

**REVISED AND UPDATED ENVIRONMENTAL MANAGEMENT PLAN
(EMP) FOR THE EXISTING & OPERATIONAL ZAMBEZI POULTRY
FARMING PROJECT IN MAFUTA COMMUNAL AREA, ZAMBEZI
REGION**



Assessed by:
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Renewal of Environmental Clearance for:
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1. INTRODUCTION

Zambezi Poultry cc, as proponent are the developers and owner of Zambezi poultry farming project. The project is on a 44.5 Hectares of Land and is an operational farming project based at Mafuta communal area, situated about +- 12 kilometres from the town of Katima Mulilo. The project started its operation in the 2002. Currently the poultry farming project is engaged in different activities that leads to its successful operations.

Its business Activities include poultry (broiler chickens for meat and layers for eggs) and ducks. Currently have more than 2000 broiler chickens and 2800 layers. There is also a section of an abattoir for meat processing. The project also grows maize and vegetable on small scale. There were also plans to keep small animals such as hare/rabbits, ostriches, tortoises. In the year 2016, the developer applied for an Environmental Clearance Certificate through an Environmental Practitioner called Nyepez Consultancy cc. The Environmental Clearance Certificate for Zambezi Poultry faming was approved and issued. however, the three (3) year period of the clearance has lapsed, hence the application for renewal.

The vegetable and Poultry farming project was and is aimed at producing food for local markets in the region and the country as well as for exports to other neighbouring countries in Southern Africa. Zambezi Poultry cc saw an urgent need to undertake this project having observed the high inflation in poultry food products in the country and internationally, which had negative impact on the local communities that are immensely affected by costs involved and climatic changes which results in drought in the entire Southern African region.

The intention for renewal of the clearance certificate is therefore to ensure the continuous operation and existence of the project to run it in a profitable, eco-friendly and sustainable way. The aim is to follow the Principles of Eco-friendly and offer customers the attraction that conserves the environment and improves the well-being of local people. Eco-project development is about uniting conservation, communities, and sustainable environmentally friendly project by minimizing impact on the environment

- To minimize the impact of new and existing Zambezi Poultry Farms on the Environment, including natural resources, local residents and existing surrounding land uses;
- To ensure site selected for Zambezi Poultry Farm is appropriate for long term operation and that farming methods are sustainable;

- To ensure proper consideration of the effects of new developments on existing poultry facilities; and,
- To ensure compliance with environmental requirements.
- Provide training and empowerment for local communities to achieve sustainable development in the region create jobs for the local community

1.2 Main Objective

- To apply for the renewal of the Environmental Clearance Certificate (ECC) for existing and operating Zambezi Poultry and Chicken farm development in Mafuta Communal Area of Zambezi Region which was obtained in 2016 (the First initial certificate was acquired by Nyepez Consultancy cc on behalf of the proponent (Zambezi Poultry cc)
- To provide a brief background of the existing project and its proponents;
- Provide the Renewed, Compliant and updated Environmental Management Plan for the project and explain all new amendments on physical environment of the project area;
- To explain the process that was followed during the Environmental Scoping Study;

1.3 Poultry Farm Activities

The Zambezi Poultry farm was established in 2012 for commercial business purposes. The following facilities were established on the site.

- eight broiler farm units, each with 12 houses (approximately 185,000 m2 in total each broiler farm unit);
- an incubator, accommodating hatching;
- a slaughter floor;
- rendering facility;
- a laundry;

1.4 Aims of the Study

The aims of initial scoping submitted was to:

- Comply with Namibia's Environmental Assessment Policy, Environmental Management Act (2007) and its February 2012 EIA Regulations;
- To provide for a compliant and updated Environmental Management Plan for activity monitoring and evaluation purposes

- Consult all Interested and Affected Parties (I&AP's) to ensure that their input is taken into account;
- Review the legal and policy framework and its relevance to this project;
- Describe the biophysical and socio-cultural environment of the project to determine its sensitivities and suitability;
- Identify and assess impact related to the construction, operation and later decommissioning of the poultry farm and associated infrastructure and propose suitable mitigation strategies.
- In 2016 a Compiled Scoping Report and Management plan in line with the 2012 EIA Regulations of the Environmental Management Act (2007) and terms of reference was submitted, approved and an initial Environmental Clearance Certificate **dated 27 February 2017 issued. The first approval was issued through the old ministerial manual approving system, which therefore means the expired Clearance Certificate is not found online but filled in the Ministry's registry.**

1.5 Locality

The existing and operational the Poultry farming project is situated in Mafuta Communal area on a 44.5 Hectares of Land and is a functional and operational farming project based at Mafuta area. The site is situated approximately +- 12 kilometres South from the town of Katima Mulilo. The area is within the Katima Rural Constituency, in the Mafuta communal area in the Zambezi Region (formerly known as (Caprivi Region).

