Propose clearance of approximately 18 hectares of indigenous vegetation for agricultural purposes, on portion 35 of the farm Karino Farm 134-JU, near Mbombela, City of Mbombela, Mpumalanga Province

Draft Basic Assessment Report

10 July 2020

CORE Environmental Services

Anne-Mari White *(Cert. Sci. Nat.)*

Professional Registration -
SACNASP: 300067/15
EAPASA: 2020/602

EXECUTIVE SUMMARY

Louis Walters Trust is proposing to clear approximately 18 hectares of indigenous vegetation to establish an agricultural area for the purpose of macadamia farming activities. In accordance with the National Environmental Management Act 107 of 1998, GNR 983 of 2014 (as amended in 2017), an Environmental Authorisation (EA) is required before more than 1 hectare of vegetation can be cleared.

Louis Walters Trust subsequently appointed **Core Environmental Services** to apply for the EA by means of conducting a Basic Environmental Authorisation process as regulated within General Notice Regulation 982, 2014 (as amended in 2017).

The establishment and operation of the agricultural area are likely to result in environmental and socio-economic impacts. The identified impacts are listed below and discussed thereafter:

- *Impact on biodiversity;*
- *Generation of dust;*
- *Impact on soil;*
- *Impact on water resources;*
- *Socio-economic impact.*

The table below summarises the impacts identified and assessed for the establishment and operational phases of the project:

IMPACT	SIGNIFICANCE BEFORE MITIGATION MEASURES	SIGNIFICANCE AFTER MITIGATION MEASURES
Establishment and Operational Impacts		
Biodiversity Impact	Low	Very Low
Generation of dust	Low	Very Low
Erosion	Low	Very Low
Soil Pollution	Low	Very Low
Impact on water resources	Low	Very Low
Job opportunities	Low (+)	Medium (+)
Health and Safety	Low	Very Low
Operational Phase Impacts		
Biodiversity Impact	Medium	Low
Erosion	Low	Very Low
Soil contamination	Medium	Low
Impact on water resource	High	Medium
Socio-economic Impact	Low (+)	Medium (+)

The essence of all environmental assessment processes is aimed at ensuring informed decision-making and environmental accountability. Furthermore, it assists in achieving environmentally sound and sustainable development. The impact assessment for this project has been undertaken in line with the requirements prescribed in the NEMA regulations.

The assessment of the possible impacts associated with the establishment and operational activities, concluded that the impact on the surrounding environment is of **medium to low significance**. Recommendations have however been made to address the impacts which could affect the biophysical and socio-economic environment. It is recommended that pro-active measures are taken to minimise the spread of alien invasive vegetation. Recommendations for the mitigation of impact are included within Section 6 and also the Draft Environmental Management Plan attached.

The significance of the potential environmental (biophysical and social) impacts associated with the proposed project are discussed in detail under **Section 6**.

It is the opinion of the EAP that the EA for this project should be granted, and the proposed mitigation included as the conditions of the authorisation.

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

APPENDICES

ABBREVIATIONS

BAR	Basic Assessment Report
CBA	Critical Biodiversity Area
EA	Environmental Authorisation
GNR	General Notice Regulation
I&AP	Interested and Affected Party
MDARDLEA	Mpumalanga Department of Agriculture, Rural Development, Land and Administration
NEMA	National Environmental Management Act, 1998 (Act No. 107 of 1998)
PPP	Public Participation Process
SACAA	South African Civil Aviation Authority

1. OVERVIEW OF THE PROJECT

1.1 Introduction

Louis Walters Trust is proposing to clear approximately 18 hectares of indigenous vegetation to establish an agricultural area for the purpose of macadamia farming. In accordance with the National Environmental Management Act 107 of 1998, GNR 983 of 2014 (as amended in 2017), an Environmental Authorisation (EA) is required before more than 1 hectare of vegetation can be cleared.

Louis Walters Trust subsequently appointed **Core Environmental Services** to apply for the EA by means of conducting a Basic Environmental Authorisation process as regulated within General Notice Regulation 982, 2014 (as amended in 2017).

