

ENVIRONMENTAL & SOCIAL IMPACT ASSESSMENT REPORT

PROPOSED INTEGRATED ANIMAL AND CROP FARMING & RELATED INFRASTRUCTURE AT MUBIZA VILLAGE, KATIMA MLILO, NAMIBIA

**Environmental Assessment
Practitioner (EAP)**



“Balancing Growth with Resilience”

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Submitted July 2020

NOTICE

This EIA Report was produced by **ERONGO CONSULTING GROUP**, for **MWAKA INTEGRATED FARMING CC**, for the development of the Proposed **INTEGRATED ANIMAL AND CROP FARMING AND RELATED INFRASTRUCTURE AT MUBIZA VILLAGE, KATIMA MLILO, NAMIBIA**.

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“Balancing Growth with Resilience”

Document Status

PROPONENT	Mwaka Integrated Farming CC Att: Emmanuel Chirenje P.O. 940, Katima Mlilo, Zambezi Region, NAMIBIA
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1. INTRODUCTION

1.1 Background

The proponent is planning to embark on an Integrated Animal and Crop Farming initiative at Mubiza Village, which is quite remote in the Zambezi Region of Namibia.

According to FAO (2020), mixed farming exists in many forms depending on external and internal factors. External factors are weather patterns, market prices, political stability, technological developments, etc. Internal factors relate to local soil characteristics, composition of the family and farmers' ingenuity. Farmers can decide to opt for mixed enterprises when they want to save resources by interchanging them on the farm - because these permit wider crop rotations and thus reduce dependence on chemicals, because they consider mixed systems closer to nature, or because they allow diversification for better risk management¹.

1.2 Permitted Development

The project would be undertaken by Mwaka Integrated Farming CC, who is the proponent with blessings from the Mubiza Traditional Authority, as enshrined under the Communal Land Reform Act 5 of 2002. Mubiza Village is in rural Zambezi Region of Namibia.

The Statutory or Legislative Rights allow the proponent to undertake this development. Although substantial parts of the Project are not expected to give rise to significant environmental effects in terms of the the Namibian Environmental Management Act 7 of 2007, the proponent, through Erongo Consulting Group, have undertaken to provide Environmental Assessment of the entire project. This approach has been adopted in order to provide robust and consistent supporting documentation for use with the various stakeholders or authorities including applications that will be required along the length of the project.

1.3 Purpose of the EIA Report

The purpose of the EIA Report is to describe how the EIA of the project will be undertaken, set out the topics that will be assessed and the geographic and spatial scope within which they will be considered. The report also sets out an overview of the methods that will be used to determine the potential significant environmental effects that will occur temporarily during the project implementation - digging of trenches, drilling, and vegetation clearing - and occur permanently because of its physical presence and operation.

1.4 Consultancy Terms of Reference

The Terms of Reference (TORs) for the proposed project is technically and legally based on the requirements set out by the Namibian Environmental Management Act (2007) and

¹ From www.fao.org/DOCREP/004/Y0501E/Y0501E00.HTM

the accompanying EIA Regulations (2012) and Section 50 of the Local Authorities Act of 1992, Act 23 of 1992, as amended. The process covered the following steps:

- *A description of all tasks to be undertaken as part of the assessment process, including any specialist studies to be included if needed;*
- *An indication of the stages at which the Environmental Commissioner is to be consulted;*
- *A description of the proposed method of assessing the environmental issues and alternatives*
- *An identification of all legislation and guidelines that have been considered in the preparation of the scoping study;*
- *Description of the environment that may be affected by the activity and the manner in which the physical, biological, social, economic and cultural aspects of the environment may be affected by the proposed activity*
- *A description of environmental issues and potential impacts, including cumulative impacts that have been identified*
- *A draft Environmental Management Plan that complies with EMA and its Regulations;*
- *The nature and extent of the Public Consultation processes to be conducted during the assessment process.*

It should be noted that the ToR and scope of services required the Environmental Impact Assessment and production of EMP for the proposed development, and this included extensive and exhaustive public consultation process.

1.5 The Environmental Assessment Practitioner (EAP)

Erongo Consulting Group is one of Namibia's leading Environmental, Sustainability and Management Consultancy Company founded by previously disadvantaged Namibians.

The company combines local experience with a regional and global knowledge base constantly striving to achieve inspiring and exacting solutions that make a genuine difference to our clients, the end-users, and society at large. The company works across the following markets: Buildings, Transport, Planning & Urban Design, Water, Environment & Health, Energy and Management Consulting.

We partner with our clients to create sustainable societies where people and nature flourish. With our unique combination of technical excellence and socio-economic insights we deliver enduring structures, resource-efficient solutions and socially cohesive communities for today and tomorrow.

We have a multidisciplinary approach to what we do and what we aspire to achieve. We work to create a sustainable society where improved quality of life and economic growth is enabled by innovative and durable solutions to the most pressing needs, challenges and concerns for businesses, public institutions and people.

Often these challenges are related to the physical environment in which life unfolds – natural resources, infrastructure, buildings and structures, urban spaces – and our ambition is to help drive a sustainable transition towards a more resource efficient future.

1.6 Consultation

Specific consultations (direct and indirect) have been undertaken to inform this EIA process. Newspapers, Facebook Pages, WhatsApp, Notice Boards and posters were used to reach out to Interested and Affected Stakeholders. The intentions for consultation during the EIA process have been included within each of the topic assessment chapters. The Newspaper article calling for Public Consultation appeared in the **New Era of 20 and 29 July 2020**. This was coupled with the extensive use of Facebook.

The BID was shared with those who had shown some interest in the project. However, no comments were received from the IAPs who had requested for the document. The proponent engaged Erongo Consulting Group prior to the commencement of the main activities. Therefore, it should be noted that this exercise was carried out and drafted before any development has taken place on the ground.

The EIA Consultant could only identify issues observed on site as well as from discussions with and investigations from IAPs / stakeholders who were directly and indirectly affected by the whole development.

General consultation process for the project included a series of high-level discussions with the Proponent, Zambezi Regional Council, Ministry of Agriculture, Land and Forestry, Ministry of Environment and Tourism, and, in some cases, Mwaka Integrated Farming Project Management Team.

The Consultation employed a triangulation of qualitative and quantitative research methods. This ensured that evidence from multiple sources will be cross-checked and searched for regularities (O'Donoghue and Punch 2003). The methodology consisted of three sections: interviews, case study. The interviews aided the EAP in learning more broadly about the proposed development and its related infrastructure.

1.7 Report Content and Structure

In arranging the content of this Report, and therefore also of the Environmental Management Plan (EMP) that will follow, the aim has been to set the chapters in a sequence that presents information to the reader in a logical order. This also facilitates cross reference between chapters with related content. It should be noted that, the information in this Report is based on the currently available baseline information provided by the Proponent and the Project Management Team, and our independent judgment as the EIA Practitioners.

1.8 Ownership

In terms of the Communal Land Reform Act 5 of 2002, the proposed site is under the jurisdiction of the Mubiza Traditional Authority and Permission to Occupy was recommended by the Mubiza Traditional Authority.

- The application for Leasehold was made to the Ministry of Land Reform (Zambezi Communal Land Board)
- The site is not developed and has the Total size of about 100 hectares

2. METHODOLOGY OF THE STUDY

Taking into account the multi-sector project activities planned, and the vastness of the farming block, the assessment was divided into three themes namely:

- **Socio-culture:** to assess the impacts of the various project activities on the socio-cultural norms of the local community.
- **Ecological:** to assess the inputs of the various project activities on the ecological status of the area.
- **Infrastructure:** to assess the impacts of infrastructure development on the ecological and social aspects of the area.

2.1 Planning

The team, initially comprising Project Managers, Zambezi Regional Council, and Traditional Leadership reviewed the terms of reference for the team in general and for each theme group which mainly included undertaking a reconnaissance study, data collection, data analysis and report writing.

2.2 Reconnaissance Survey

The team undertook a study tour to obtain a general impression of the study area, and to note the significant environmental issue that would require further investigation.

2.3 Scoping Exercise

Two stakeholder consultative meetings were held in Zambezi Region. This comprised the following Zambezi Regional Council represented by Dr. Calvin Mukata, Deputy Director; Mubiza Traditional Authority represented by Induna Banda; Mubiza Project Kalombwana Villages) represented by Lister Chaka (land owner), Neighbouring Villages represented by Julia Chaka

The Purpose of the Study

Planning for Data Collection

Following a review of the reconnaissance survey, the significant environmental issues were presented and refined in plenary sessions. Based on the agreed sets of environmental issues the groups formulated action plans for their data collection process.

2.4 Data Collection

Both primary and secondary data were collected.

2.4.1 Primary Data

- (a) **Direct Observation:** This process involved the noting of the ecological, social and economic factors as the groups walked, flew over and drove through the area.
- (b) **Aerial Observation:** This process involved the noting of ecological social and economic factors using Google Map.

- (c) **Transect Walks:** The groups walked through some parts of the study area in the company of community members who provided information on the prevailing social and economic lifestyles in relation to land use.
- (d) **Focus Group Discussions:** The groups facilitated focus group discussions that included local traditional leadership and select community members. This Process was to yield qualitative information on community perceptions of the proposed development.
- (e) **Semi-Structured Interviews:** Semi-structures interviews were made to obtain data from institutions including the local authority, and central government agencies as well as semi-government institutions.
- (f) **Consultations:** The EAP made consultations with stakeholder agencies for expert advice.