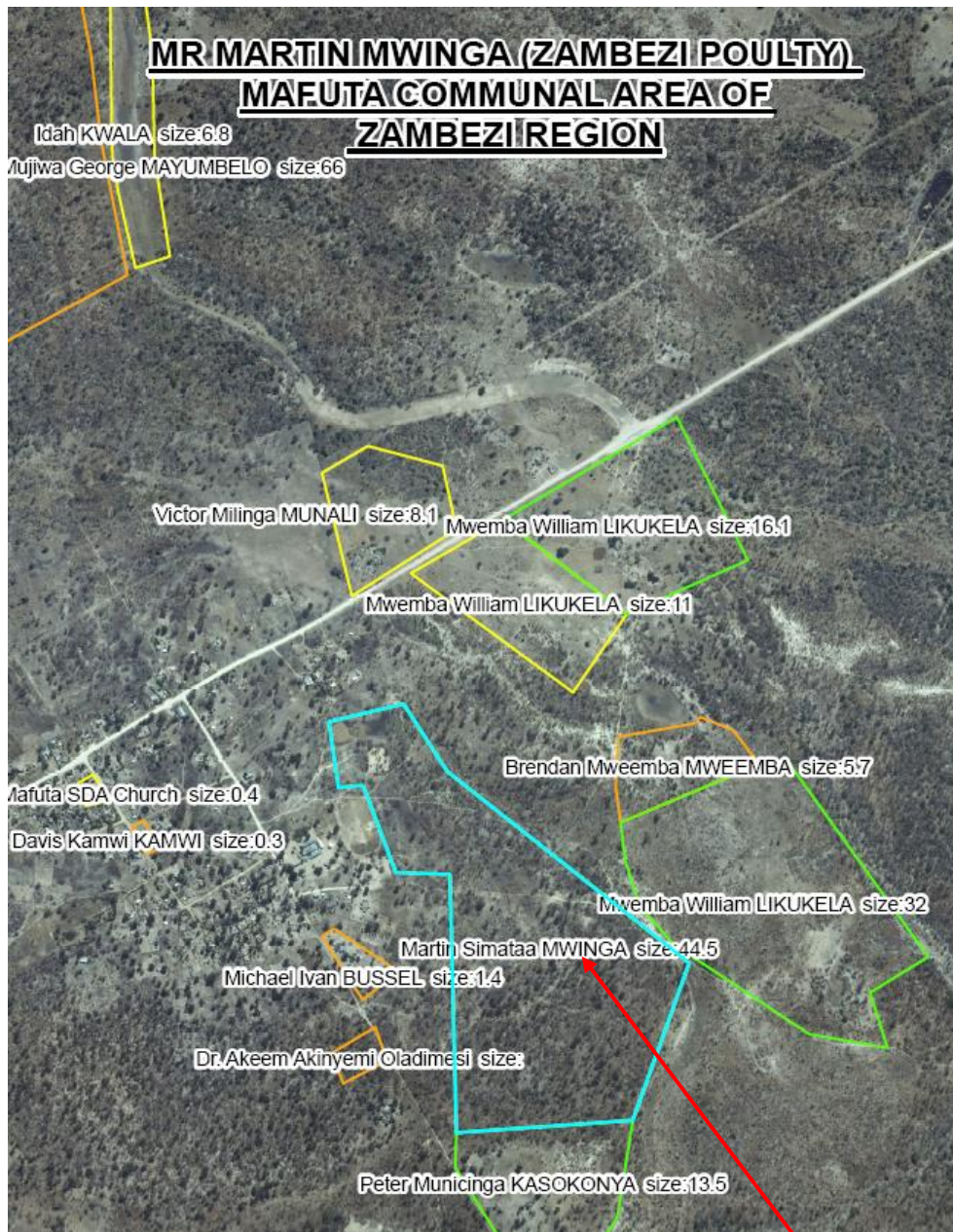


Figure 1: Project locality area

Zambezi Poultry cc_Project
area. 44.5 hectares

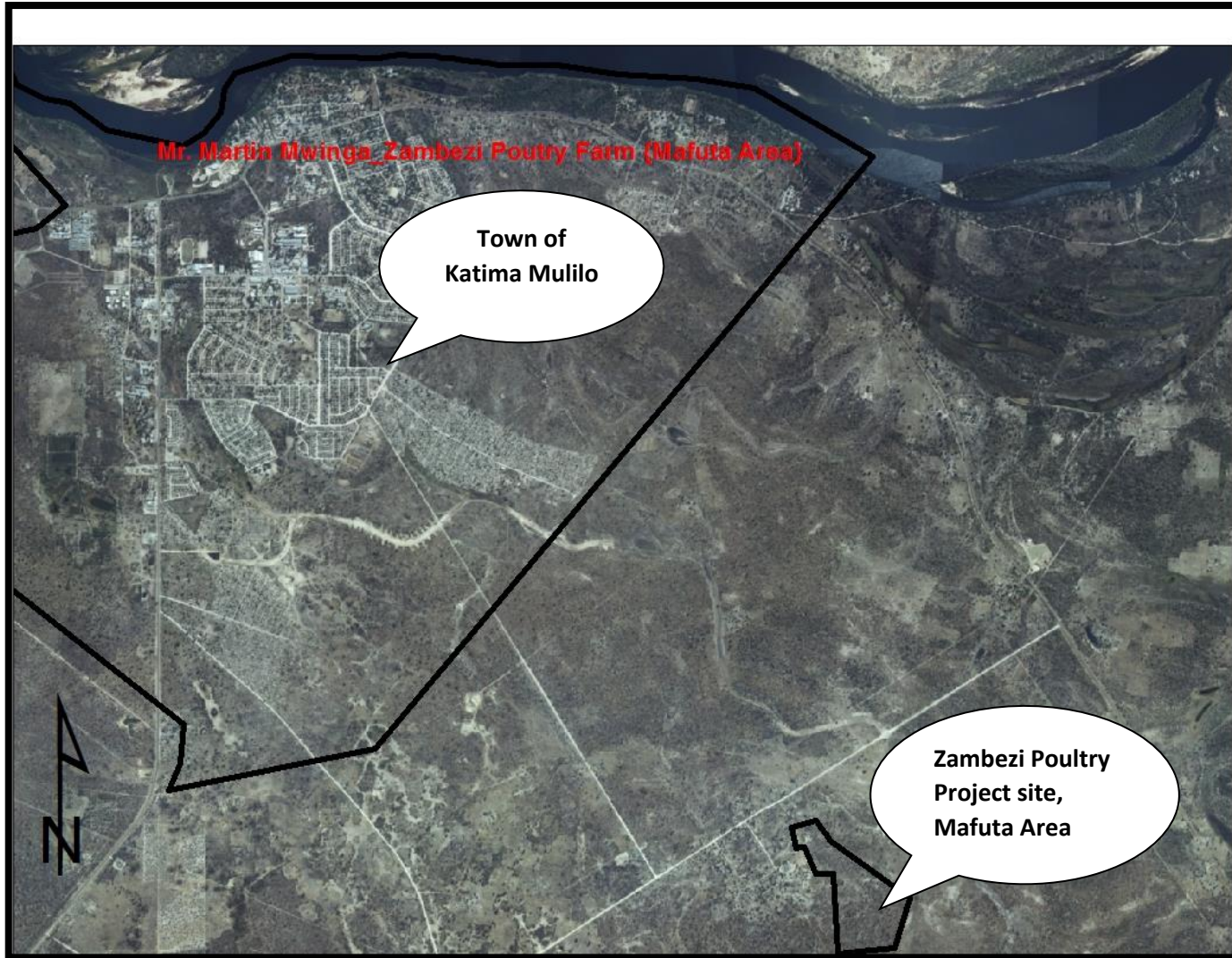


Figure 2: Project locality map: Zambezi Poultry Farming project

1.6 Project Economics & Operational Activities

The objectives of establishing and developing the site was ideally intended for the development site of the existing and operational poultry farm and farming facilities, since it is situated a few kilometres from the main town and have strong connection of people movement and traffic flow to & from the main town. This farming project gives an important or vital economic importance and upliftment to the Mafuta communal area, the Zambezi region and the residents in the Katima Mulilo town at large. It is also outlined in NDP4 that the Goal of Agriculture, is to increase productivity and water use efficiency and improving food security through development, adoption and dissemination of sustainable technology.

This project has also created employment opportunity by employing about 28 people. The business has established a school feeding program where a total number of 150 school learners were and are being feed by the Zambezi poultry proponent. The Zambezi poultry farm is also contributing to sponsorship of school & community activities such as soccer, providing uniforms, books, clothes, shoes to needy children.

As a result of the long-term mutual relationship between the Zambezi Poultry farm owners and Mafuta community was and is developed. Significant community empowerment such as training on farming, community gardens, assistance for education financial assistance is also being offered to the community.

| Project | Potential Impacts |
|-----------------|---|
| Construction | No construction activity - undertaken as the project is operational. the construction was already completed in 2017 |
| Decommissioning | Nuisance dust generated from demolition equipment and general decommissioning activities |

2. LEGAL AND REGULATORY REQUIREMENTS

The Namibian Environmental Management Act (Act No. 7 of 2007) promotes the sustainable management of the environment and the use of natural resources by establishing principles for

decision making on matters affecting the environment. With regard to managing ambient air quality in a sustainable way and limiting impacts, health-based ambient standards, emission standards, and ambient monitoring are considered the most appropriate approaches.

3. IMPACT ASSESSMENT

3.1 Identification of key impacts

A summary of the major impacts to be caused by the proposed Zambezi Poultry during its operations can be summarized as follows:

| Potential Impact activities |
|--|
