APPENDIX J: IMPACT & RISK ASSESSMENT

IDENTIFIED IMPACTS AND RISKS FOR EACH ALTERNATIVE:

Preferred Alternative	Impacts that may result from the Development phase (Planning, Design and Construction): 1) Higher intensity agriculture and increased hardened surfaces within the agricultural landscape. 2) Direct and indirect employment opportunities (temporary and permanent) and skills transfer to new employees. 3) Financial stimulation of the local economy. 4) Waste generation from construction activities – general construction waste. 5) Dust generation as a result of construction activities and vehicles. 6) Noise generation as a result of construction activities and workers. 7) Possible increase in visual intrusion within the agricultural landscape. 8) Loss of biodiversity, aquatic habitat and ecological structure. 9) Potential hydrology modification and change in sediment balance. 10) Potential Water Quality impacts. Impacts that may result from the Operational phase: 11) Increased use of access roads and therefore generation of traffic. 12) Potential surface water pollution from contaminated runoff (e.g., unit wash water) 13) Waste generation from operational phase. 14) Infectious mortalities (hazardous waste) may occur during the operational phase. 15) Provision of more sustainable protein to local markets. 16) Direct and indirect employment opportunities (temporary and permanent) and skills transfer to new employees. 17) Significant financial contribution to the local economy and a knock-on effect for trade in local economy. 18) Nuisance factors i.e. Noise, odour and dust generated from operational activities on site. 19) Possible increase in visual intrusion within the agricultural landscape. 20) Loss of biodiversity, aquatic habitat and ecological structure. 21) Potential hydrology modification and change in sediment balance. 22) Potential Water Quality impacts. 23) The risk of depletion of the groundwater due to over-abstraction. 24) The risk of groundwater quality deterioration as a result of over-abstraction. 25) The risk of groundwater abstraction impacting surface water 26) The risk of groundwater contamination due to a leaking septic tank, which may detrimentally impact a water resource Impacts that may result from the decommissioning and closure phase: No decommissioning-related impacts have been identified, as it is not anticipated that the development will be decommissioned should it proceed.
Alternatives scoped out:	A. Constructing a new river crossing versus utilising the existing river crossing. Initially, the preferred layout alternative indicated the internal road network to follow an alternate alignment. This was the Applicants preferred alternative as the road would follow the natural contours of the property and provide for easy

	movement of trucks onto site. However, this would entail the construction of a new watercourse crossing slightly south of the existing watercourse crossing. The freshwater specialist confirmed that the proposed crossing area is still largely in a natural state, with vegetation classified as critically endangered which extends to the permanently wet areas around the site as well. The stream in question was also assessed as having High Ecological Importance and Sensitivity, which places it in a Recommended Ecological Category A which requires that its current ecological condition be maintained. Therefore, if the crossing had remained in its original location, it would result in a medium - high negative impact on the stream, even with mitigation measures and rehabilitation of the downstream area. However, by utilising the existing crossing, the impact of the new preferred alternative is Low negative. The impact was therefore avoided by formalising the existing crossing. B. Engineering Designs: Amending the designs to accommodate sub-surface flow. The initial design for the proposed stream crossings, 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, these impacts have been avoided, through the preferred option which 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. Engineering plans for the preferred alternative have been included in Annexure B1. C. Trenching versus Overhead transmission distribution lines. The proposed HT power distribution lines (11kv) were originally going to be located within a trench system. However, it has since been determined that the cost of trenching the HT power transmission line far outweighs the cost of erecting the cables overhead. The power distribution lines will therefore be located along the same route indicated however they will, most likely, be overhead transmission lines. D. Revised farmyard layout area. It was decided to move the two reservoirs and the water treatment plant together, out of the farmyard to a disturbed location within the cultivated fields that will allow for gravity flow to the broiler facility. It was also decided to move the 'solar batteries, generator and diesel tank' closer to the farm shed and further away from the boundary of the property.
No-Go Alternative	The 'No-Go' option, where the development of the broiler facility is not pursued, was evaluated and the following potential impacts identified: 1) Loss of economic opportunities - No new jobs will be created, limiting employment opportunities for the local community.