2.4.2 Secondary Data

The team made reference to secondary sources that included Topographic Maps, Project reports, Administrative reports, as well as text materials.

3.4.3 Team Report and Feedback

Following data collection the term met in plenary session to review in details the data finding and discuss the possible environmental imputes and mitigation measures.

3.4.4 Final Report Compilation

A report-writing Team compiled the draft Environmental Impact Assessment Report. After this process, the draft report was to be subjected to Public Scrutiny.



3. PROPOSED PROJECT DESCRIPTION

The development will directly take place at Mubiza Village in Zambezi Region.

Site Coordinates:

- **Latitude:** 17°36'47.3"S 24°26'11.1"E;
- **Longitude:** -17.613132, 24.436425

The location is communal in nature, and isolated from the general public and any infrastructure. It directly falls under the jurisdiction of the Mubiza Traditional Authority. The boundaries the development is clearly depicted on the Google Earth picture, Figure 1.1.

3.1 Description of the Proposed Activity

The proponent wishes to develop an integrated animal and crop farming initiative on Mubiza Village, and the proposed development cannot take place without an Environmental Clearance Certificate as promulgated by the Environmental Management Act 7, of 2007 and its Regulations as well as the Four Cornerstone of the Earth Summit.

The proposed development, though to be developed in phases, will entail the following:

- 100ha of land will be fenced, of which about 60ha will be cleared for infrastructure development, and 40ha to be fenced and reserved for the existing game animals.
- If more land is acquired / offered in the near future, the Proponent intends to accommodate more wildlife to be part of this sanctuary as a conservancy.
- Animals to be in the reserve are as follows.
 - Eland, buck, springbok, warthog, Ostrich, Zebra, Giraffe.
- About 2,500 Crocodile ponds, water to be fed by 6x Boreholes at about 50cum³ per week;
- Water supply, mainly from 6x Boreholes which will be drilled on the Farm;
- Rainwater to be harvested into reserve acquires. About 2m deep.
- Wastewater to be stored in oxidation ponds and trickle filter System will be used to recycle water for watering the Fodder garden.
- The infrastructure will be connected to a 11kVa by Nored mains;
- Complementary power will be harnessed from Solar panels at 0.5MW estimate.
- Water heating of ponds to be solar powered, water pumps to be electrified for low noise (pollution)
- Food processing unit with Abattoir, waste water to be processed for irrigation.
- Crop irrigation water will primarily be drawn from reclaimed water.
- Tree plantation to be part of the garden where the following trees will be nursed and donated to local communities, schools, etc.
- The Project will also plant own trees for fodder e.g. Moringa olifera; Acacia galpini, Ficus

3.2 Description of the Site

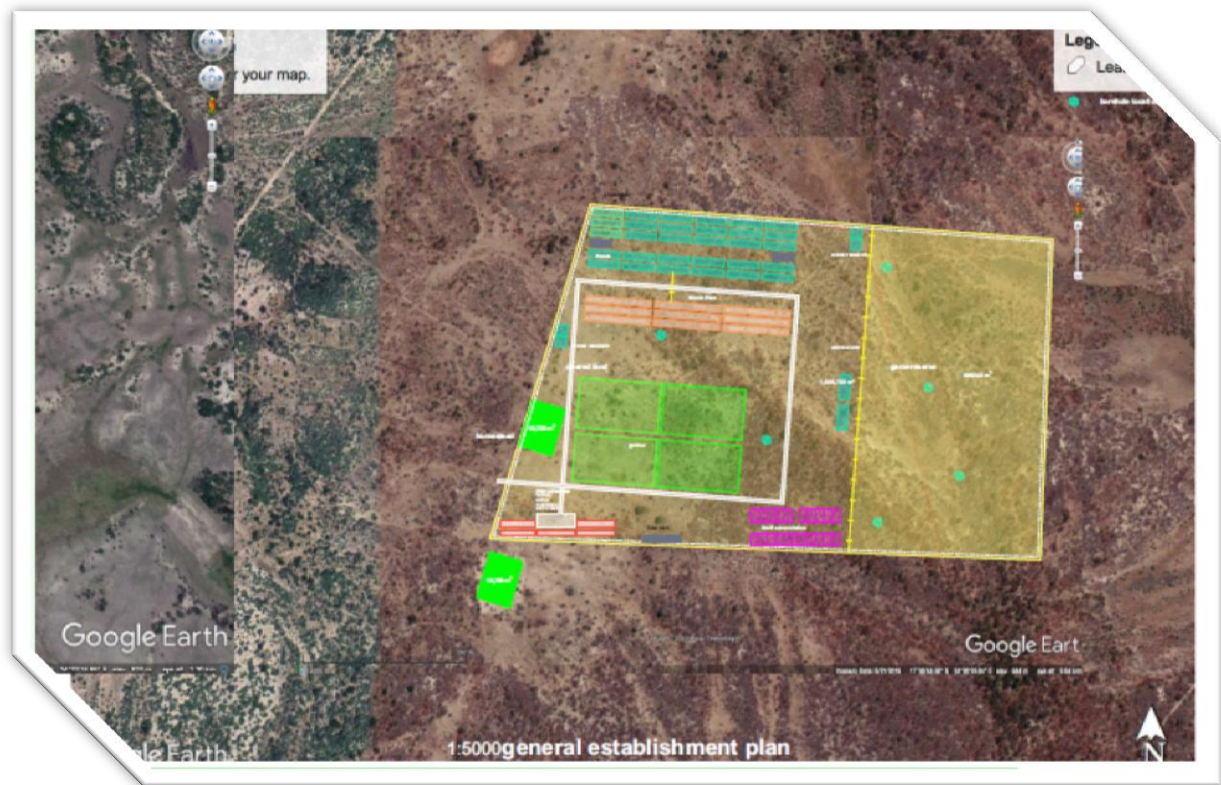


Figure 3.1: The location of the site in relations to the existing structures

The identified piece of land is remote, isolated and regarded as communal, and the Government of Namibia or relevant Government Ministries haven't earmarked the piece of land for any future development.

3.3 Location of Activity on Site

The proposed development will complement the surrounding area. Local, Regional and International tourists and residents will make use of the proposed development. Adding such a development to the area will add to the quality of lives of the residents and broaden the tourism scope of the Zambezi Region and Namibia at large.

The proposed development layout is designed to fit the shape and size of the site making it suitable for proposed development and related infrastructure.

The site is on 100 hectares of communal land, and the terrain is virgin, rugged and rectangular in design. Bulk services will be provided on site (privately) - water, sewerage, electricity.

3.4 Biological Aspects

The site is located in a communal land that has been in existence for a long time. This environment has slowly transformed from the natural environment to a human habitat now, which has caused some minimal wipe out of the natural habitat.

The identified piece of land is pictorially illustrated below in **Figures 3.2 - 3.4**. The pictures vividly show some of the vegetation and terrain on the proposed Mubiza Village Farm in the Zambezi Region of Namibia.





Due to the existing character of the area, it is therefore anticipated that the proposed development will not cause any negative biological or environmental impact. About 100ha of land will be fenced, of which about 60 hectares will be cleared for infrastructure. The remaining 40ha will be reserved for the existing game animals.

The proposed activity may affect the following biological aspects:

- **Negative:** bushland will be cleared to pave way for infrastructure development and farming purposes
- **Positive:** No major impacts will be generated by proposed development as it will take place in a remote setting
- **Positive:** The development is not located to any biologically sensitive areas

3.5 Social and Economic Aspects

Integrated farming system (IFS) is a cross-linked farming system where farmers use high-quality organic food and renewable energy. The main principle of such system is to reduce pollution and increase income by combining different types of farming².

Another factor to consider will be **water-based systems** that promote efficient utilization of nutrients and fuel production. In aquaculture, fish breeding can be mixed with livestock care, as well as growing vegetables. There are many successful stories of farmers who decided to rear fish and ducks in ponds; this integration automatically reduces the cost of feeding the ducks. They, in turn, provide water with quality manure for the fishes. The

² Read more: <https://www.legit.ng/1129268-advantages-disadvantages-integrated-farming-system.html>

ducks also keep the water from weeds, insects, snails and frogs that could harm or inconvenience the fishes.

The project will also combine crocodile and horticulture. Crocodile manure creates a favorable microflora in the pond for the reproduction of fish and enriches the soil with useful substances. Weeds are considered quite a serious problem in ponds, so they can serve as food for pigs. Many animals can be a source of inexpensive fertilizers that can be put into good use on the farm, they consume and digest a lot of food with useful enzymes that do not lose their nutrients after defecation.

As has been noted by examples above, the main principle in all cases is economical waste-free production. It sounds reasonable and profitable, though this has pros and cons.