| Deforestation and ecosystem impacts |
| Grazing for Livestock |
| Groundwater Surface Water and Soil contamination |
| Noise pollution |
| Water Use |
| Air Emissions |
| Odour |

| 3.2 Sustainability / Potential Appraisal | | | |
|--|-----------------|----------|--|
| Impact on Ecological & Socio Economic | Level of Impact | | Comments |
| | Positive | Negative | |
| Creation of Employment | High | None | 28 unskilled local workers were contracted during the construction phase of the project and an estimate of ± 28 skilled & semi-skilled local workers during the operational phase of the project |
| Grazing& cattle corridors | N/A | None | An alternative nearby commonage suitable for grazing which is located few kilometres from the project site. |
| Abstraction of water | High | None | The water extracted from the Nam water pipeline situated about 20 meters from the proposed site. |
| Water Pollution | N/A | None | There are no chemical and/or hazardous substances that are produced from the poultry farm development, substances which will contaminate or pollute surface and |

| | | | |
|---------------------------------------|---------|-----|--|
| | | | underground water. The area does not have surface water and it is dominated by sandy and is a dry savannah land. Based on this the level of underground water is evident and presumed to be very low and far from the surface. |
| Tenure insecurity & land use disputes | Limited | N/A | Area is registered under a leasehold for a period of time for leasing to the investors, there are currently no land use activities in the proposed project area |

Key Consideration Area

- Contribute to local economy
- Employment Creation
- Local level economic empowerment

4. IMPACT ASSESSMENT AND MITIGATION

4.1 Assessment of Impacts

The purpose of this section was and is to assess and identify the most prominent environmental impacts and provides possible mitigation measures that are expected from both the operational and the decommissioning for the activities of the Zambezi poultry project. The following component or section below summarizes categories of impacts identified, following the site visits that were undertaken at the site area and from other comments received from relevant stakeholders

- Biodiversity and ecosystem impact
- Fire
- Socio-economic impacts
- Health and safety impacts
- Cumulative impacts

The above identified impacts were assessed and evaluated in different phases of the development. By subjecting each of the potential impacts to the criteria stipulated above, was possible to establish the significance of each impact prior to implementing mitigation measures and then after mitigation measures have been implemented.