	2) Reduces increase in food supply: The local or regional poultry supply may not expand as anticipated, potentially affecting food availability and price stability. 3) Underutilization of Land: Land designated for the facility may remain unproductive. 4) Reduced support for local suppliers: Suppliers and service providers who would have benefited from increased demand for materials, feed, and other resources will miss out on these economic opportunities. 5) The negative impacts associated with the preferred alternative will also not be materialised in the no-go alterative, however neither will the positive socio-economic impacts. Considering the property is a working farm on which agricultural activities are already taking place a certain level of impacts are already taking place albeit without mitigation measures in place.

IMPACTS ASSOCIATED WITH DESIGN AND CONSTRUCTION PHASE:

Impacts on geographical and physical aspects:	
Nature of impact:	**Higher intensity agriculture - increased hardened surfaces within the agricultural landscape.**
Extent and duration of impact:	**Local; medium term**
Probability of occurrence:	**Definite**
Degree to which the impact can be reversed:	**Barely reversible**
Degree to which the impact may cause irreplaceable loss of resources:	**no loss of resources**
Cumulative impact prior to mitigation:	**Higher intensity agriculture, increased runoff and potential erosion and sedimentation**
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	**MEDIUM (-)**
Degree to which the impact can be mitigated:	**Low**
Proposed mitigation:	**Strict implementation of the Environmental Management Programme (EMPr) included in Appendix H:** - **Prevent unnecessary exposure of bare ground (vulnerable to erosion) by minimising the area to be cleared around each unit and clearing land areas in phases as required for construction.** - **Establish pastureland and boundary landscaping as soon as possible after clearing.** - **Use earth tones or muted colours on buildings to reflect the local landscape.** - **Follow land contours to minimise visibility from afar.** - **Clustering buildings as a compact layout is less visually intrusive.** - **Use rows of indigenous and fast-growing trees to screen buildings.**
Cumulative impact post mitigation:	**Slight increase in site runoff and potential erosion. Screening vegetation may be higher than the surrounding vegetation, however units will be less noticeable.**
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	**LOW (-)**

Impact on biological aspects:	
Nature of impact:	**Loss of biodiversity, aquatic habitat and ecological structure (Water quality impairment and possible erosion, as well as flow modification within the marked streams and associated wet areas.)**
Extent and duration of impact:	**Local; short term**

Probability of occurrence:	**There is a distinct probability that the impact will occur.**
Degree to which the impact can be reversed:	**Partly reversible**
Degree to which the impact may cause irreplaceable loss of resources:	**Medium potential** **Resources can be replaced with effort.**
Cumulative impact prior to mitigation:	**Low on the larger freshwater system**
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	**Medium-Low (-)**
Degree to which the impact can be mitigated:	**Probable**

Proposed mitigation:	- **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.**
	- **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:**
	  o **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.**
	  o **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.** - **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.**
Cumulative impact post mitigation:	**Low on the larger freshwater system**
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	**LOW (-) to LOW (+)**

Impacts on socio-economic aspects:	
Nature of impact:	
Extent and duration of impact:	**Local; short term**
Probability of occurrence:	**Definite**
Degree to which the impact can be reversed:	**Not required**
Degree to which the impact may cause irreplaceable loss of resources:	**no loss of resources**
Cumulative impact prior to mitigation:	**Job creation amongst low-income families**
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	**MEDIUM (+)**
Degree to which the impact can be mitigated:	**Not required**
Proposed mitigation:	**Not required**
Cumulative impact post mitigation:	**Social upliftment in local community**
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	**MEDIUM (+)**