1.2 Location

The proposed site is located on the corner of the N4 and the Uitkyk Road, on portion 35 of the farm Karino 134-JU, near Mbombela, City of Mbombela, Mpumalanga Province.
Coordinates:
25° 29'20.00"S
31° 6'39.78"E
Surveyor General Code: T0JU00000000013400035

Please refer to the locality map below, Figure 1 and 2.

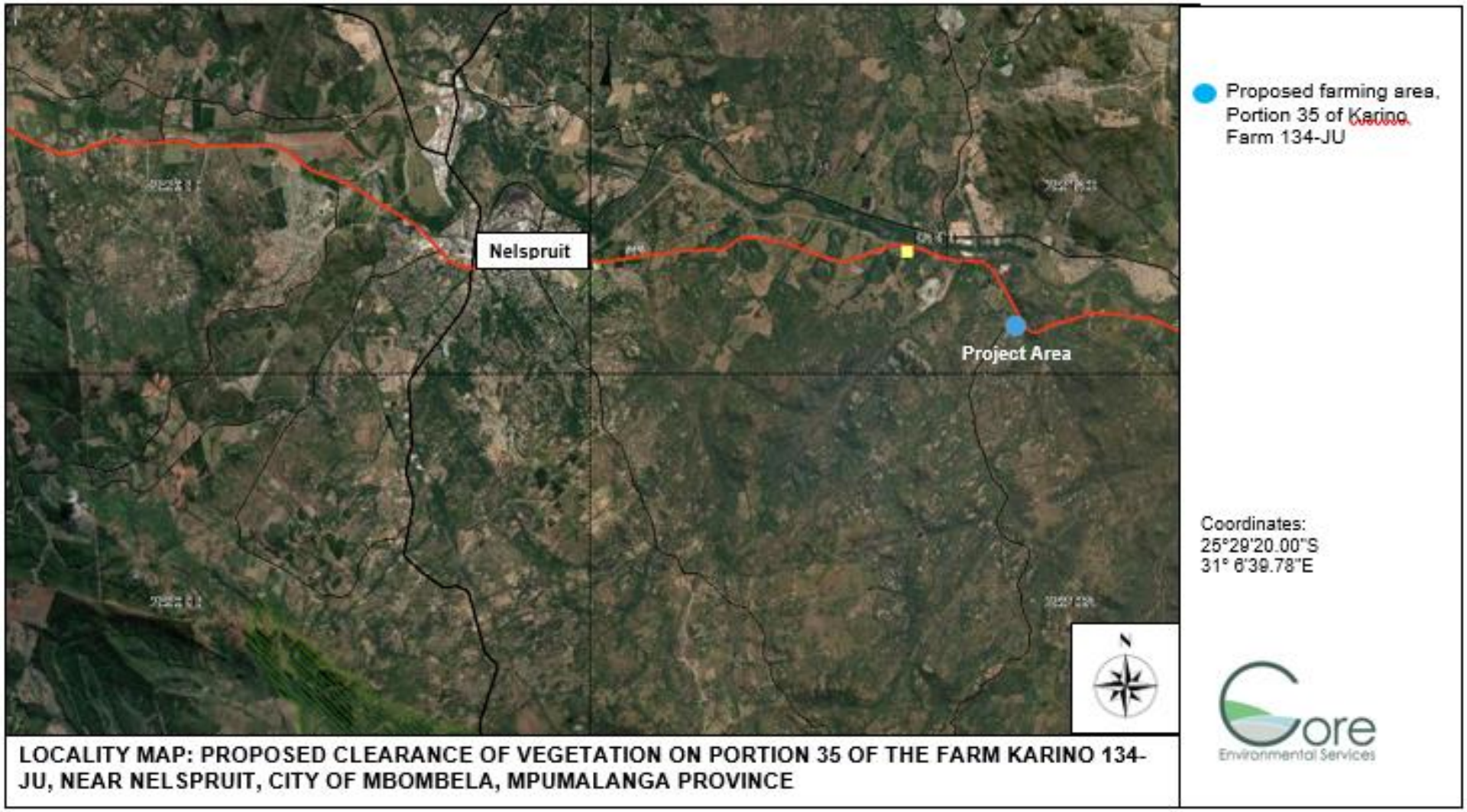

FIGURE 1: LOCALITY MAP – PROPOSED FARMING AREA ON PORTION 35 OF KARINO FARM 134-JU

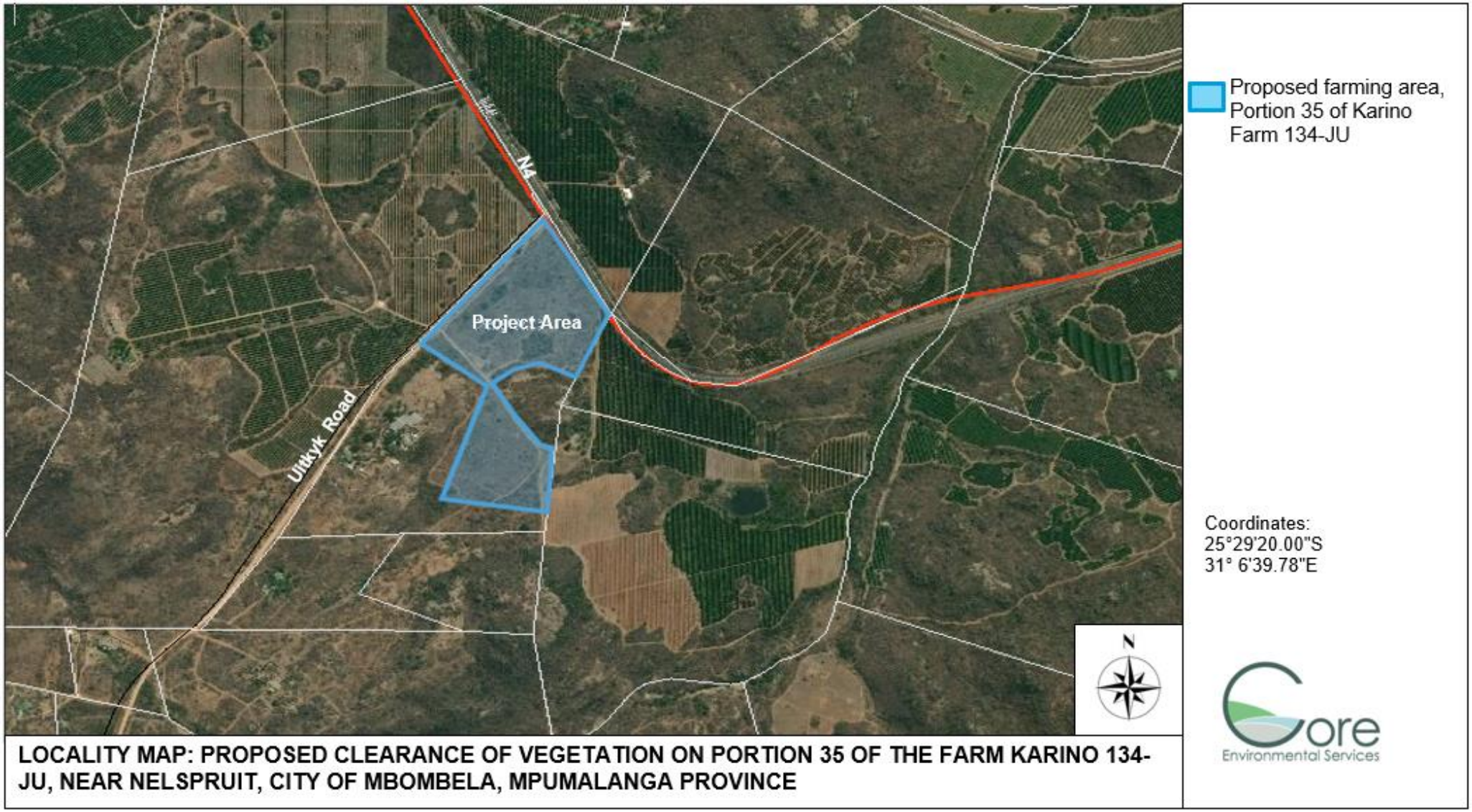

FIGURE 2: ZOOMED LOCALITY MAP OF THE PROPOSED FARMING AREA ON PORTION 35 OF KARINO FARM 134-JU

1.3 Details of the EAP

Ms. Anne-Mari White, is an Environmental Specialist, who started her studies at the North-West University (NWU) and completed her Bachelor of Science: Environmental Management at the University of South Africa (UNISA) in 2007. Ms. White is registered with the Environmental Assessment Practitioners Association of South Africa (EAPASA Reg No: 2020/602) as well as the South African Council for Natural Scientific Professionals as a Certificated Natural Scientist (Reg. No 300067/15). In addition to her qualification, she completed short courses in soil classification and wetland delineations (Terrasoil Science), Geographic Information Systems (University of KwaZulu-Natal), and Environmental Impact Assessments (NWU).

1.4 Policy, Legal and Administrative Framework

TABLE 1: LEGISLATION APPLICABLE TO THE PROJECT

Applicable legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks and instruments considered	Project application and type (permit / licence / authorisation / comment)