Detailed descriptions of management actions in terms of mitigation measures are contained in the accompanying EMP.

The process of assessing the significance of each of the possible impacts is contained in the above tables. It must be noted that the impacts described in these tables considers the nature of the potential impact before (pre) and after (post) mitigation as set out in the EMP.

Although the significance rating of the most of the impacts can be reduced considerably to a “low significance” by implementation proper mitigation measures the proponent should however understand that a “low significance” impact still exerts pressure on the environment and therefore the proponent intend to go above and beyond the prescribed mitigation and management measures provided in this report by aiming to improve the remaining environment. There are specific policies and guidelines that address environmental issues related to the development. The policies and guidelines were referred to in the legal section.

Table 1: criteria used to describe impacts Description

| | |
|------------------|--|
| Nature | Reviews the type of effect that the proposed activity will have on the relevant component of the environment and include “what will be affected and how” |
| Extent | Indicates whether the impact will be site specific: local (limit to within 15 km of the area): regional (limited to -100 km radius); national (limited to the coastline of Namibia); or international (extending beyond Namibia’s borders) |
| Duration | Reviews the lifetime of the impact, as being short (days, <1 month), medium (months, <1 year), long (years, <10 years), or permanent (generations, or >10 years). |
| Intensity | Establishes whether the magnitude of the impact is destructive or innocuous and whether or not it exceeds set standards, and is described as none (no impact); low (where natural/social environmental functions and processes are negligibly affected); |

| | |
|--|--|
| | medium (where the environment continues to function but in a noticeably modified manner); or high (where environmental functions and processes are altered such that they temporarily or permanently cease and/or exceed legal standard/requirements). |
| Probability | Considers the likelihood of the impact occurring and is described as improbable (low likelihood), probable (distinct possibility), highly probable (most likely) or definite (impact will occur regardless of prevention measures). |
| Degree of confidence in predictions | Is based on the availability of specialists knowledge and other information |

The application of the above criteria to determine the significance of potential impact uses a balanced combination of duration, extent, and intensity/magnitude, modified by probability, cumulative effects, and confidence. Significance is described as follows.

| Significance Rating | Criteria |
|----------------------------|---|
| Low | Where the impact will have a negligible influence on the environment and no modifications or mitigations are necessary for the given project description. This |
| Medium | Where the impact could have an influence on the environment, which will require modification of the project design and/or alternative mitigation. This would be allocated to impacts of moderate severity/magnitude, locally to regionally, and in the short term |
| High | Where the impact could have a significant influence on the environment and in the event of a negative impact the activities causing it, should not be permitted (i.e. there could be a no-go implication for the project, regardless of any |

| | |
|--|--|
| | possible mitigation). This would be allocated to impacts of high magnitude, locally for longer than a month, and/or of high magnitude regionally and beyond. |
|--|--|

The FAO guidelines for fields projects (FAO, 2012) used during the assessment.

Table 2: Environmental categories for FAO field projects

| Environmental Category | Environmental and Social Impacts | Environmental Analysis or Assessment Required |
|-------------------------------|--|---|
| Category A | Significant, or irreversible adverse impacts | Mandatory environmental impact assessment |
| Category B | Less significant adverse impacts that may be easily prevented or mitigated | Environmental analysis to identify more precisely potential negative impacts |
| Category C2 | Minimal or no adverse impacts | No further environmental and/ or social analysis or assessment required |

Based on the above FAO's categories of field project analysis, the project development of Zambezi Poultry farming project at Mafuta falls under category B, where there is less significant adverse impacts that may be easily prevented or mitigated. Environmental analysis is required to analysis to identify more precisely potential negative impacts. The following box below specify the type of projects under Category B, which according to FAO (2012) do not require a full EIA but will require further deepening of environmental or social considerations, depending on the expected magnitude of risks. In many cases, the analysis would aim at gathering additional information in sufficient detail so as to be able to discuss concretely how risks could be addressed and minimized (and possibly eliminated) in the project design.

According to Pastakia (1998) the Rapid Environmental Assessment method was used to assess projects related to the Poultry development project and Pastakia's method was used during the assessment. The ranking formulas area calculated as follows;

$$A=A1 \times A2$$

$$B=B1 +B2+B3$$

$$\text{Environmental Classification (ES)} =A \times B$$

Table 3: Environmental Classification of Impacts according the Rapid Impact Assessment Method of Pastakia 1998

| Environmental Classification (ES) | Class Value | Description of Class |
|-----------------------------------|-------------|-------------------------------------|
| 108 to 72 | 5 | Major positive change/impact |
| 71 to 36 | 4 | Significant positive change/impact |
| 35 to 19 | 3 | Moderate positive change/impact |
| 10 to 18 | 2 | Positive change/impact |
| 1 to 9 | 1 | Slight positive change/impact |
| 0 | 0 | No change/status quo/not applicable |
| -1 to -9 | -1 | Slight negative change/impact |
| -10 to -18 | -2 | Negative change/impact |
| -19 to -35 | -3 | Moderate negative change/impact |
| -36 to -71 | -4 | Significant negative change/impact |
| -72 to -108 | -5 | Major negative change/impact |

