility: Owner/ECO]		
Risk	**Actions**	**Monitoring**	**Targets**
Wasting Water Soil Erosion Overloading of sewerage system	• Ensure that only water efficient devices such as low-flow taps, low-flow showerheads, washing machines and dishwashers are used. • Ensure that all toilets are low volume (9.5 litres or less), with dual-flush or multi-flush. • Ensure that outbuildings and outside taps and showers are fitted with metering tap buttons, which have set timers to prevent taps being left on or dripping. • Reduce hard surfacing to encourage rainwater to seep back into the ground. Design paved areas so that water run-off is slowed down and where possible use soak-aways and permeable paving that allows water to filter into the ground. • Ensure that the optimum pipe size and water pressure is used. A pressure reducing valve can be installed at a point nearest to where the supply enters the building to ensure that all water supplies in the building are balanced. • Ensure all dwellings & buildings are harvesting rainwater and encourage the re-use of grey water where appropriate. However, ensure that the local ecological system is not polluted and that it is managed correctly. • Ensure the use of indigenous planting and efficient irrigation methods, such as drip irrigation.	The level and effectiveness of Water Efficiency Measures implemented. Good practise dictates that the pumping rates, abstracted volumes, groundwater levels and groundwater quality be monitored to ensure that groundwater	Water use targets to be set according to water availability. Aim for Zero Waste in the life-cycle of the development. Refer to Water Use License.

	• All hoses to be fitted with trigger gun spray nozzles to limit wastage. • Have timed irrigation systems with the focus on the hours when the least evaporation occurs; rain sensors to form part of the irrigation system. • Only plants adapted to the local climate used in landscaping to reduce the need for excessive watering. • Timed irrigation systems for pasture irrigation. • Taps around the farm fitted with locks to prevent unauthorised use and included on a maintenance schedule to detect and repairs leaks. • Physical brushing or sweeping used in preference to water cleansing wherever possible (e.g. cleaning pathways and inside the units).	use remains within sustainable limits and to provide warning if the groundwater supply system were to fail.	
Remedial Action	Replace any existing non water efficiency equipment or devices with water efficient alternatives. Water leaks, non-compliance to be reported to owner Increased awareness programme		

PERFORMANCE					
Acceptable Yes	**Acceptable Yes**	**Details of Transgression**	**Responsible Party**	**Action Taken**	**Date**

SECTION 5: COMPLIANCE AND MONITORING

5.1 Monitoring

The monitoring of works on site is necessary to demonstrate compliance with the specifications of the EMPr and to allow for problems or issues of non- conformance to be identified and appropriate corrective measures to minimise environmental damage to be implemented.

Monitoring should include visual checks by the Farm Manager on a daily basis, checks on particular requirements for site activities by the ECO, as well as a review of site documentation. The ECO or suitable person shall complete the performance record at the end of each table, as a record of transgressions or problems experienced on site and how they were dealt with.

Monitoring of activities on site by the ECO should be done as follows: An initial site visit prior to any activities will be carried out to brief the Contractor/Farmer who will undertake the construction activities and a second site visit will be undertaken once the no-go areas have been demarcated and prior to the commencement construction activities. Site visits will be undertaken on a monthly basis during the construction phase.

5.2 Penalties and Incentives

Transgressions relate to actions by the Contractor and team members whereby damage or harm is inflicted upon the environment or any feature thereof and where any of the conditions or specifications of the EMPr are infringed upon.

In the instance of environmental damage, the damage is where possible to be repaired and rehabilitated using appropriate measures, as specified and undertaken by appropriate specialists for the account of the Applicant or other guilty party.

Where infringement of the specifications or conditions of the EMPr is registered, appropriate remedial action or measures are to be implemented for the account of the Applicant. Where non-repairable damage is inflicted upon the environment or non-compliance with any of the EMPr obligations is registered then the Contractor may face a monetary penalty to an amount specified by the ECO. The ECO reserves the right to implement a first offence warning.

Transgressions are most likely to occur with respect to litter on site, damage to trees on site, disturbance of sensitive areas. The following penalties are suggested for the above-mentioned transgressions:

- Waste: In the case of excessive waste the ECO is to allow the Contractor 24 hours in which to remove the litter or face a monetary penalty at the ECO's discretion.
- Damage of River System or conservation area: A monetary penalty to the maximum of R5000 is to be paid for each waste act within a River System or the Conservation Area.
- Erosion: Erosion resulting from any work on site is to be rectified at the cost of the operator/farmer.

If excessive infringement with regard to any of the specifications is registered, the Applicant reserves the right to terminate the Contractor's contract.

The above-mentioned controls are to be identified and enforced by the ECO. Issues of non-compliance noted by the ECO are to be communicated to the site manager, who holds the responsibility of ensuring

that the relevant parties are made aware of the lack of compliance with EMPr specifications and that appropriate action is taken to rectify the situation. The ECO will advise on appropriate corrective actions when necessary.

5.3 Site record

Minutes of the Contractor's meetings on site must reflect:

- environmental queries and complaints;
- actions agreed upon;
- dates of eventual compliance;
- must form part of the official environmental site record; and
- along with the Environmental Site Book and Site Diary.

In additions to the summary report, the ECO shall keep a monthly photographic record of progress on site at the start of the construction phase and an ad hoc record of incidents or events on site, especially in the case of transgressions from EMPr specifications.

5.4 Review of EMPr

The EMPr will be reviewed by the ECO on an ongoing basis. Based on observations during site inspections and issues raised at site meetings, the ECO will determine whether any procedures require modification to improve the efficiency and applicability of the EMPr on site.

Any such changes or updates will be registered in the ECO's monthly record, as well as being included as an annexure to this document. Annexures of this nature must be distributed to all relevant parties on site.

5.5 Environmental Audits

A suitably qualified Environmental Auditor is to be appointed, to undertake audits of compliance with the EMPr. An audit should be undertaken 6 months after construction activities have been commenced with and 6 months after completion of construction activities/ the operation phase has commenced.

Objectives should be to audit compliances with the key components of the EMPr, to identify main areas requiring attention and recommend priority actions. The audit should cover a cross section of issues, including implementation of environmental controls, environmental management, and environmental monitoring.

Results of the audits should inform changes required to the specifications of the EMPr, or additional specifications to deal with any environmental issues which arise on site and have not been dealt with in the current document.