The Constitution of South Africa, Act No. 108 of 1996	Louis Walters Trust will be required to adhere to the Environmental Management Programme (EMPr) requirements to ensure that social and environmental management considerations are considered and implemented. As per Section 25 the Constitution, a public participation process (PPP) was and will continue to be undertaken, as this is considered to be an essential mechanism for informing stakeholders of their rights and obligations in terms of the project.
National Environmental Management Act, 1998 (Act No. 107 of 1998)	Environmental Authorisation will subsequently be applied for by means of conducting a Basic Environmental Authorisation process as regulated within GNR982 of 2014 (as amended in 2017).
National Biodiversity Act, 2004 (Act No. 10 of 2004)	The act provides for the management and conservation of South Africa's biodiversity within the framework of the National Environmental Management Act, 1998; the protection of species and ecosystems that warrant national protection; the sustainable use of indigenous biological resources, the fair and equitable sharing of benefits arising from bioprospecting involving indigenous biological resource; the establishment and functions of a South African National Biodiversity Institute; and for matters connected therewith.

	The National Biodiversity Act, 2004, must therefore be considered prior to the clearance of vegetation to minimise the impact on the terrestrial biodiversity.
Occupational Health and Safety Act, 1998 (Act No. 85 of 1998)	The Act provides for the health and safety of people at work and for the health and safety of people using plant and machinery. During establishment, work must be conducted with strict adherence to the Occupational Health and Safety Act 85 of 1998.
National Heritage Resources Act, 1999 (Act No 25 of 1999)	This legislation aims to promote good management of the national estate, and to enable and encourage communities to nurture and conserve their legacy so that it may be bequeathed to future generations.