3.6 Advantages of integrated farming system:

- Such farming system increases production to meet the demands of Namibians.
- Proper processing of waste and related substances increases the profit of farmers. Intensification of crops growth maximizes income in relation to area, time and efforts.
- Soil remains fertile for a long time due to the correct use of organic waste. Most of the waste is converted, has a value and used within the framework of the integrated system.
- Integrated farming system ensures influx of income. This means that within a year it will be possible to make profit constantly from different agricultural sectors with separate seasons. The main thing is to choose the right spheres for work so that there are no idle times and pauses without income.
- The use of by-products makes the system more stable. The potential of the soil, which plays the role of an industrial base, is preserved.
- You can produce all kinds of healthy foods on just one farm; the products will be fully enriched with various useful components that the human body needs. This method of improving agricultural productivity is absolutely safe and environmentally friendly.
- The amount of waste is minimized. In such a setting, there is little decaying waste and pollution in comparison to other production methods.
- There is no need for excessive use of chemical fertilizers and pest control agents, so the water, soil and air remain clean.
- IFS opens up opportunities for the development of agro-industrial complex and diversifying national production. Such type of farming system is a promising foundation for the development of new progressive technologies, leading us to the future safer and more profitable farming. Modern farmers often rely on technologies and need their improvement, however, the cost of getting them raises the need to try new ways of obtaining profit.
- Alternative sources of energy can be used, reducing dependence on minerals. Utilization of organic substances is an efficient way of producing biogas. Thanks to this, it will be possible to postpone the crisis in the energy sector.
- When all plots of land are used rationally, livestock is always provided with food.

- New jobs will appear, minimizing the problem of unemployment; human labor will be needed throughout the year. If a farmer works in several industries at once and one of them develops rapidly, the others also automatically grows.

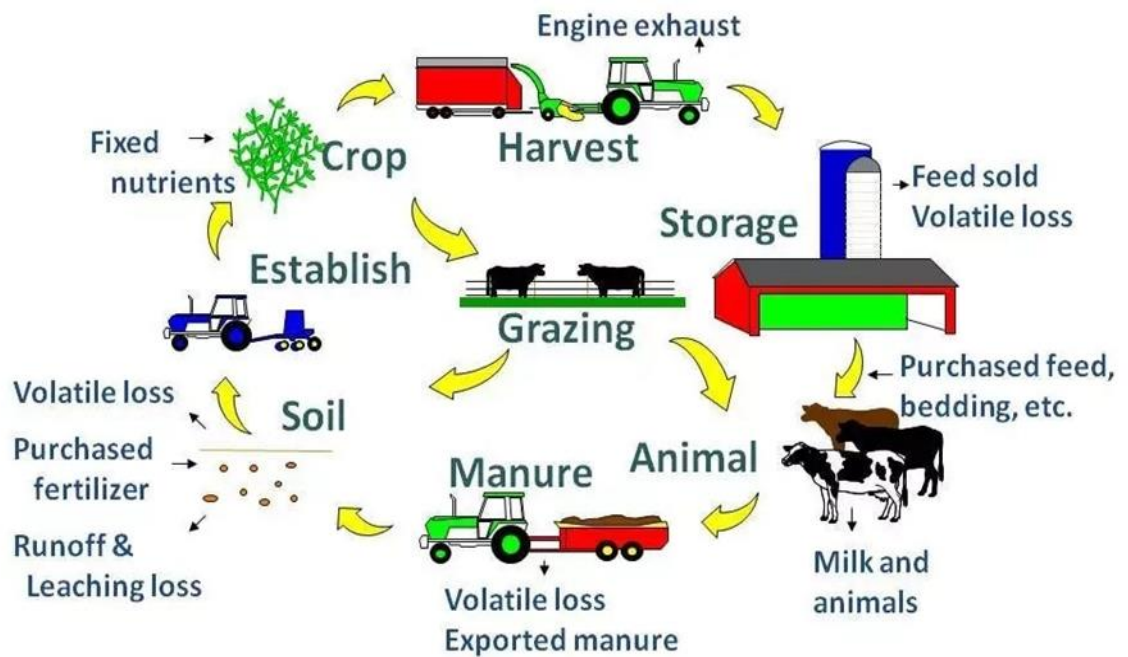


Figure 3.5: Integrated Farming Ecosystem or Value Chain

Of course, there is no perfect system, so there are some obstacles that should not be overlooked:

- When planning to receive double benefits, one should also be prepared to bear double responsibility as all the different spheres the farmer chooses to combine will have their own specific features.
- It often happens that fish farming, cattle rearing and plants farming contradict each other. For example, plants should not be treated with substances that can harm animals.
- It is necessary to thoroughly understand what you are going into. For example, if you plan to improve your yield with the help of manure, it is important to know how much is needed to avoid overdoing it, which will bring more harm than good. To prevent pollution, you need to be good at management and care.
- Scientists argue about the benefits of integrated farming. The process must be well thought through, down to the smallest details, so as to not contradict the norms of public health. Some experts say that combining birds, pigs and fish can cause diseases, such as influenza. It is known that human and avian influenza can be mixed in the body of a pig and new deadly viruses can arise in the process of mutation. There is no exact confirmation that this would happen, however, it is better to be cautious. As a security measure, farmers must abstain from combining pigs with birds.

Every advantage and disadvantage listed above is important, so always remember them if you plan on starting your own farming business. However, this is a quite promising industry, so it makes sense to work on obstacles and take advantage of opportunities.

3.7 Cultural Aspects

There are no historical or heritage sites in the vicinity or within the 5-10km radius. No buildings have no architectural significance or any importance within the immediate environment or the 2 km radius to the local community.

The proposed activity may affect the following economic aspects:

- **Negative:** The development will have minimal negative aesthetic view on the whole area.
- **Positive:** No objections were received from the public; therefore, the proposed activity is in accordance with the community’s values, norms, and cultural principles.

3.8 Mitigation of Effects on Current Operations

It would be a fair assessment to consider the loss of grazing due to the sale of subdivided land. The applicant has considered the impact that it may have on the current cattle farming operations as well as potential mitigation measures. Unbeknownst to this subdivision consent application, mitigation measures have been implemented for last few years.



4. DESCRIPTION OF THE RECEIVING ENVIRONMENT

The Chapter provides an overview of the baseline biophysical and social environmental conditions, with which the proposed project will interact. This information has been sourced from observations made during a site visit and existing literature from previous research conducted in the area. This chapter also identifies sensitivities pertaining to key environmental features as well as potential impacts resulting from the proposed project in relation to these sensitivities.

4.1 Biophysical Environment

4.1.1 Climate

In contrast to the rest of Namibia, the Zambezi Region has a hot tropically humid climate with higher rainfall, lower evaporation and warmer winters.

Rainfall

Even though the Zambezi Region receives more precipitation, rainfall is highly variable from year to year and from one place to another. It also experiences periodic droughts. Average annual rainfall in the landscape is around 500 - 650 mm. Almost all rain falls in the summer months (November to April), peaking in January and February.

Temperature

During the summer months the average temperature during the day reaches 35°C, falling to about 20°C at night. In winter the daytime temperature rises to around 28°C, but the nights can be comparatively cold, at 7° C or less.

Topography and soils

The major feature of the Zambezi landscape is extensive forest, savannah sands with associated flood plains, channels and deposits which have resulted in producing six major landscapes. The site area represents two of these landscapes:

- Savannah forest with associated grass
- Sandy soil

Surface and Ground water Hydrology

The site is dominated by heavy sandy and dry savannah and there is no availability of surface water in the area. At the same time, the area is not prone to flood, hence the underground water levels is uncertain and could only be predicted and/or estimated by the hydrological expertise for water sources.

4.2 Landscape Characteristics

4.2.1 Vegetation

The Zambezi region is considered a semi-arid tropical savannah ecosystem with very distinct wet and dry seasons. Vegetation types in the Zambezi region is characterised by soils, flooding and fire. The land types in the Zambezi shows considerable variation in

terms of abundance and size of plant species and communities identified to provide an overview of the dominant plant species and communities (Mendelsohn et al 1997) the two vegetation units represented at the site area:

- Zambezi grassland – terminalia sericea
- Heavy sandy

Zambezi's natural vegetation resources provide people with many resources. Most resources are used for domestic purposes to the benefit of households. But items are also sold to earn cash income. The most important product is for grass and wood. About 88% of all the homes are constructed from wood, 78% of homes are thatched with grass or reeds and 96% of all households use firewood for cooking, Kraals and fences are constructed using timber harvested from local trees, mainly *colophospermum* Mopane and terminalia sericea (silver clustwer leaf).

Other resources are used less frequently or by smaller number of people. Fruit and nuts from a large number of plant species as well as water rely bulbs are consumed domestically and also sold. Plants are also collected for medical purposes. Sleds and dug out boats are also made of wood. Palm leaves are used to make baskets, both for domestic use and for sale in the export market.

The site where the project is proposed for development is characterized by some important plant species that are commonly found in the Zambezi (Caprivi) region. Some of the plant species found at the area are listed below;

4.3 Birds

As a result of the unavailability of the lack of surface water on the site, the area or the proposed site does not have abundance of bird species. Birds are mostly confined by the river side of the mighty Zambezi River.

4.4 Wildlife

This area is situated closest to the town boundary of Katima Mlilo; the area does not have any wildlife species. There is only availability of few and small livestock's that graze in the area during the wet seasons when the grazing land or pasture is good. Domestic livestock animals such as cattle and goats are some of the animals that can be observed in the area. Wild animals are mostly found in the wetlands of the East Zambezi region where they possess great value to the local communities in terms of Tourism attraction in the area.

4.5 Agriculture

There is no any commercial and or subsistence agriculture taking place on or close by the proposed project area

4.6 Socio Economic Profile

4.6.1 Population

The population of the Zambezi Region has grown from 79,826 in 2011 to 90,596 in 2011. This is an annual growth rate of 1.3% which is slightly lower than the national average of 1.4% (NSA, 2014). The region has seen some fluctuations in its population numbers in the past two decades. There are most likely attributed to a combination of regional boundary change, political conflict / uprising, return to stability (people moving back), and out-migration towards perceived better employment opportunities elsewhere in the country.