Waste impacts:	
Nature of impact:	**Waste generation from construction activities – general construction waste.**
Extent and duration of impact:	**Local short term (during construction phase)**
Probability of occurrence:	**Improbable**
Degree to which the impact can be reversed:	**Completely reversible**
Degree to which the impact may cause irreplaceable loss of resources:	**Low**
Cumulative impact prior to mitigation:	**Less space at landfill due to increased disposal**
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	**LOW (-)**
Degree to which the impact can be mitigated:	**LOW**
Proposed mitigation:	**The implementation of the Environmental Management Programme (EMPr) (Appendix H). 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.** – **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.**
Cumulative impact post mitigation:	**Recyclable materials used on site and less disposal off site**
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	**LOW (-)**

Dust impacts:	
Nature of impact:	**A degree of dust will be generated during construction phase**
Extent and duration of impact:	**Local; short term**
Probability of occurrence:	**Probable**
Degree to which the impact can be reversed:	**Completely reversible**
Degree to which the impact may cause irreplaceable loss of resources:	**no loss of resources**
Cumulative impact prior to mitigation:	**Nuisance to surrounding land users during the construction phase**
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	**LOW (-)**
Degree to which the impact can be mitigated:	**Very Low**
Proposed mitigation:	**The implementation of the Environmental Management Programme (EMPr) (Appendix H):** - **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 shield 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.
Cumulative impact post mitigation:	**No impact anticipated**
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	**VERY LOW (-)**

Noise impacts:	
Nature of impact:	**A degree of noise will be generated during the construction of the proposed expansion.**
Extent and duration of impact:	**Local; short term**
Probability of occurrence:	**Improbable**
Degree to which the impact can be reversed:	**Completely reversible**
Degree to which the impact may cause irreplaceable loss of resources:	**no loss of resources**
Cumulative impact prior to mitigation:	**Nuisance on land users in the immediate vicinity during the construction phase**
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	**LOW (-)**
Degree to which the impact can be mitigated:	**Very low**
Proposed mitigation:	**The implementation of the Environmental Management Programme (EMPr) (Appendix H). This includes:** - **Restrict working hours to weekdays and half day Saturday. No work on Sundays and public holidays.** - **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.** - **Development on large farm limited to no direct receptors.**
Cumulative impact post mitigation:	**No impact anticipated**
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	**VERY LOW (-)**

Impacts on cultural-historical aspects:	
Nature of impact:	**None anticipated as confirmed by HWC**

Visual impacts / Sense of Place:	
Nature of impact:	**Possible increase in visual intrusion within the agricultural landscape**
Extent and duration of impact:	**Local; long term (extends into operational phase)**
Probability of occurrence:	**Highly probable**
Degree to which the impact can be reversed:	**Partly reversible**
Degree to which the impact may cause irreplaceable loss of resources:	**no loss of resources**
Cumulative impact prior to mitigation:	**Units visible from internal farm roads.**
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	**LOW-MEDIUM (-)**
Degree to which the impact can be mitigated:	**Low**
Proposed mitigation:	**The implementation of the Environmental Management Programme (EMPr) (Appendix H). This includes:** - **Prevent unnecessary exposure of bare ground (vulnerable to erosion) by minimising the area to be cleared around each unit and clearing land areas in phases as required for construction.** - **Establish pastureland and boundary landscaping as soon as possible after clearing.**

	- **Use earth tones or muted colours on buildings to reflect the local landscape.** - **Follow land contours to minimise visibility from afar.** - **Clustering buildings as a compact layout is less visually intrusive.** - **Use rows of indigenous and fast-growing trees to screen buildings.**
Cumulative impact post mitigation:	**Potential visual intrusion for land users that make use of the farm's internal access roads.**
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	**LOW (-)**

PREFERRED ALTERNATIVE - IMPACTS ASSOCIATED WITH THE OPERATIONAL PHASE:

Impacts on geographical and physical aspects:	
Nature of impact:	**Intensified use of access roads and generation of traffic**
Extent and duration of impact:	**Local; long term**
Probability of occurrence:	**Highly probable**
Degree to which the impact can be reversed:	**Partly reversible**
Degree to which the impact may cause irreplaceable loss of resources:	**no loss of resources**
Cumulative impact prior to mitigation:	**Road degradation and erosion, dust**
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	**LOW (-)**
Degree to which the impact can be mitigated:	**Low**
Proposed mitigation:	- **Maintain all onsite roads in a good condition.** - **Regularly monitor roads for damage or erosion and addressed immediately.** - **A suitable speed limit (20-40km/h) must be enforced on all access roads.** - **Suitable dust suppression techniques must be utilised on roads, where required.**
Cumulative impact post mitigation:	**None anticipated**
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	**LOW (-)**

Impact on biological aspects:	
Nature of impact:	**Potential surface water pollution from contaminated runoff (e.g. unit wash water)**
Extent and duration of impact:	**Local; long term**
Probability of occurrence:	**Improbable**
Degree to which the impact can be reversed:	**Completely reversible**
Degree to which the impact may cause irreplaceable loss of resources:	**marginal loss**
Cumulative impact prior to mitigation:	**Water quality of watercourses in the vicinity of the facility affected (localised)**
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	**MEDIUM (-)**
Degree to which the impact can be mitigated:	**Low**
Proposed mitigation:	**Implement stormwater management as per Goal 7 of the EMPr** **- Dry-sweep pens, remove all manure and minimise usage of water inside units for washing. Units are to be washed by high pressure hoses (washing pumps) only once dry matter has been removed in order to eliminate any possible manure runoff.** **- Negligible runoff is caused by the 'washing' of the chicken houses. Any possible runoff will enter the vegetated free-range pastures located adjacent to the chicken houses where it dissipates. These areas will also contain trees which will assist with infiltration of any run-off.** **- During rain events runoff flows from free range areas (located adjacent to chicken houses) where it dissipates. Any remaining runoff then enters the existing/ proposed road network (further dissipation).** **- Run-off from the road will be directed into the vegetated stormwater swales proposed along the roads to the east and west of the chicken houses.** **- Any run-off from the swales will be directed into the proposed detention ponds/ dry pans. Any overflow, if applicable, will be directed into the existing agricultural contours surrounding the site.**

	- Runoff will accumulate in the detention pond/ dry pans allowing any possible manure to settle before water flows into the existing agricultural contours. **- The proposed stormwater management system will assist with dissipating & polishing runoff; and trapping any possible manure from the chicken houses to Ensure that no run-off from the units ends up in freshwater features.** **- No ingress of stormwater into the broiler units is to occur to protect runoff quality.** **- Contain all sweepings and dispose of to the relevant re-use location.** **- Implement erosion control measures, such as silt fences or erosion blankets along slopes, to prevent soil runoff, where applicable.** **- 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.**
Cumulative impact post mitigation:	**No impact anticipated**
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	**LOW (-)**
Nature of impact:	**Limited flow modification and loss of biodiversity resulting from ongoing future maintenance activities. A small possibility of a reduction in water quality through the operation of the broiler, which could cause eutrophication and limited loss in biodiversity in the surrounding streams C and D (where only the most sensitive species will be affected).**
Extent and duration of impact:	**Local; Short term**
Probability of occurrence:	**Low probability** **There is a low probability that the impact will occur**
Degree to which the impact can be reversed:	**Completely reversible**
Degree to which the impact may cause irreplaceable loss of resources:	**Low potential** **No irreplaceable resources will be impacted.**
Cumulative impact prior to mitigation:	**Low negative impact on the larger freshwater system**
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	**Low to MEDIUM-Low (-)**
Degree to which the impact can be mitigated:	**Likely**
Proposed mitigation:	- **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**
Cumulative impact post mitigation:	**Low negative impact on the larger freshwater system**
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	**LOW (-)**