City of Mbombela Integrated Development Plan (IDP) (2017 - 2022)	The primary objectives of the IDP is to foster economic growth that creates jobs and improve infrastructure within the Province. Job opportunities will be created by the proposed agricultural activities which supports economic growth within the area.

1.5 National Environmental Management Act 107 of 1998

In accordance with the National Environmental Management Act 107, of 1998, the following listed activities will be triggered by the proposed development and will require approval prior to commencement:

<u>GNR 983, Activity 27, 2014 (as amended in 2017):</u>
The clearance of an area of 1 hectare or more, but less than 20 hectares of indigenous vegetation, except where such clearance of indigenous vegetation is required for –

(i) The undertaking of a linear activity; or
Maintenance purposes undertaken in accordance with a maintenance management plan.

1.6 Description of the project

Louis Walters Trust is proposing to clear approximately 18 hectares of indigenous vegetation to establish an agricultural area for the purpose of macadamia farming. The larger portion of the proposed project area is heavily invested with alien invasive species and it is evident that the areas was previously cultivated.

In terms of water use, the applicant has water rights on adjoining properties (Portion 11 and 12 of the farm Karino 134-JU) and permission is granted to abstract water from the Crocodile River according to the Crocodile River Major Irrigation Board (Please refer to Appendix E). According to the documentation obtained, the applicant has 8 000m^3 of water rights per hectare per annum for portion 11 and 12 of the farm Karino 134-JU. This equates to a total of 265 600 m^3 of water per annum.