In 2011, there were a significant number of non-Namibians (10%) living in the Zambezi Region. The majority originate from Zambia (70%) while 15% were Angolans (NSA, 2014). The people from the Zambezi Region are descendants of Zambian kingdoms (Harring & Odendaal, 2012) and therefore their traditional linkages to Zambia are much stronger than to the other neighbouring countries.

The population density of the region was 6.1 persons per km² in 2011, which is much higher than the national average of 2.6 persons per km², indicating possible land use pressures (NSA, 2014). Katima Mulilo Urban Constituency had the highest density amongst the constituencies with 631 persons per km². Katima Mulilo is the only major urban area and its population has increased from 22,134 people in 2001 to 28,362 in 2011; the majority of the population (69%) still lives in the rural areas. Rural to urban migration is happening across the country as people move to seek job opportunities and improved infrastructure and services.

The constituencies with the next highest population densities were Katima Mulilo Rural and Kabbe North, both with 8 persons/km², and this is largely due to their proximity to Katima Mulilo and Zambia where trade takes place.

With 69% of the Zambezi Regions' population living in the rural areas, the main source of income and livelihood support is from subsistence farming. Approximately 26.3% of the rural population depends on livestock farming and 52.9% depend on crop cultivation (NSA, 2012). The long history of subsistence farming for both livestock and crop cultivation is also further enforced by the strict regulations for export of meat from the region due to the existence of foot and mouth disease. There have been recent investigations and studies to find means to improve the livestock sector and to stimulate the commercialization of the sector in the region.

There are two quarantine camps at Katima and Kopano. The quarantine camps have been established to improve the marketing of cattle. Since the Zambezi Region is communal land, the Ministry of Agriculture, Water and Forestry provides certain services to the communal farmers such as agriculture development, extension services, veterinary services and agriculture planning.

These services are further supported by various NGO's operating within the region. In the Zambezi Region, crop cultivation is dryland cropping that is dependent on the rainfall for water. Typically, households plant between one and four hectares of mostly mahangu, sorghum and maize.

The Zambezi Region is a popular tourist destination, especially for wildlife viewing, trophy hunting and fishing activities. However apart from trophy hunting, the tourism sector is still very much undeveloped in spite of its vast potential. A unique selling point for the region is the ever-growing conservation efforts, the vast amount of wildlife (particularly elephants, buffalos and aquatic species that near endemic to the region) and the beautiful scenery along the river. There are about 15 tourism establishments not directly in the landscape area. The surrounding area has a number of tourism attractions including wildlife and big rivers.

Even though the majority of the Zambezi population live in the rural areas (69%), the main source of household income across the region are from wages and salaries (30%), 25% from non-farming business activities, and 21% from farming activities. This varies quite significantly between constituencies, which gives the percentage of households which obtain their main income from farming.

5. NAMIBIAN LEGAL REQUIREMENTS

The Policy, Legal, and Administrative framework requirements for EIA are defined by select Namibian and international relevant policies and laws which may influence or regulate certain aspects of project.

5.1 Legislative Framework

The pursuit of sustainability, with respect to any development, is guided by a sound legislative and policy framework. This section provides a review of applicable and relevant Namibian legislation, policies and guidelines. This review serves to inform the proponent of the requirements and expectations, as laid out in terms of these instruments, to be fulfilled before the proposed project may commence. The findings of the abovementioned review are summarised below.

Table 5.1: Namibian Legislation relevant to the project

LEGISLATION/ GUIDELINE	RELEVANT PROVISIONS	IMPLICATIONS FOR THIS PROJECT
– Namibian Constitution First Amendment Act 34 of 1998	<i>“The State shall actively promote... maintenance of ecosystems, essential ecological processes and biological diversity of Namibia and utilization of living natural resources on a sustainable basis for the benefit of all Namibians, both present and future” (Article 95(l)).</i>	Ecological sustainability should inform and guide this EA and the proposed development.
– Environmental Management Act EMA (No 7 of 2007)	<ul style="list-style-type: none"> – Requires that projects with significant environmental impact are subject to an environmental assessment process (Section 27). – Details principles which are to guide all EAs. 	The EMA and its regulations should inform and guide this EA process.
– Environmental Impact Assessment (EIA) Regulations GN 28-30 (GG 4878)	<ul style="list-style-type: none"> – Details requirements for public consultation within a given environmental assessment process (GN 30 S21). – Details the requirements for what should be included in a Scoping Report (GN 30 S8) and an Assessment Report (GN 30 S15). 	
<ul style="list-style-type: none"> – Forestry Act 12 of 2001 – Nature Conservation Ordinance 4 of 1975 	<ul style="list-style-type: none"> – Prohibits the removal of any vegetation within 100 m from a watercourse (Forestry Act S22 (1)). – Prohibits the removal of and transport of various protected plant species. 	Even though the Directorate of Forestry has no jurisdiction within Townlands, these provisions will be used as a guideline for conservation of vegetation.
– Labour Act 11 of 2007	Details requirements regarding minimum wage and working conditions (S39-47).	The proponent should ensure that all contractors involved during the construction, operation and maintenance of

– Health and Safety Regulations GN 156/1997 (GG 1617)	Details various requirements regarding health and safety of laborers.	the proposed project comply with the provisions of these legal instruments.
– Public Health Act 36 of 1919	Section 119 states that “no person shall cause a nuisance or shall suffer to exist on any land or premises owned or occupied by him or of which he is in charge any nuisance or other condition liable to be injurious or dangerous to health.”	
– National Heritage Act 27 of 2004	Section 48(1) states that “A person may apply to the [National Heritage] Council [NHC] for a permit to carry out works or activities in relation to a protected place or protected object”.	Any heritage resources (e.g. human remains etc.) discovered during construction requires a permit from the NHC for relocation.
– Burial Place Ordinance 27 of 1966	Prohibits the desecration or disturbance of graves and regulates how bodies may be unearthed or dug up.	Regulates the exhumation of graves.
– Water Act 54 of 1956	The Water Resources Management Act 24 of 2004 is presently without regulations; therefore the Water Act No 54 of 1956 is still in force: <ul style="list-style-type: none"> – Prohibits the pollution of underground and surface water bodies (S23 (1)). – Liability of clean-up costs after closure/ abandonment of an activity (S23 (2)). 	The protection of ground and surface water resources should be a priority. The main threats will most likely be concrete and hydrocarbon spills during construction and hydrocarbon spills during operation and maintenance.
– Town Planning Ordinance 18 of 1954	Subdivision of land situated in any area to which an approved Town Planning Scheme applies must be consistent with that scheme (S31).	The proposed use of the project site must be consistent with the Zambezi Regional Council Planning Scheme (2012).
– Townships and Division of Land Ordinance 11 of 1963	Details the functions of the Township Board including what they consider when receiving an application for Township Establishment (S3).	The proposed layout and land uses should be informed by environmental factors such as water supply, soil etc. as laid out in Section 3.
– Road Ordinance 1972 (Ordinance 17 of 1972)	<ul style="list-style-type: none"> – Width of proclaimed roads and road reserve boundaries (S3.1) – Control of traffic on urban trunk and main roads (S27.1) – Rails, tracks, bridges, wires, cables, subways or culverts across or under proclaimed roads (S36.1) – Infringements and obstructions on and interference with proclaimed roads. (S37.1) – Distance from proclaimed roads at which fences are erected (S38) 	The limitations applicable on RA proclaimed roads should inform the proposed layout and zonings where applicable.
– Atmospheric Pollution Prevention Act (Act No 45 of	<ul style="list-style-type: none"> – Limitations imposed on working hours, or prohibiting certain activities or methods of working 	<ul style="list-style-type: none"> – The proponent must ensure the contractors address explosive reagent safety and best practices related to

<p>1965).</p> <ul style="list-style-type: none"> - Explosives Act 26 of 1956 Explosives Regulations; 	<ul style="list-style-type: none"> - The Notices will be done according to the Act on the blasting times and use of blasting materials 	<p>environmental management awareness.</p> <ul style="list-style-type: none"> - Blast crews and engineering staff should be aware that nitrates and ammonia are generally the compounds of greatest concern for water quality
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5. ALTERNATIVES

The proponent has been engaging the Ministry of Agriculture, Water and Forestry to determine the best site for the proposed Township and Related Infrastructure development. The identified piece of land came out as the most suitable considering its size and location, and” the need to have that very piece of land get developed”.

5.1 No-Go Alternative (Do Nothing Alternative)

Should the proposed development not take place, serious consequences can be expected, as there will be slow pace of development in line with the Harambee Prosperity Plan and other developmental initiatives as anticipated by the Central Government of Namibia and the UN. This might indirectly affect socio-economic development and may lead to service protests by the local communities.

The site is idle and not being utilised for any economic purposes, and its far away from the residential structures / infrastructure or activities.

It should be noted that the identified piece of land is currently not developed, and the proposed development is the only suitable infrastructure to be accommodated on the site.

5.2 Site Alternative

Due to land availability and service connections, the proposed site, Alternative 1, is the only site that has been identified for the township and related infrastructure development or establishment during the consultation process with the Proponent. Therefore, no alternative sites have been identified or considered during this study.

5.3 Technology Alternative 1:

Due to the type of project, no alternative technology can be considered.