Waste impacts:	
Nature of impact:	**Waste generation from operational phase**

Extent and duration of impact:	**Local; long term**
Probability of occurrence:	**Probable**
Degree to which the impact can be reversed:	**Completely reversible**
Degree to which the impact may cause irreplaceable loss of resources:	**marginal loss**
Cumulative impact prior to mitigation:	**Less space at landfill due to increased disposal**
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	**LOW-MEDIUM (-)**
Degree to which the impact can be mitigated:	**Possible**
Proposed mitigation:	**The implementation of the Environmental Management Programme (EMPr) (Appendix H). Section 4.3 addresses the Operational Management aspects. Goal 4 specifically addresses Waste Management.**
Cumulative impact post mitigation:	**Minimal waste disposal to landfill; increased recycling on site**
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	**LOW (-)**

(Hazardous) Waste impacts:	
Nature of impact:	**Infectious mortalities may occur during the operational phase**
Extent and duration of impact:	**Local; short term**
Probability of occurrence:	**Improbable**
Degree to which the impact can be reversed:	**Completely reversible**
Degree to which the impact may cause irreplaceable loss of resources:	**marginal loss**
Cumulative impact prior to mitigation:	**Biosecurity risk within and outside the farm**
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	**MEDIUM (-)**
Degree to which the impact can be mitigated:	**Possible**
Proposed mitigation:	**The implementation of the Environmental Management Programme (EMPr) (Appendix H). Section 4.3 addresses the Operational Management aspects. Goal 4 specifically addresses Waste Management.** **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** **-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 in the mortality pits neither to mix it with general waste destined for the land-fill site. **NOTE: PRACTICE SPECIFIC OPERATIONAL REGULATIONS AND GUIDELINES FOR OPERATION OF CHICKEN REARING FARMS IN SOUTH AFRICA SHOULD BE ADHERED TO AT ALL TIMES.**
Cumulative impact post mitigation:	**No impact anticipated**
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	**LOW (-)**

Nuisance impacts:	
Nature of impact:	**Noise, dust and/ or odour generated from operational activities on site**
Extent and duration of impact:	**Local; short term**
Probability of occurrence:	**Improbable**
Degree to which the impact can be reversed:	**Completely reversible**
Degree to which the impact may cause irreplaceable loss of resources:	**no loss of resources**
Cumulative impact prior to mitigation:	**Nuisance to surrounding land users and residents in the immediate vicinity.**
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	**LOW (-)**
Degree to which the impact can be mitigated:	**Possible**
Proposed mitigation:	**The implementation of the Environmental Management Programme (EMPr) (Appendix H):** - **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.**

	- **Create awareness on site of workers to keep noise levels down.** - **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.**
Cumulative impact post mitigation:	**No impact anticipated**
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	**LOW (-)**

Impacts on the socio-economic aspects:	
Nature of impact:	**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.**
Extent and duration of impact:	**Local; long term**
Probability of occurrence:	**Definate**
Degree to which the impact can be reversed:	**Not required**
Degree to which the impact may cause irreplaceable loss of resources:	**no loss of resources**
Cumulative impact prior to mitigation:	**Job creation and skills transfer within low-income families and social upliftment within the local community**
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	**MEDIUM - HIGH (+)**
Degree to which the impact can be mitigated:	**Not required**
Proposed mitigation:	**Not required**
Cumulative impact post mitigation:	**Job creation within low-income families and social upliftment within the local community**
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	**MEDIUM - HIGH (+)**

Impacts on the cultural-historical aspects:	
Nature of impact:	**None anticipated as confirmed by HWC**

Visual impacts / Sense of Place:	
Nature of impact:	**Increase in visual intrusion within the agricultural landscape**
Extent and duration of impact:	**Local; long term**
Probability of occurrence:	**Highly probable**
Degree to which the impact can be reversed:	**Partly reversible**
Degree to which the impact may cause irreplaceable loss of resources:	**no loss of resources**
Cumulative impact prior to mitigation:	**Units visible from internal farm roads.**
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	**LOW - MEDIUM (-)**