Table 4: Assessment Criteria

| Criteria | Score |
|--|-------|
| Importance of condition (A1) –Assessed against the spatial boundaries of human interest it will affect | |
| important to national/international interests | 4 |
| important to regional/national interests | 3 |
| important to areas immediately outside the local condition | 2 |
| important only to the local condition | 1 |
| No importance. | 0 |
| Magnitude of changes /effects (A2) –measure of scale in terms of benefits of an impact or condition | |
| Major positive benefits | 3 |
| Significant improvement in the status quo | 2 |
| Improvement in status quo | 1 |
| No change in status quo | 0 |
| Negative change in the status quo | -1 |
| Significant negative disbelief or change | -2 |
| Major disbelief or change | -3 |
| Permanence (B1) –defines whether the condition is permanent or temporary | |
| No change/not applicable | 1 |
| Reversible | 2 |
| Permanent | 3 |
| Cumulative (B3) –reflects whether the effects will be a single direct impact or will include cumulative impacts over time, or synergistic effect with other conditions. It is a means of judging the sustainability of the condition-not to be confused with the permanence criterion | |
| Light or No cumulative Charater /Not applicable | 1 |

| | |
|-----------------------------|---|
| Modern Cumulative character | 2 |
| Strong Cumulative character | 3 |

Table 5: Criterion for Impact Evaluation (Directorate of Environmental Affairs, 2008)

| Risk Event | Description of the risk that may lead to an impact |
|-------------------------------------|---|
| Probability | Refers to the probability that a specific impact will happen following a risk event Improbable (low likelihood) Probable (distinct possibility) Highly probable (most likely) Definite (impact will occur regardless of prevention measures) |
| Confidence level | The degree of confidence in the predictions based on the availability of information and specialist knowledge Low (based on the availability of specialist knowledge and other information) Medium (based on the availability of specialist knowledge and other information) High (based on the availability of specialist knowledge and other information) |
| Significance (no mitigation) | None (A concern or potential impact that, upon evaluation is found to have no significant impact to all) Low (any magnitude, impact will be localised and temporary. Accordingly, the impact is not expected to require amendment to the project design) Medium (Impacts of moderate magnitude locally to regionally in the short term, accordingly the impact is expected to require modification of the project design or alternative mitigation) High (Impacts of high magnitude locally and in the long term and/or regionally and beyond. Accordingly, the impact could have a ‘no go’ implication for the project unless mitigation or re-design is practically achievable) |
| Mitigation | Description of possible mitigation measures |

| | |
|---------------------------------------|--|
| Significance (with mitigation) | <p>None (A concern or potential impact that, upon evaluation is found to have no significant impact to all)</p> <p>Low (any magnitude, impact will be localised and temporary. Accordingly, the impact is not expected to require amendment to the project design)</p> <p>Medium (Impacts of moderate magnitude locally to regionally in the short term, accordingly the impact is expected to require modification of the project design or alternative mitigation)</p> <p>High (Impacts of high magnitude locally and in the long term and/or regionally and beyond. Accordingly, the impact could have a ‘no go’ implication for the project unless mitigation or re-design is practically achievable)</p> |
|---------------------------------------|--|

The following tables evaluate the identified impacts, both positive and negative of the poultry farming project activities on the environment. This includes the social, economic and natural environment affected by the activities on the proposed site.

4.2 Operational Phase Impacts Prior to Mitigation

4.2.1 Negative Impacts of Low Significance for the operational phase prior to mitigation

| NEGATIVE IMPACTS (LOW) | DESCRIPTION OF IMPACT |
|---|--|
| Land transformation – Dust levels | The development would result in increased dust levels during the operational phase. |
| Land transformation – Noise levels | The area is situated in a rural area and the farmers in the area are accustomed to the sound of working machinery. The chickens themselves does not generate any significant levels of noise during the operational phase. Some noise arises in relation to the expected increase in traffic to and from the site, especially at the end of a production cycle |
| Heritage | The project development does not and/or is not expected to have any significant impact on archaeological or palaeontological remains during the operational phase. |

4.2.2 Negative Impacts of Medium-Low Significance for the operational phase prior to mitigation

| NEGATIVE IMPACTS (MEDIUM-LOW) | DESCRIPTION OF IMPACT |
|---|--|
| Hydrology – Storm water and drainage | The roofs of chicken houses and other buildings will increase storm water runoff. Hardened surfaces around chicken houses due to trampling, nesting and foraging by chickens will increase storm water runoff and subsequent erosion (loss of topsoil). |
| Hydrology – Water supply | Water use for chickens and irrigation purposes. |
| Land transformation – Soil chemistry and fertility | <p>Soil chemical properties and vegetation yield can however be negatively affected if large amounts of manure is applied over long periods of time.</p> <p>Solid and chicken waste is mixed with sawdust and is used as manure on the farm especially for vegetables and maize plantation. All waste is kept on the farm and used as manure.</p> <p>It is therefore not expected that manure will negatively affect soil properties and vegetation production, but this aspect must be taken into consideration, should manure loads be left to build up in the veld.</p> |
| Land transformation – Visual impacts | <p>any proposed expansion will consist of the existing agricultural land use of the property and surrounding areas.</p> <p>All buildings and associated infrastructure are sited as unobtrusively as possible. A natural buffer zone is maintained between the chicken houses and neighboring farms. Indigenous trees and shrubs have been planted and maintained to reduce visibility from adjoining roads and properties.</p> |
| Increased traffic volume | The transportation of chickens to and from the site will increase traffic levels in the area. |