5.4 Selection Process

Consultation meetings have been held with the Proponent and relevant role-players to determine the most suitable area available for the establishment of the township. Economic restraints, existing infrastructure and available land were major constraints on the selection process.

5.5 Location alternatives

The Site was chosen on its merit due to its suitability and also as a result of the current land use. The Area is currently undeveloped and is the perfect area for the proposed development considering its strategic location. Besides, there is no such area in the Zambezi Region that can accommodate such a development.

6. PROJECT FINDINGS/IMPACTS

The assessment considered the major components of the project & how they would impact upon the environment. The components considered include infrastructure development, road and electricity solar panels / grid, and agro-processing industry, human settlement, service centre, irrigation and agriculture production.

6.1 Impacts Of Infrastructure Development

Infrastructure development will occupy about 60 hectares out of 100 hectares. The impacts associated with this area are:

- **Loss of potential agricultural land:** Inundation will reduce some of the planned farm portions (Neutral).
- **Environmental Degradation:** This will arise from increased pressure caused by human activities.

6.2 Impact of Road Construction

The road infrastructure development will comprise the expansion of the existing primary feeder roads and the construction of a network of internal access roads as described below.

Extension of the Road width

The extension of the road width, which is expected to be carried out on the three primary feeder roads (described below), should upgrade their capacity from largely on-way to two-way traffic flow.

Opening up of Access Roads

The proposed agricultural development extension will require the opening of the largely virgin land for Access Road construction. Intensive construction of these roads (about 6m wide) will take place in the virgin pieces of land. This scale of agricultural production requires road accessibility.

The development of the above road infrastructure is likely to have significant impacts both in the short- and long-term. Table 6.1 summarizes these impacts (both during and after construction) and the suggested mitigation measures.

(i) Ecological Impacts:

Vegetation clearing and mechanized material excavation will result in soil erosion and increased runoff into river drainages. The short-term consequence of this is the sedimentation of riverbeds and disruption of aquatic life. More intensive Access Road development is, in the long-term, likely to cause disruptions to wildlife habitats and the migratory bird routes due to the project taking place in a virgin and communal piece of land.

(ii) Social Impacts

The development of the primary roads is likely to attract a proliferation of unplanned roadside settlements both within and outside the project area for commercial and social benefits. Areas with a considerable density of settlements along these routes are likely to experience growth.

Table 6.1: Analysis of Short-Term and Long-Term Road Construction Impacts

POTENTIAL IMPACTS	HOT SPOT	MITIGATION MEASURES
Soil erosion as a result of vegetation removal:	All sloppy areas where the roads pass	Construction of lead-off and storm drains and culverts.
Population increase along the road resulting in poor land use.	Areas along the roads	<ul style="list-style-type: none"> ○ Systematic farm allocation along the roads to reduce haphazard settlement ○ Establishment and maintenance of road reserves
Accident risks associated with vehicular traffic and transport.	Populated areas along the roads	<ul style="list-style-type: none"> ● Establishment of speed controls and placement of road signs. ● Public awareness of road safety
Creation of new pathways for disease vectors affecting humans and animals	All livestock rearing portions and human settlements on the Farm	<ul style="list-style-type: none"> ○ Establishment of veterinary check-points and provision of veterinary extension services. ○ Sensitization of people on all health risk and prevention measures.
Disruption/destruction of wildlife though interruption of migratory routs, disturbance of wildlife habitats and noise related problem.	Mubiza Village Farm (site)	Establishment of a Mubiza Village Fam Conservation Plan, through which the general design of infrastructure
Opening up of avenues for poaching activities	Mubiza Village Farm (site)	<ul style="list-style-type: none"> ▪ Formulation of a Community based Management plan. ▪ Establishment of the whole farm as buffer zone. ▪ Capacity building of Mubiza Village Farm personnel including anti-poaching units / rangers

6.3 Construction and Operation of Electricity / Solar Grids

The proposed development will make use of solar energy to power boreholes, irrigation, and general usage.

Solar energy is considered a sustainable energy supply technology. Solar energy systems/power plants do not produce air pollution, water pollution, or greenhouse gases. Using solar energy can have a positive, indirect effect on the environment when solar energy replaces or reduces the use of other energy sources that have larger effects on the environment. The benefits of **solar energy** are clear. Not only can you save money on your electric bills – you can also reduce your carbon footprint and improve the health of those around you.

6.4 Way Leave Development Impacts

The way leave clearance will more likely have similar impact as the road network, given the closely related routing.

- **Ecological impacts:** The way leave traverses through the forests to aggravate the effects of soil erosion. Further still, there is likely to be a significant disruption of the water retention capacity of the soils, hence affecting the groundwater systems. Way leave clearance is likely to cause disruptions of wildlife habitats.
- **Social Disruptions:** No social disruptions are expected since the way leave won't interfere with any human settlement or dwellings.

Table 6.2: Impacts of Way Leave Development

IMPACTS	HOT SPOTS	MITIGATIONS
Soil erosion as a result of vegetation removal along the way-leaves.	Sloping ground on Mubiza Village Farm,	<ul style="list-style-type: none"> ○ Vegetation clearing and early burning just after the rainy seasons. ○ Clearing to be limited to allocated and specified areas of the way-lakes. (Way-leave traverses to be carefully set).
Dislocation of settlements along the way-leave.	Not Applicable	<ul style="list-style-type: none"> ○ Not Applica
Physical Disruption of wildlife habitats	Mubiza Village Farm,	<ul style="list-style-type: none"> ○ Grid layout should be discussed with MET, local Communities, Zambezi Regional Council ○ No Grid should be constructed in the Mubiza Village Farm

6.5 Other Identified Impacts

▪ Social-Economic Impact

The proposed activities are likely to impart both negative & positive impacts in the area. From infrastructure point of view, socio-economic impacts will arise from social amenities that will be provided will include services such as job creation, schools, health centres, etc.

▪ Employment Creation

One of the expected most positive impacts is the creation of employment for the local community members. It is envisaged that more than 90% of the unskilled labour will be recruited from within the catchment area. For skilled labour, priority will be given to Namibians with suitable qualifications before engaging expatriates. It is also anticipated that more jobs are expected to be created as the project progresses.

Project members of staff will also plough salaries and wages into the local economy directly through purchases of various goods and services.

- **National Economy**

The project is expected to attract many potential investors (both local & foreign) who will bring substantial capital in the area. The injection of such capital investment will have far-reaching multiplier effects on the national economy. Similarly, the export of various agro-products will significantly improve the foreign exchange status of the country.

- **Health Services**

As investors implement their activities on the Farm, it is envisaged that there will also be some improvement in the provision of health services in the project area. This will be achieved through rehabilitating existing health centres and construction of a new clinic at the Farm.

Expected impacts on health in the area will be positive & negative. The positive aspects of the impact will be improved health services as a result of rehabilitation & construction of old and new clinics respectively. On the other hand, negative impacts could arise from increased interaction between project workers (who may come from outside) and locals. This could lead to increase in transmission of communicable diseases such as COVID19, STDs, HIV/AIDS, TB, etc in the area. Perceived increase in population will result in stretching of the few health services in certain areas of the farm.

- **Education Services**

The positive impacts on education will arise from improved education infrastructure for local schools. There will be need to open at least two basic schools in the area. Improvement in educational services will encourage pupils to attend classes and will also attract teachers to work in the area. Further, job creation for parents will improve their household income base. As a result of improved household income base, parents will be encourage their children to attend school and dissuade them from opting for caterpillar collection during school days. The perceived increase in population in the area would result in shortage of educational services in the area.

Table 6.3: Impacts of siting of agro-processing and crocodile ponds facilities

IMPACT	HOT SPOTS	MITIGATION
Aggravation of solid waste problems in the area.	Mubiza Village Farm - Area planned for an Agro-processing industry and crocodile farming.	<ul style="list-style-type: none"> ○ Subject the industrial developments to specific EIA ○ Subject the Industrial development to specific EIA.
Aggravation of effluent discharge	As above	<ul style="list-style-type: none"> ○

- **Human Settlement**

The assessment of the human settlement considered the potential social changes that would result from human settlement and their subsequent impact on the environment. Population increase as a result of the influx of employment seekers and service providers would result into impacts that are related to the use of the limited natural resources, sanitation and public health facilities. Change in land tenure status from customary to state land is another social change with serious social and ecological impacts on the environment. The other social change is the tribal and ethnic interaction that would result from coming in of investors and farmers of different tribes and races in the area. This may result in cultural, tribal, religious, ethnic and traditional conflicts. The potential social and ecological impacts of the mentioned social changes and their proposed mitigation measures are analyzed in the table below.