Degree to which the impact can be mitigated:	**Possible**
Proposed mitigation:	**The implementation of the Environmental Management Programme (EMPr) (Appendix H):** – **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 to screen buildings.**
Cumulative impact post mitigation:	**Potential visual intrusion for land users that make use of the farm's internal access roads.**
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	**LOW (-)**

Geohydrology Impacts:	
Nature of impact:	**Over abstraction from the borehole would drop the regional groundwater level (Direct)**
Extent and duration of impact:	**Local, Long term >15 years but lest than <30**
Probability of occurrence:	**Unlikely, if reported demand is not exceeded**
Degree to which the impact can be reversed:	**To some degree reversible if water bearing fractures did not collapsed**
Degree to which the impact may cause irreplaceable loss of resources:	**Can impact groundwater flow paths and fractures may collapse**
Cumulative impact prior to mitigation:	**High – Unless properly managed, over abstraction of groundwater could impact on the groundwater availability for neighbouring water users as well as groundwater reliant ecosystems. Although this specific abstraction is low enough to not cause a regional impact, large scale over abstraction can impact on groundwater flow paths.**
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	**MEDIUM (-)**
Degree to which the impact can be mitigated:	**Fully mitigatable**
Proposed mitigation:	**Groundwater abstraction volumes must be monitored.** **Water levels must be monitored and should not drop below the critical water level (47.33 mbgl for KF_BH01 and 110.80 mbgl for KF_BH02).** **Monitoring information must be assessed regularly (suggest monthly in summer). If the water level in the borehole drops below the critical water level. abstraction will immediately be reduced by 10%. Monitoring will persist and after 30 days. if the water level in the borehole did not recover to above the critical water level. abstraction will be reduced by a further 10%. This process will continue until the water level in the borehole is stable.** **The groundwater management plan needs to be implemented as per the EMPr (Goal 8).**
Cumulative impact post mitigation:	**If the impacts are mitigated as detailed in this report. the cumulative impact would be negligible with little to no impact on availability of groundwater resources.**
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	**LOW (-)**
Nature of impact:	**Over-abstraction of groundwater can degrade water quality and iron clogging can occur, which can clog the fractures in the borehole and the equipment. (Direct)**
Extent and duration of impact:	**Local, Long term >15 years but lest than <30**
Probability of occurrence:	**Unlikely if abstraction recommendations are adhered to.**
Degree to which the impact can be reversed:	**The impact is reversible.**