| | |
|---|---|
| <p>Land transformation – Loss of ecological processes (Ecological Support Areas)</p> | <p>The construction of roads and fence lines through the the project site area will impact on Ecological Support Areas (ESAs) and the level of ecological connectivity (corridors) that they offer.</p> <p>No chicken houses were constructed within 32m from any ephemeral watercourse. No disposal or irrigation of grey water is allowed to accumulate or occur within a few meters from any watercourse. Ablution facilities for farm workers are placed a distance from any ephemeral watercourse.</p> |
| <p>Land transformation – Odour nuisance levels</p> | <p>It is not possible to avoid all odours, but it is ensured that the ventilated houses and free-range pastures emanate less odour than the conventional closed intensive broiler houses. Chicken houses are located well away from any human settlements and houses are frequently cleaned and disinfected after every production cycle.</p> <p>Subject to good management of poultry, housing systems and waste disposal, odour are and should not present a significant impact.</p> |
| <p>Faunal biodiversity</p> | <p>Potential faunal habitat was lost, transformed and fragmented due to the clearance of land and the construction of infrastructure.</p> <p>The potential attraction of predators and problem animals to the foraging chickens might interfere with natural predator-prey relationships of the area and can also cause infestation of problem animals, e.g. rodents which are carriers of certain diseases.</p> |
| <p>Floral biodiversity</p> | <p>Approximately 16 ha natural veld have been cleared for the construction of chicken houses and associated infrastructure. Trampling and the concentration of chickens around chicken houses will impact on natural vegetation.</p> |
| <p>Waste – Sewage/effluent/ hydrocarbons</p> | <p>There are two potential sources of effluent – sewage from ablation facilities and grey water from house wash down procedures. Relatively small amounts of waste water are generated during the cleaning and disinfecting of chicken houses which occurs at the end of each production cycle.</p> |

| | |
|-----------------|--|
| | The Applicant uses biodegradable detergents. All chemicals used during the cleaning and disinfecting processes does break down swiftly once they are exposed to sunlight. It was proposed to reuse the grey water for irrigation purposes. |
| Veldfire | Machinery and human activity would increase veldfire risk levels, especially during the dry seasons. |

4.2.3 Positive Impacts for the operational phase prior to mitigation

| POSITIVE IMPACTS | DESCRIPTION OF IMPACT |
|---|---|
| Socio-Economic: Economic upliftment | <p>Approximately 28 permanent employment opportunities were created during the operational phase. Approximately 60% of the expected value of the employment opportunities was accrued to previously disadvantaged individuals.</p> <p>Any proposed expansion of the free-range chicken farm will make the farms economically more viable. The farm is the abattoir's main source of meat since there are no other large-scale freerange chicken farms in the Mafuta & Katima Mulilo area.</p> |
| Socio-Economic: Food security | The local production and subsequent processing of meat at the Zambezi Poultry farm & Chicken Abattoir in Mafuta communal area boosts the Environmental Management Programme Expansion of the free-range chicken farm on Farms and economy of Mafuta and surrounds, while aiding in securing the local availability and access to an additional food source. |
| Socio-Economic: Healthier food option produced in a more humane and sustainable manner | Free-range products are generally more expensive compared to commercially produced products. The demand for free-range products are however escalating due to an increased demand for healthy living and an increased awareness regarding animal welfare. |

| | |
|--|--|
| | <p>Free-range chicken meat is a healthier food option compared to meat that is produced in the conventional intensive broiler industry.</p> <p>The operational poultry farm has thus supplied an alternative food source to the population that is produced in a more humane and sustainable manner.</p> <p>The proponent proposed to base the project development on a permaculture system which is based on core values and ecological design principles that seek to develop sustainable agricultural systems.</p> <p>The project development has the potential to set a positive precedent for sustainable agriculture in Zambezi region & Namibia as a whole.</p> |
|--|--|

As depicted in the tables above, impacts related to the operational phase are expected to mostly be of medium significance but can mostly be mitigated to have a low significance. The extent of the impacts is mostly of low likelihood. An Environmental Management Plan (EMP) will ensure that the impacts of the operational phase are minimised and included measures to reduce the identified impacts during the operation of the Poultry project activities while ensuring that the local environment is rehabilitated and employees working on the guesthouse are suitably protected to avoid accidents and injuries.

4.3.4 Mitigation Measures during Constructions Phase

All appropriate mitigation measures should be implemented by the Applicant for the duration of the construction phase.

| Objective | Mitigation: Action/control |
|---|---|
| Protection of floral biodiversity - indigenous plant species and vegetation type | Extensive earth moving activities and leveling is highly undesirable. Vegetation cover should be left intact where possible, except for development areas such as the chicken houses and roads. A certain amount of damage is expected during construction phase. |

| | |
|--|---|
| | <p>Where vegetation cover is too high, trimming back to at most to 0.5m height is recommended instead of the complete removal of vegetation.</p> <p>Disturbance or removal of the topsoil should be prevented as far as possible to reduce the risk of erosion and to prevent the impact on dormant geophytes. Wherever topsoil is disturbed, geophytes should be removed and relocated to buffer areas.</p> |
| Protection of biodiversity – ecological processes | <p>Proper construction and maintenance operations of roads and fence lines must be followed to reduce impact and obstruction of Ecological Support Areas</p> <p>It is recommended that the forage camps only be partly fenced around the chicken houses to separate chicken flocks, while maintaining ecological connectivity in the form of ecological corridors. Natural vegetation should remain intact to allow for natural storm water infiltration and dust management.</p> |
| Protection of faunal biodiversity | <p>Maintain intact habitat wherever possible. Parked construction vehicles and machinery must be inspected before they are moved to ensure that no slow- moving animals (e.g. tortoises) are killed while hiding beneath the vehicles.</p> <p>Animals must be allowed to cross the site unharmed during the construction phase.</p> <p>Refuse should be removed from site regularly.</p> |
| Storm water management | <p>The Applicant should only clear the land necessary to accommodate the development to reduce potential erosion.</p> <p>Physical disturbance to topsoil should be restricted to demarcated areas (Chicken houses, roads and associated infrastructure).</p> |
| Reduce risk of erosion | <p>Internal roads must be constructed in areas where the minimum amount of vegetation will be disturbed.</p> <p>Steep gradients must be avoided for the construction of chicken houses and associated infrastructure. Any eroded area must be repaired as soon as possible to prevent further damage.</p> |