Table 6.4: Impact of Human Settlements

IMPACT	HOT SPOTS	MITIGATION
Tendency to expand and encroach onto Protected Forests Areas, Catchments & Wetlands due to uncontrolled increase in population immigration as a result of employment and trading opportunities	Areas close to Mubiza Village Farm	<ul style="list-style-type: none"> ○ Formation of Village Natural Resource Management Committee as a local control mechanism
Encroachment on planned but not occupied farmlands	All numbered farmlands that may not be quickly taken	<ul style="list-style-type: none"> ○ Establishment of buffer zones to protected areas ○ Preparation of area land use plan
Land ownership conflicts as a result of unclear tenure procedures on unnumbered plots	All unnumbered plots which in the past fell under customary tenure	<ul style="list-style-type: none"> ○ Establishment of Project Area Management Committee to monitor and oversee distribution and occupation of both numbered and unnumbered farms.
Disruption of social linkages and cohesion as a result of destruction of local solidarity	Inter village system and its socio-cultural practices in the area	Develop social amenities which bring people together to preserve their culture and heritage
Disruption of traditional institutions	Village Headmen Chieftdom	Develop funding mechanisms that will enhance the new roles.
Increase in communicable diseases	<ul style="list-style-type: none"> ○ Villages ○ Farms ○ Service Centre 	<ul style="list-style-type: none"> ○ Strengthen Basic Health care provision ○ Sensitization in COVID19, HIV/AIDS and establishment of Mubiza Vocational Training Centre
Loss of use rights to various natural resources (forest, rivers, land, forest products)	Local communities in the project area	Provision of alternative sources of incomes and livelihoods/local empowerment
Racial, religious and ethnic conflicts	Local communities & immigrants	Develop social facilities & promote cultural integration
Increase in crime due to new investment and population increase	Commercial farms and other business centres	Establishment of Police Station & community policing in the area
Loss of political influence in matters affecting the area	<ul style="list-style-type: none"> ○ Local Traditional and Civic leaders ○ Local communities 	Promote cultural integration through civic education, social functions

▪ **Impacts of Irrigation**

Irrigation will be utilized on the farm, and the water will be for both livestock & crop production. Irrigation will thus ensure efficient, increased and sustained crop production. Apart from the reticulated water, other sources of water for irrigation are the rivers, streams, and underground water, which are readily available within the Farm.

Irrigation can basically be defined as “the artificial watering of plants.” Awareness of negative impacts likely to arise from irrigation is very crucial in ensuring sustainable development in the Farm. Impacts of immediate importance include soil erosion, salination of irrigation land and water bodies, water logging, and leaching of soil nutrients, proliferation of weeds, pollution & contamination of local groundwater.

▪ **Soil Erosion**

Soil erosion is the displacement of soil materials on the ground surface by action of moving water or air. Water movement on the ground surface causes water erosion, which is our area of concern. This impact can be exhibited by

- Loss of cultivable land
- Deterioration of water resources on cultivable land
- Loss of soil fertility as a result of washing away of humus and natural nutrients
- Flooding of valley bottoms and silting of dams, rivers and ponds.

▪ **Salination of Water & Irrigation Land**

The Farm in its current state has not been subjected to reckless land use which can escalate salinity beyond natural levels. Salinity may be defined as “the concentration of salts dissolved in water.” Salinity may occur due to the presence of a particular salt. A special kind of salinity is that caused by the pollution of land & water in various ways, especially by substances which are not naturally found in the environment (e.g. emptying of domestic and industrial waste of all kinds into rivers and refuse dumps), fertilizers.

It must be noted that groundwater also contains some salts because the water tables are formed of water which has infiltrated the soil and has leached some of its salts. The saltiness of the soluble salts present in the soil and subsoil (Hugues & De Leer, 1990). The three reasons why irrigation escalates salination are:

- The soils of the farm tend to naturally leach. Once irrigation is introduced, it will bring other mineral salts from the dams which will combine with existing salts leached in the soils. These salts will be gradually exposed on the irrigated land as the water is evaporated. The increase in the concentration of these salts will harm the crops through plasmolysis or phyto-toxication. This may also affect natural regeneration where fallow is envisaged.
- Salination of the soils may also increase through the application & spreading of other mineral salts such as chemical fertilizers. Irrigation will dissolve these fertilizers and further infiltrate them into the soils.

▪ **Leaching of Nutrients**

Where the soils are porous, as is the case with sandy soils, leaching of soil nutrients, agro-chemicals and chemical fertilizers increases. It must be noted that the parent rock of the Farm is sandstone.

▪ **Pollution & Contamination Of Local Ground Water**

Irrigation in itself will further enhance the infiltration of chemical fertilizers & other agro-chemicals into the groundwater. It must be noted that boreholes have been largely

recommended as sources of safe drinking water. If, therefore, these chemicals infiltrate the water, then both shallow wells and boreholes will be unsafe as sources of water for human use.

▪ **Proliferation of weeds**

Weed seed and plant material is generally transported by water. When irrigation occurs, this weed seed and plant material is easily drawn out of the watercourse and deposited on arable land. Some of the weed will also grow profusely along water furrows creating a bridge for insects and disease vectors for the intended crops. A good example is the water hyacinth or Kariba weed, which has been a headache to deal with in many rivers and dams along the Zambezi Valley or Escarpment.

All the above impacts have a very negative effect on the environment. It is therefore incumbent upon all the developers to ensure that they develop the conservation buffers and put in place erosion control measures in order to minimize factors that may lead to land degradation irrigation.

Table 1.5: Impact of irrigation

IMPACTS	HOT SPOTS	MITIGATION MEASURES
Soil erosion especially on sloppy grounds	Irrigated lands round water bodies	<ul style="list-style-type: none"> ○ Putting up of level-bunds on irrigated lands to ensure infiltration and reduction of run-off ○ Regulation of water application to avoid over watering ○ Create buffers of about 20 – 40 m width between cultivated land and the rivers, streams.
Water logging of soils	Irrigated lands round water bodies	Installation of and maintenance of adequate drainage system for removal of excess water
Salination of soils	Irrigated lands	<ul style="list-style-type: none"> ○ Application of appropriate cultivation method ○ Ensure that irrigated lands are not over water logged. ○ Cultivation of crops with salinity tolerance especially fruits
Leaching of soil nutrients	Irrigated lands round water reservoirs	Avoid over watering and replace nutrients through crop rotation organic fertilizer application
Proliferation of weeds	Mainly drainage lines	<ul style="list-style-type: none"> ○ Maintenance of drainage lines through weed removal ○ Construct drainage line with brick linings (this also applies furrow irrigation) ○ Monitor presence of prolific weeds such as Water Hyacinth
Deterioration of water quality in the rivers & contamination of local ground water	Downstream areas and local water tables	<ul style="list-style-type: none"> ○ Improved water, management, agriculture practices and control of inputs (Biocides & chemical fertilizers) ○ Frequent checking & control of the parameters for water quality and quantity

6.2 Impacts of Agriculture Production

▪ **Loss of Habitat & decreased Biodiversity**

A large percent of the Farm is forests will be opened up to pave way for commercial cultivation of agricultural crops and animal husbandry. When new land for agricultural and animal husbandry purposes is opened up, this will lead to loss of existing habitat and decreased biological diversity in these areas.

▪ **Loss of Soil Fertility**

The expected causes of soil fertility losses are heavy machinery utilization during land preparation, stresses induced by clearing the natural vegetation and natural land slopes.

▪ **Heavy Machinery Utilization during Land Preparation**

(i) Creation of hard pan

Ploughing is the most common method of preparing land for planting. The soil pores under the plough get closed and eventually get compacted as the process of ploughing continues. The compacted areas become thicker and harder after each ploughing operation, thus creating a hard pan. The created hard pan reduces the infiltration of water into the soil thus allowing the lateral movement of water (in this case accelerating runoff and erosion of nutrient-rich topsoil.

(ii) Introduction of new weed population

Weed infestation increases with the use of ploughs. Each time the soils are inverted, new weed seeds are exposed to the top layer which is favourable for germination. These weeds will continuously compete for nutrients with the desired crop.

(iii) Surface sealing formation

Heavy machinery tends to destroy the crumbly structure of the soil causing the soil particles to be compact, with low organic and moisture content. In this state, infiltration of water is hampered; splash and runoff increase soil erosion.

▪ **Stresses Induced by Clearing the Natural Vegetation**

Mubiza Farm will be a major integrated commercial farming project and hence, it is expected that there will be massive clearing of the existing natural vegetation. Much of the bare land will be exposed to direct raindrop and winds' impact resulting in water, wind erosion and desiccation.

▪ **Natural Land Slopes**

Slope is particularly important with arable land. The slopes of the farm are not so steep exceeding 12% restriction for arable lands.

7. PROPOSED MITIGATION MEASURES

This section summarizes the soil conservation techniques which are thought to be appropriate for the proposed development.

7.1 Mitigation on Heavy machinery Utilization

Conservation tillage implements include rippers and sub-soilers. While utilizing conservation tillage implements, it is important that contour tillage or ridging and ridge tying is appropriately followed.

7.2 Mitigation Natural Land slopes

Biological and physical conservation measures are of considerable importance for water and soil conservation. The appropriate measure is construction of level bunds along contour lines. Plant productive grasses on the contour bund for firmness. Yet grass is suitable for this purpose.

7.3 Contamination & Pollution of Soils, Groundwater & Surface Water

The agricultural commercialization of the farm is expected to consume a lot of fertilizers and pesticides per ha. Overuse of fertilizers and pesticides may result in soil acidity and pollution of water bodies such as rivers and streams in the farm. Moreover, pesticides have serious effects on the health of users, too.

7.4 Overgrazing & Soil Compaction by Livestock

Overstocked pastures are often overgrazed and the result is that land degradation becomes more serious and usually accompanied by the disappearance of valuable pasture species.

7.5 Increased Sedimentation of Local Streams & Rivers

Sedimentation of streams and rivers occur when the soil is washed down into the rivers due to erosion from upland cultivated and grazing land.