Degree to which the impact may cause irreplaceable loss of resources:	**The impact is highly likely to cause loss of resource.**
Cumulative impact prior to mitigation:	**Moderate – Unless properly managed. other groundwater users may face reduced water quality. leading to potential health risks and increased treatment costs. Additionally, ecosystems dependent on groundwater may be disrupted. as contaminated or lower-quality water can harm vegetation, aquatic life, and overall biodiversity, potentially leading to long-term ecological damage.**
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	**MEDIUM (-)**
Degree to which the impact can be mitigated:	**The impact can be mitigated through monitoring of the quality.**
Proposed mitigation:	**Groundwater quality must be monitored.** **Monitoring information must be assessed regularly (suggest monthly in summer). If an increase of 25% in electrical conductivity is observed, abstraction will immediately be reduced by 10%. Monitoring will persist and after 30 days if the water quality of the borehole did not recover, abstraction will be reduced by a further 10 %.** **This process will continue until the water quality has stabilised.** **The groundwater management plan needs to be implemented as per the EMPr (Goal 8).**
Cumulative impact post mitigation:	**If the impacts are mitigated as detailed in this report. the cumulative impact would be negligible with little impact on the availability of groundwater resources.**
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	**LOW (-)**
Nature of impact:	**Depletion of surface water due to abstraction from groundwater. (Direct)**
Extent and duration of impact:	**Local, Short term 0-5 years**
Probability of occurrence:	**Improbable**
Degree to which the impact can be reversed:	**Fully reversible.**
Degree to which the impact may cause irreplaceable loss of resources:	**Can impact surface water.**
Cumulative impact prior to mitigation:	**Low – Unless properly managed, over abstraction of groundwater could impact on the surface water runoff. Although this specific abstraction is low enough not to cause a regional impact.**
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	**LOW (-)**
Degree to which the impact can be mitigated:	**Fully mitigatable**
Proposed mitigation:	**Groundwater levels and chemistry must be assessed regularly (suggest monthly in summer). If a change of 25% in electrical conductivity is observed, abstraction will immediately be reduced by 10% as indicated in Table 10. Monitoring will persist and after 30 days if the water quality of the borehole did not recover, abstraction will be reduced by a further 10 %. This process will continue until the water quality has stabilised.** **The groundwater management plan needs to be implemented as per the EMPr (Goal 8).**
Cumulative impact post mitigation:	**If the impacts are mitigated as detailed in this report, the cumulative impact would be negligible with little to no impact on surface water runoff.**
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	**Very LOW (-)**
Nature of impact:	**Groundwater contamination due to leaking wastewater from septic tanks. (Indirect)**
Extent and duration of impact:	**Local, Long term >15 years but lest than <30**

Probability of occurrence:	**Possible**
Degree to which the impact can be reversed:	**Partly reversible.**
Degree to which the impact may cause irreplaceable loss of resources:	**High, of groundwater contamination from leakage of contaminants can lead to severe and lasting damage to water quality and ecosystems.**
Cumulative impact prior to mitigation:	**Moderate – Unless properly managed, the persistent infiltration of excess nutrients can disrupting aquatic ecosystems and reducing biodiversity. Together, these effects can compromise water resources, damage ecosystems, and result in long-term environmental and economic consequences, highlighting the urgent need for effective management and preventive measures.**
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	**Medium (-)**
Degree to which the impact can be mitigated:	**The impact can be mitigated through monitoring of the quality.**
Proposed mitigation:	**Groundwater quality must be monitored. Use early warning systems to detect potential contamination sources and address them promptly.** **The groundwater management plan needs to be implemented as per the EMPr (Goal 8).**
Cumulative impact post mitigation:	**If the impacts are mitigated as detailed in this report, the cumulative impact would be negligible with little to no impact on the availability of groundwater resources.**
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	**LOW (-)**

IMPACTS ASSOCIATED WITH THE NO-GO ALTERNATIVE:

Potential impacts on the socio-economic aspects:	
Nature of impact:	**Loss of economic opportunities: No new jobs will be created onsite, limiting onsite employment opportunities for the local community. Reduced support for local suppliers: Suppliers and service providers who would have benefited from increased demand for materials, feed, and other resources will miss out on these economic opportunities.**
Extent and duration of impact:	**Local; long term**
Probability of occurrence:	**Definite**
Degree to which the impact can be reversed:	**Unlikely**
Degree to which the impact may cause irreplaceable loss of resources:	**Unlikely**
Cumulative impact prior to mitigation:	**Social degradation of local labour force** **Missed opportunity for local economic growth**
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	**MEDIUM (-)**
Degree to which the impact can be mitigated:	**Unlikely**
Proposed mitigation:	**No onsite mitigation available**
Cumulative impact post mitigation:	**Social degradation of local labour force** **Missed opportunity for local economic growth**
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	**MEDIUM (-)**
Nature of impact:	**Limited increase in food supply: The local or regional poultry supply may not expand as anticipated, potentially affecting food availability and price stability.**
Extent and duration of impact:	**Local; medium term**
Probability of occurrence:	**Highly Probable**
Degree to which the impact can be reversed:	**Possible**
Degree to which the impact may cause irreplaceable loss of resources:	**Unlikely**
Cumulative impact prior to mitigation:	**Unmet need for affordable protein**
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	**LOW (-)**
Degree to which the impact can be mitigated:	**Unlikely**
Proposed mitigation:	**No onsite mitigation available**
Cumulative impact post mitigation:	**Need for sustainable protein not met**
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	**LOW (-)**