| | |
|---|---|
| | |
| Protection of water resources | <p>Water abstraction should be kept to a minimum and personnel should be instructed not to waste water.</p> <p>Storm water from the roofs of buildings should be captured in rain water tanks. This could also be used for drinking water.</p> |
| Protection of heritage resources: Archaeology & Palaeontological | <p>If any archaeological or palaeontological (e.g. human remains, bones, teeth, fossil wood, plant- or shell-rich beds) material is found or exposed during earthmoving and construction, work must cease, the site should be moved elsewhere by arrangement</p> |
| Minimisation of visual impact | <p>The Applicant should only clear the land necessary to accommodate the development. Layout and construction of roads and infrastructure should be planned with due cognizance of the topography. Rehabilitate areas disturbed during construction to prevent visual scarring.</p> <p>A “no development” buffer area must be maintained between the chicken houses and neighbouring cropfields.</p> |
| Minimization of Dust | <p>Earthworks and vegetation clearing / trimming should not be undertaken during very windy conditions.</p> <p>Cleared land should be exposed for a minimum time possible and rehabilitated after construction. Rehabilitation should include mulching and re-vegetation to stabilise the soil.</p> |
| Minimisation of Noise | <p>All construction equipment, including vehicles, must be properly and appropriately maintained in order to minimise noise generation.</p> <p>Silencers (sound bafflers) should be used to ensure effective sound dampening, if necessary.</p> <p>Noise levels will be kept to a minimum by limiting operation of heavy earthmoving equipment and construction activities to normal working hours, and to normal work days (i.e. Monday to Friday, between 08h00 and 17h00).</p> |

| | |
|--|--|
| | |
| <p>Waste and effluent management</p> | <p>Construction vehicles and machinery should be properly maintained to prevent contamination of soil and water through the spillage or leakage of hydrocarbons such as petrol and diesel. All vehicles leaking fuel or other liquids should immediately be removed to the maintenance area and repaired. Spills should be cleaned up promptly and disposed of correctly.</p> <p>Portable toilets should be supplied for personnel during the construction phase.</p> <p>Any building & solid waste must be transported to the Katima Mulilo Council dumping site.</p> |
| <p>Minimisation of traffic impact</p> | <p>Construction vehicles may only park on specific demarcated areas. Appropriate traffic safety measures should be put into place to ensure the safety of travelers.</p> <p>Appropriate traffic warning signs shall be maintained. Trained and equipped flagmen shall be used where the access road intersects with public roads.</p> |
| <p>Socio-economic development</p> | <p>Local workers, companies and contractors should be used as far as possible during the construction phase.</p> |
| <p>Protection of Agricultural resources</p> | <p>Officials from the Department of Agriculture, water & Forestry: Land Use and Soil Management should be allowed to visit the farm without consultation or prior notice for the entire construction period.</p> <p>An agricultural specialist in natural resources should be appointed as part of the installation team. The agricultural specialist must periodically visit the site to make recommendations with regard to the protection of natural resources or identify risks and impose preventative measures for the identified possible negative impacts</p> |

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4.2.5 Mitigation Measures during Operation Phase

All appropriate mitigation measures should be implemented by the Applicant for the duration of the operational phase.

| Objective | Mitigation: Action/control |
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| Protection of floral biodiversity - indigenous plant species and egetation type | <ul style="list-style-type: none"> ▪ Overstocking should be prevented. ▪ No additional vegetation should be cleared during the operational phase. ▪ Existing roads must be used as far as possible. ▪ Indigenous species (also water-wise) must be used for the establishment of paddocks, pasture and natural barriers. |
| Protection of biodiversity – ecological processes | <ul style="list-style-type: none"> ▪ Maintain intact habitat and ecological corridors wherever possible. ▪ Provide additional natural shelter in the pasture (veld) for chickens. ▪ External shade by way of either trees or artificial structure must be provided ▪ Educate operational personnel, if the need arises, about the importance of conservation and to understand that exploitation of local resources is prohibited. |
| Prevention of veldfires | <ul style="list-style-type: none"> ▪ Open fires (e.g. cooking) should not be left unattended. ▪ Cigarette buds should be safely disposed of and not thrown into the veld. ▪ A fire break should be created and maintained around the perimeter of the farm. ▪ The Applicant should ensure that fire-fighting equipment is available in the event of an accidental fire breaking out. |
| Storm water management | <ul style="list-style-type: none"> ▪ Overstocking, overgrazing and subsequent erosion should be prevented. ▪ Storm water from the roofs on buildings should be captured in rain water tanks. This could be used for drinking water at the chicken houses, irrigation and for cleaning and disinfecting purposes. |