Table 6.6: Impacts of Agriculture and Animal Production and Mitigation Measures

IMPACTS	HOT SPOTS	MITIGATION MEASURES
Loss of habitat and decreased biological diversity by replacement of natural forest with agricultural crops	Farm Mubiza	<ul style="list-style-type: none"> ○ Create on farm biological diversity conservation areas, on each farm ○ Leave natural vegetation strips between cleared farm components
Loss of soil fertility, exposure of infertile sub soils and accelerated soil erosion due to use of heavy machinery for land preparation and creation construction of crocodile ponds, etc	Mubiza Farm where heavy equipment will be used.	<ul style="list-style-type: none"> ○ Biomass retention and compensation to the soils by applying Agro forestry systems suitable for commercial farm. ○ Introduction of biological and physical structures to minimize run-offs and improve infiltration.
Introduction of noxious weeds and pests in the area	Mubiza Farm	<ul style="list-style-type: none"> ○ Phytosanitary certification of all plants materials that come into the area. ○ Constant monitoring of weed and pest control ○ Provision of extension services on crop management.
Contamination and pollution of	Mubiza Farm	Provision of extension services in

soils, ground water and surface water with agric chemicals		integrated pest and disease management using both conventional and traditional control measures.
Contamination and pollution of soils, groundwater and surface water with agriculture Chemicals	All farm lands under crop production, and river systems	Creation of enough buffer zones between crop fields and rivers. <ul style="list-style-type: none"> ○ - Choice of chemicals with least residual impacts on, humans, animals and environment.
Increased Sedimentation of local streams and rivers	All rivers and streams in the farm block.	<ul style="list-style-type: none"> ○ Plough across contours ○ Apply both physical and biological soil erosion control measures ○ Apply undisturbed buffer zone of vegetation cover of 20 to 40 meters, between streams and crop fields.
Overgrazing and soil compaction by livestock	grazing upland areas	<ul style="list-style-type: none"> ○ Ensure livestock population does not exceed optimum carrying capacity of the grazing area.
Loss of plant bio-diversity due to convention of natural woodlands into pastoral lands.	Mubiza Farm	Avoid clearing of natural woodlands for livestock production and promote supplementary fodder production.

8. PUBLIC PARTICIPATION [AT A GLANCE]

8.1 Introduction

The role of stakeholder engagement in this development was greatly explored by the consultant, who explored the different elements of a Stakeholder Engagement Framework, while considering the steps, stakeholder categories, and possible options for public participation in the whole process. It is important to note that there is no single ‘magic bullet’ solution that exists for stakeholder engagement. Each situation requires thorough design and planning specifically tailored to the objectives sought for the relevant stage of a project or program. Depending on the unique situation and context, a range of different stakeholder engagement and public participation methods were employed.

The term participation typically refers to some aspect of local community involvement in the design, implementation and evaluation of a project or plan (Brown & Wyckoff-Baird, 1992). According to Smith (1983), public participation encompasses a range of procedures and methods designed to consult, involve, and inform the public to allow those that would be potentially affected by a decision or policy to have input into the process. The latter are also known as stakeholders, which include (IFC 2007):

“...persons or groups who are directly or indirectly affected by a project, as well as those who may have interests in a project and/or the ability to influence its outcome, either positively or negatively. Stakeholders may include locally affected communities or individuals and their formal and informal representatives, national or local government authorities, politicians, religious leaders, civil society organizations and groups with special interests, the academic community, or other businesses”

Stakeholder engagement broadly refers to a framework of policies, principles, and techniques which ensure that citizens and communities, individuals, groups, and organizations have the opportunity to be engaged in a meaningful way in the process of decision-making that will affect them, or in which they have an interest.

Thus, public participation can be recognised as a practice of stakeholder engagement. Stakeholder engagement and public participation are a means of achieving:

- Participatory democracy (e.g. community empowerment and providing the opportunity to develop knowledge for making informed choices)
- Transparency in decision-making process
- Community empowerment and support
- Reduced conflict over decisions between decision-makers and public groups, and between the groups
- Public participation may involve both individual and group input.

Table 8.1: Public Participation Five Elements

Courtesy: International Association for Public Participation (2007)

Element	Description
(a) Inform	Provided the general public with balanced and objective information to assist them in understanding the problem (housing shortage), alternatives, opportunities and/or solutions, which is the servicing of land.
(b) Consult	Obtained public feedback on analysis, alternatives and/or decisions.
(c) Involve	to work directly with the public throughout the process to ensure that public concerns and aspirations are consistently understood and considered
(d) Collaborate	Partnered with the public in each aspect of the decision, including the development of alternatives and the identification of the preferred solution.
(e) Empower	Placed final decision making in the hands of the public.

8.2 Call for Public Participation

The initial period for Public Participation ran between 1 July to 31 July 2020. The newspaper advert appeared on 21th and 29st of May 2020 in the New Era Newspaper.

No issues or comments were raised by potential I& Aps despite extensive communication to engage them.

8.3 Newspaper & Facebook Advertising

The Consultant advertised using the targeted approach by using the locally and nationally read and accepted Newspaper, New Era, to reach out to I&APs. See Adverts on next page, Figures 8.1 – 8.2

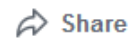
8.4 Site Notice:

Given the dispersed nature of the identified piece of land, and its isolation, and the means of communication outlined above, it was deemed NOT necessary and to display a makeshift Notice Board near the identified site.

8.5 List of Interested & Affected Parties

Table 8.1: List of I&APs - Mubiza Mixed Farming Project

NAME	ORGANIZATION / INSTITUTION	CONTACT DETAILS
Dr. Calvin Mukata, Deputy Director	Zambezi Regional Council	0811667442
Induna Richard Mutenda	Mubiza Traditional Authority	0813410317
Lister Chaka (land owner)	Mubiza Project (Kalombwana Villages)	0817504032
Julia Chaka	Neighbouring Villages	0813674882



Comment as Erongo Consulting Group CC - ...



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Erongo Consulting Group CC - Environment



Published by Mugove Emmanuel Hamadziripi [?] · 10h · 🌐

Environmental Clearance Notice

PROPOSED INTEGRATED ANIMAL AND CROP FARMING & RELATED INFRASTRUCTURE AT MUBIZA VILLAGE, KATIMA MLILO, NAMIBIA

Public Participation Notice in terms of Regulation No. 29, Section 21 under the Environmental Management Act (Act No. 7 of 2007)

Proposed Development:

Integrated Animal and Crop Farming Project

Site:

Mubiza Village, Katima Mlilo, Zambezi Region, Namibia

Site Coordinates:

Latitude: 17°36'47.3"S 24°26'11.1"E;

Longitude: -17.613132, 24.436425

Proponent:

Mwaka Integrated Farming CC

EAP:

Erongo Consulting Group

Competent Authority: Ministry of Environment & Tourism

Erongo Consulting Group has been duly appointed by Mwaka Integrated Farming CC to professionally undertake and complete an Environmental & Social Impact Assessment (ESIA) and the Environmental Monitoring and Management Plan (EMMP) in order to obtain an Environmental Clearance Certificate (ECC) as per the legal requirements of the Environmental Management Act (Act No. 7 of 2007), and Environmental Impact Assessment Regulations (GN 30 in Government Gazette 4878 of February 6th, 2012). The proposed development may not be undertaken without Environmental Clearance Certificate (ECC) as enshrined in the Environmental Management Act (Act 7 of 2007) and its Regulations.

Erongo Consulting Group CC - Environment



Mugove

Home

pasture, livestock & related infrastructure- , will have on the natural resources, eco-system, and the socio-economic dimensions of the neighboring communities and populations.

Interested and Affected Parties are hereby invited to register and participate in the public consultation process to give input, comments, and opinions. Please submit your comments in writing not later than 31 July 2020.

Commenting Period: 17 – 31 July 2020, 1700 Hours

• +264-81-277-2797 or +264-85-277-2797

• Stakeholders Engagement: Due to the prevailing COVID19 Lockdown / situation, and as a precautionary measure, no physical interface will take. Please submit your comments in writing not later than 31 July 2020.

• Email: erongoconsulting@gmail.com / info@erongoconsultinggroup.co.za

Notice **Legal Notice**

Legal Notice **Legal Notice**

ERONGO CONSULTING GROUP

"Talented Growth with Integrity"

ENVIRONMENTAL CLEARANCE NOTICE

Public Participation Notice in terms of Regulation 4(1) of the Environmental Management Act (Act 107 of 2002)

Proposed Development: Integrated Animal and Crop Farming Project
Site: Matiza Village, Katima Mulilo, Zambezi Region, Namibia
Site Coordinates: Longitude: 17 04 27 S; 24 20 11 E
 Latitude: 17 01 31 S; 24 43 42 E
Map: Meusa Integrated Farming CC
Project: Erongo Consulting Group
Competent Authority: Ministry of Environment & Tourism

Erongo Consulting Group has been duly appointed Meusa Integrated Farming CC to professionalize and complete an Environmental & Social Impact Assessment (ESIA) and the Environmental Monitoring and Management Plan (EMMP) in order to obtain an Environmental Clearance Certificate (ECC) as per the legal requirements of the Environmental Management Act (Act No. 107 of 2002), and Environmental Impact Assessment Regulations (Act No. 201 of 2002) Gazette 487 of February 9th, 2012. The proposed development may not be undertaken without Environmental Clearance Certificate (ECC) as required in the Environmental Management Act (Act 107 of 2002) and its Regulations.

The ESIA Process and the purpose of this ESIA study to identify the direct and indirect impacts that the development - Integration of crop, pasture, livestock & related infrastructure - will have on the natural resources, eco-system, and the socio-economic dimensions of the neighbouring communities and populations.