Potential impacts on the geographical and physical aspects:	
Nature of impact:	**Underutilization of agricultural land: Land designated for the facility may remain unproductive and continue to degrade**
Extent and duration of impact:	**Local; long term**
Probability of occurrence:	**Highly Probable**
Degree to which the impact can be reversed:	**Possible**
Degree to which the impact may cause irreplaceable loss of resources:	**Unlikely**
Cumulative impact prior to mitigation:	**Degradation of unproductive agricultural land**
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	**LOW (-)**
Degree to which the impact can be mitigated:	**Unlikely**
Proposed mitigation:	**Soil rehabilitation or alternative land use**
Cumulative impact post mitigation:	**Improved productivity or profitability**
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	**LOW (-)**

SUMMARY OF IMPACTS:

Impacts	Significance prior to mitigation	Significance post mitigation
IMPACTS DURING PLANNING, DESIGN & CONSTRUCTION PHASES		
Higher intensity agriculture - increased hardened surfaces within the agricultural landscape.	MEDIUM (-)	LOW (-)
Loss of biodiversity, aquatic habitat and ecological structure (Water quality impairment and possible erosion, as well as flow modification within the marked streams and associated wet areas.)	Medium - LOW (-)	LOW (-) – low (+)
Temporary Employment opportunities during the construction phase. Financial stimulation of the local economy.	MEDIUM (+)	MEDIUM (+)
Waste generation from construction activities – general construction waste.	LOW (-)	LOW (-)
Dust generation from construction activities	LOW (-)	VERY LOW (-)
Noise generated from construction activities	LOW (-)	VERY LOW (-)
Increase in visual intrusion within the agricultural landscape	LOW / MEDIUM (-)	LOW (-)
IMPACTS DURING OPERATIONAL PHASE		
Intensified use of access roads and traffic generation	LOW (-)	LOW (-)
Potential surface water pollution from contaminated runoff (e.g. unit wash water)	MEDIUM (-)	LOW (-)
Limited flow modification and loss of biodiversity resulting from ongoing future maintenance activities. A small possibility of a reduction in water quality through the operation of the broiler, which could cause eutrophication and limited loss in biodiversity in the surrounding streams C and D (where only the most sensitive species will be affected).	Low to medium – Low (-)	LOW (-)
Waste generation from operational phase	LOW – MEDIUM (-)	LOW (-)
Hazardous waste – infections mortalities	MEDIUM (-)	LOW (-)
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.	MEDIUM - HIGH (+)	MEDIUM - HIGH (+)
Noise, Odour & Dust generation from operational phase	LOW (-)	LOW (-)
Increase in visual intrusion within the agricultural landscape	LOW - MEDIUM (-)	LOW (-)

The risk of depletion of the groundwater due to over-abstraction	MEDIUM (-)	LOW (-)
The risk of groundwater quality deterioration as a result of over-abstraction	MEDIUM (-)	LOW (-)
The risk of groundwater abstraction impacting surface water	LOW (-)	VERY LOW (-)
The risk of groundwater contamination due to leaking wastewater from septic tanks	MEDIUM (-)	LOW (-)
IMPACTS ASSOCIATED WITH THE NO-GO ALTERNATIVE		
Loss of socio- economic opportunities: No new jobs will be created onsite. Reduced support for local suppliers.	**MEDIUM (-)**	**MEDIUM (-)**
Limits increase in sustainable protein supply	**LOW (-)**	**LOW (-)**
Underutilization of agricultural land	**LOW (-)**	**LOW (-)**