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| | <ul style="list-style-type: none"> ▪ Storm water diversions / furrows along internal gravel roads should be maintained. Any signs of erosion should immediately be addressed |
| Reduce risk of erosion | <ul style="list-style-type: none"> ▪ Effective storm water measures must be implemented. ▪ Any erosion sites must be repaired as soon as possible to prevent further damage. ▪ Disturbances within and around the development area caused by the construction activities should be rehabilitated once construction is completed (re-vegetated or stabilize the soil). |
| Protection of water resources | <ul style="list-style-type: none"> ▪ Water abstraction should be within the amounts stipulated by the farm's existing water use rights, including additional availability from the borehole ▪ High pressure equipment should be used for the cleaning and disinfecting of chicken houses to reduce water usage. |
| Protection of heritage resources: Archaeology & Palaeontological | <ul style="list-style-type: none"> ▪ If any archaeological or palaeontological (e.g. human remains, bones, teeth, fossil wood, plant- or shell-rich beds) material is found or exposed during earthmoving and construction, work must cease, the site should be demarcated. ▪ The material should not be removed until inspected by an archaeologist. |
| Reduce Visual impact to public roads | <ul style="list-style-type: none"> ▪ A "no development" buffer area must be maintained between the chicken houses and neighboring crop fields. ▪ The height of all buildings on site should be kept as low as possible to reduce visual impact. |
| Minimisation of Dust | <ul style="list-style-type: none"> ▪ Overstocking, overgrazing and subsequent wind erosion should be prevented. ▪ Cleared areas should be exposed for the shortest time possible. ▪ Land clearing should not be conducted under strong windy conditions. |
| Reduce Odour levels | <ul style="list-style-type: none"> ▪ Manure and bedding material should be removed from site on a regular basis by a registered contractor. ▪ No storage and processing of waste should occur on site. |

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| | <ul style="list-style-type: none"> ▪ A detailed Mortality Disposal Procedure (MDP) should be compiled and implemented by the Applicant according to which dead chickens are collected and disposed off on a daily basis. ▪ Biosecurity and optimum hygiene practices should be applied on a daily basis |
| Solid waste management | <ul style="list-style-type: none"> ▪ Chicken manure and bedding material should be removed from site on a regular basis. ▪ Dead chickens and other hazardous material should be collected from the veld and chicken houses on a daily basis. ▪ A mortality register should be kept. ▪ Mortalities should be stored in closeable bio-hazard bins at a suitable and controlled holding facility until they are removed from site and disposed of at the Katima Mulilo town council Waste Disposal Site. ▪ Workers should be instructed not to litter on site. ▪ General and household waste should be properly disposed of on a regular basis at the Katima Mulilo town council dumping site. |
| Effluent management | <ul style="list-style-type: none"> ▪ Septic tanks should be installed further than 100m on either side of any watercourse. ▪ The quantity of grey water used for irrigation purposes should be kept below the thresholds stipulated in the National Water Act ▪ Surface and groundwater quality should also be routinely sampled and analysed for potential pollutants |
| Socio-economic development - employment | <ul style="list-style-type: none"> ▪ Local workers, companies and contractors should be used as far as possible during the operational phase. |

The EMP have specific targets for each year that will be evaluated by the annual Environmental audit. The audit makes recommendations which will necessitate changes in the EMP. The EMP is and will be reviewed on an ongoing basis as new environmental challenges arise or targets/objectives are achieved. The Operations Manager will ensure that this review occurs in a timely manner.

5. DECOMMISSIONING PHASE

Once the development for Zambezi Poultry farming Leasehold have ended, the project will be subject for decommissioning. Although the lease is often subject for renewal and/or extension of the years for leasing, the building as a permanent structure will be donated to the Land owner & Mafuta community for use to any use of their choice. Furthermore, the decommissioning phase described for the purposes of this EMP consist of the following activities:

- Chicken houses and associated infrastructure should be dismantled.
- A hierarchical waste management approach should be adopted, namely:
 - re-using whole components and infrastructure,
 - recycling all useful materials such as metals, glass and plastics,
 - energy and material recovery at a gasification plant or similar,
- Safe disposal of remaining waste portions at a licensed incineration or landfill site.
- Concreted areas should be broken up and building rubble recycled or disposed of at a licensed landfill site.
- Compacted areas such as roads should be ripped and rehabilitated using local vegetation.
- Disturbed or eroded areas should be rehabilitated using suitable methods and natural local vegetation.
- All rehabilitation should be supervised by a suitably qualified professional such as a botanist, hydrologist or engineer.

6. CONCLUSIONS AND RECOMMENDATIONS

This environmental scoping report that was submitted in 2016 has addressed the key issues as identified in this EMP and no significant impacts have been identified.

6.1 Conclusion

In the current Namibia society, businesses such as the Zambezi Poultry farm for agricultural production and services have proved to have a major positive socio-economic impact on the development of towns, region the nation's development. These types of businesses are important tool in alleviating poverty and providing alternative livelihoods, especially in Namibia's community areas with a low rate of unemployment.

This project development in Mafuta area has proved to have a high potential for trading or supplying on local markets, for export to SADC countries and for export to other countries outside African continent. It also offers socio-economic benefits to the local communities with minimised ecological impacts.

Since the project site falls within the Zambezi region which is rated as a second poorest region according to the regional poverty profile (NPC, 2004) the surrounding communities can only benefit from the proposed Poultry farm in terms of increased long-term quality of life.

6.2 Recommendations

Development related impacts must be prevented or mitigated by implementing strict monitoring and control mechanisms. All permits and approval must be obtained from the relevant ministries or authorities for the operation of the Poultry Farm, such as business fitness certificates & certificates of operation from Ministry of trade. It is imperative that the mitigation measures as set out in this EMP be implemented during the planning (layout design) construction and operational phases to prevent unnecessary damage to the natural environment.

The EMP should be added to all contractors agreements and be signed by such contractors. The recommendations made in this report places the developer under a legal obligation to ensure that all mitigation measures are implemented and followed through during construction and operation of the Zambezi Poultry farm.

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