Interested and Affected Parties are hereby invited to register and participate in the public consultation process to log input, comments, and opinions. Please submit your comments in writing not later than 21 July 2020.

Commenting Period: 17 - 31 July 2020, 1700 Hours
 • +264-81-271-2717 or +264-85-271-2727
 • Stakeholders Engagement: Due to the prevailing COVID-19 outbreak/situation, we act as a precautionary measure, no physical meetings will take place. Please submit your comments in writing not later than 21 July 2020.
 Email: erongoconsulting@gmail.com or info@erongoconsultinggroup.co.na

Consulting & Operations | Project Delivery | Energy | Research | Environmental & Business | Sustainability & Resilience | DRR | Planning | Compliance | Trainings | SHEQ | Waste Management | Advisory Services | Management Consulting

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MINISTRY OF TRADE & INDUSTRY
NOTICE OF APPLICATION TO A COMMITTEE IN TERMS OF THE LIQUOR ACT, 1988
 (Regulations 14, 26 & 33)
 Notice is given that an application in terms of the Liquor Act, 1988, particulars of which appear below, will be made to the Registrar of the District of: KHARAS

1. Name and postal address of applicant:
 KEETMANSHOOP
 P.O. BOX 110
 KEETMANSHOOP

2. Name of business or proposed business to which applicant relates:
 KEETMANSHOOP
 P.O. BOX 110
 KEETMANSHOOP

3. Address/location of premises to which Application relates:
 P/REYERS BEEST
 KEETMANSHOOP
 05 AUGUST 2020

4. Nature and details of application:
 RESTAURANT LIQUOR LICENCE

5. Where application will be lodged:
 KEETMANSHOOP
 05 AUGUST 2020

6. Date on which application will be lodged:
 05 AUGUST 2020

Any objection or written submission in terms of section 23 of the Act in relation to the application must be sent or delivered to the Secretary of the Committee to reach the Secretary not less than 21 days before the date on which the application is lodged.

Send in the completed Form 2 and proof of payment (POP) once you have deposited your payment at:
 Bank Windhoek
 Acc no: 1179904901, Branch code: 481972

IMPORTANT
 • Complete Form 2 clearly in block letters
 • Make sure the application, lodgment and hearing dates are still valid before you send us the application
 • Indicate your business name as reference on the deposit slip

You can either fax to: 061-220584
 or email to: Lmeroro@nepc.com.na

REPUBLIC OF NAMIBIA
MINISTRY OF HEALTH AND SOCIAL SERVICES
Global Fund Grant
VACANCIES

The Ministry of Health and Social Services (MoHSS) with support from Global Fund Grant is looking for Dynamic, Suitably Qualified and Experienced Candidates to fill the following Vacancies:

Position	X 3 Pharmacist Grade 7
Total Cost to Company (TC)	Total Remuneration N\$30,847.75 Monthly (N\$370,173 Annually) Basic Salary N\$27,862.29 Monthly Housing Allowance N\$7,403.46 Monthly Transport Allowance N\$565.00 Monthly
Fixed Term Contract	August 2020 until 31 Dec 2020
Duty Stations	• Zambezi Region - Katima Hospital ART • Omaheke region - Epako ART clinic • Hardap Region - Mariant ART clinic
Primary Roles and Responsibilities	Overall coordination/supervision of day to day of ART/HIV pharmacy operations. Providing clinical support and medicines information to ART patients, Providing pharmaceutical HIV Care Continuum services, Support ART management at district regional and facility level, Support the roll out and use of ART Electronic Dispensing Tool (EDT), Community Adherence Groups and Community Based ART services (CBART), Ensure availability of ARVs and other pharmaceutical commodities, etc. The Full Job Descriptions Will be Provided Upon Request • Registration as Pharmacist
Appointment Requirements	Enquiries: Mr Stanslaus Madende on 061-203 2858 OR Ms. Elise Jele on 061-2032894

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1. Name and postal address of applicant:
 FELICIANA NDAPWA HANINDAVA
 P.O. BOX 291
 RUNDU

2. Name of business or proposed business to which applicant relates:
 OKAPYA MINI MARKET
 3. Address/location of premises to which Application relates:
 KIGHELA LOCATION
 OKAVANGU VILLAGE, OKAVANGU DISTRICT

4. Nature and details of application:
 GROCERY LIQUOR LICENCE

5. Where application will be lodged:
 OKAVANGU DISTRICT
 05 AUGUST 2020

6. Date on which application will be lodged:
 05 AUGUST 2020

Any objection or written submission in terms of section 23 of the Act in relation to the application must be sent or delivered to the Secretary of the Committee to reach the Secretary not less than 21 days before the date on which the application is lodged.

Send in the completed Form 2 and proof of payment (POP) once you have deposited your payment at:
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 Acc no: 1179904901, Branch code: 481972

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Interested applicants who meet the above requirements should submit their: (1) Application cover letter (2), Resume/Curriculum Vitae (CV), (3) Certified Copies of Identity Documents/Passport (4) Certified Copies of Qualifications and (5) Certified copies of Certificate of Services and (6) Other Credentials if any, to:
 The Human Resources Manager
 MoHSS Global Fund, Private Bag 31198,
 Directorate of Special Programmes,
 Ministry of Health and Social Services, WINDHOEK
 OR
 Hand delivers to the Global Fund Grant Human Resource Office, Room No 26. Directorate of Special Programmes (DSP): Florence Nightingale Street, Ministry of Health and Social Services, Windhoek.

Applicants are requested to clearly indicate duty stations and submit separate application for each position applied for. All Foreign qualifications must be submitted with their evaluation by the Namibian Qualification Authority (NQA) and failure to do so will lead to disqualification. Preference will be given to Namibians. No emailed and faxed applications will be accepted. The Successful candidate to assume duty as soon as possible.

CLOSING DATE FOR APPLICATIONS: 24 July 2020

ERONGO CONSULTING GROUP

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Wanted

Looking for employment

35 Years lady looking for domestic work or any kind of job in Windhoek. Have 5 years experience. Please help me my people. I want to support my 3 kids. Contact me: 9812016429

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9. ASSUMPTIONS, LIMITATIONS AND CONCLUSION

9.1 Introduction

Environmental Impact Assessment is a process that aims to identify and anticipate possible impacts based on past and present baseline information. There is, inevitably, always some uncertainty about what will actually happen in reality. Impact predictions have been made based on field surveys and with the best data, methods and scientific knowledge available at this time. However, some uncertainties could not be entirely resolved. Where significant uncertainty remains in the impact assessment, this is acknowledged and the level of uncertainty is provided.

In line with best practice, this ESIA has adopted a precautionary approach to the identification and assessment of impacts. Where it has not been possible to make direct predictions of the likely level of impact, limits on the maximum likely impact have been reported and the design and implementation of the project (including the use of appropriate mitigation measures) will ensure that these are not exceeded. Where the magnitude of impacts cannot be predicted with certainty, the team of specialists have used professional experience and available scientific research from solar facilities worldwide to judge whether a significant impact is likely to occur or not. Throughout the assessment, this conservative approach has been adopted to the allocation of significance.

9.2 Gaps and Uncertainties

Inevitably knowledge gaps remain. For instance, there is an incomplete understanding of cumulative impacts as it is not known how the project will be consolidated onto the Greater Zambezi Valley Green Belt Master Plan.

9.3 Gaps in Project Description

Regarding the location of the site, the assessment is based on a refined layout derived from revisions of earlier layouts, to accommodate environmental sensitivities.

9.4 Gaps in Baseline Information

Ecological limitations; a limitation associated with the sampling approach was the narrow temporal window of sampling. Ideally, a site should be visited several times during all the different annual seasons to ensure that the full complement of plant and animal species present are captured.

However, this is rarely possible due to time and cost constraints and therefore, the data captured is representative of the species at the site. The vegetation at the time of the site was in a reasonable condition for sampling. This represents a sufficiently conservative and cautious approach which takes account of the study limitations.

9.5 Conclusion

It can be concluded that, an **Environmental Clearance Certificate** be issued by the Environmental Commissioner / Government of the Republic of Namibia.

Such farming system increases production to meet the demands of Nigerians. Proper processing of waste and related substances increases the profit of farmers. Intensification of crops growth maximizes **income** in relation to area, time and efforts.

Conventional agriculture has caused economic problems associated with over production of crops, increased costs of energy-based inputs and decreased farm incomes. It has also produced ecological problems such as poor ecological diversity, soil and water pollution and soil erosion. The adoption of **integrated systems of agricultural** production involving lower inputs of fertilizer, pesticides and cultivations can alleviate these economic and ecological problems.

Such systems are dependent upon a good understanding of the nature of interactions between the four main components of such systems, which are fertilizers, pesticides, cultivations and rotations, and how these interactions influence crop yields and farm income. Alternatives to energy-based inputs include: legume rotations; use of waste organic matter as well as that from animals and crops; integrated pest management; pest and disease forecasting; biological and cultural pest control; living mulches and mechanical weed control; conservation tillage; specialized innovative cultural techniques, including intercropping, strip cropping, under sowing, trap crops, and double-row cropping. It is essential to integrate the components of agricultural systems fully so that their impact of other inputs is taken into account.

The applicant trusts that the above motivation meets the MET's expectations and criteria to grant consent for the subdivision of the farm and subsequent sale of agricultural land as part of sustainable development. Already, the Agricultural Land Subdivision Committee has given no objection.

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