Currently 312 trees are planted per hectare on these portions of which 31 hectares are being cultivated. Each mature tree requires a 0.18m^3 of water per week, which totals a current water use of 90 529m^3 per annum.

With the additional 18 hectares of macadamia trees proposed to be planted, an additional 52 565m^3 of water will be required for irrigation purposes. Even with the additional 18 hectares of cultivated land, the applicant still has a surplus of 122 506m^3 per annum available for irrigation purposes.

1.7 Need and Desirability

- Macadamia nuts is a growing market in South Africa and is therefore an attractive and desirable investment opportunity. With a low labour requirement, macadamias are easy to grow, and farmers will therefore get a return on investment in approximately 5 to 7 years.
- China is South Africa's fastest growing market for macadamia nuts as China currently consumes 50% of South African macadamia production and although China is catching up on supplying to their need for macadamia nuts, the need for macadamia nuts remain and continues to grow.
- Macadamia trees covers an area of approximately 28 000 hectares and is growing by an estimated 3900 hectares per year. Mpumalanga is the main macadamia nut growing area in South Africa.
- A total of 12 500 full-time workers are estimated to be employed by the macadamia industry in South Africa with an additional 8100 workers during the peak season.

With the growing demand for macadamias, there is a definite need for more macadamia farms which would in turn provide job opportunities to the surrounding community members.

2. PUBLIC PARTICIPATION PROCESS

The purpose of this chapter is to provide an outline of the public participation process (PPP) to date and the way forward with respect to the Basic Assessment process.

Consultation with the public forms an integral component of the EA process. This process enables Interested and Affected Parties (I&APs) (e.g. directly affected landowners, national-, provincial- and local authorities, and local communities etc.) to raise their issues and concerns regarding the proposed activities, which they feel should be addressed in the BA process. The PPP has thus been structured such as to provide I&APs with an opportunity to gain more knowledge about the proposed project, to provide input through the review of documents/reports, and to voice any issues or concerns at various stages throughout the BA process.

I&APs were identified during the public participation phase of the project. All the parties identified as an I&AP (surrounding landowners, relevant departments, stakeholders, local and district authorities) have automatically been registered in the I&APs database for the project. The registered I&AP list is attached as **Annexure C.1.**

In effort to engage potential stakeholders, different communication methods were used to inform them about the project and how to get involved in the BA process. These methods include:

- Distributing English Background Information Documents (BIDs) to all registered I&APs, proof of which is attached in **Annexure C.2**;
- Placement of media advert in a local newspaper (The Lowvelder) on 12 June 2020 (see **Annexure C.3**).
- Placing of a notice at the proposed site took place on 10 June 2020 (see **Annexure C.4**);

The draft Basic Assessment Report will be made available for public review from July 2020 – August 2020.

To date no comments have been received by I&AP's.

3. CONSIDERATION OF ALTERNATIVES

The EIA process requires the developer to identify and investigate/assess feasible and reasonable alternatives. The project alternatives range from the location where the activity is proposed, type of activity to be undertaken, design the of activity, technology to be used in the activity to the option of not implementing the activity (No-Go Alternative).

The assessment of the alternatives is a complicated and multi-faceted issue, which is essential to the success of this application and ultimately to the proper, responsible and sustainable operation of the proposed project.

3.1 Alternative Selection

3.1.1 Location alternatives

The portion of the property proposed for cultivation, was previously used for agricultural purposes and is subsequently heavily modified. As the proposed location was previously used for agricultural activities and of low ecological sensitivity, no other location alternatives were investigated.

3.1.2 Layout alternatives

Various aspects were considered to determine the best possible layout which would have the least impact on the affected and surrounding environment. These aspects included:

- Previously cultivated areas;
- Slope of the area; as well as
- Rocky areas within the project site

The layout proposed as attached in Appendix A, is therefore the best layout alternative which will have the least impact on the environment.

3.1.3 No-Go alternative

The no-go alternative would be to not authorise the application for the clearance of vegetation for agricultural purposes. Should this alternative be favourable, the project area will not be cleared and used for agriculture, however, no impact was identified to be so severe in order for the no-go alternative to be further investigated.

4. DESCRIPTION OF THE AFFECTED ENVIRONMENT

The description of the affected environment below draws on existing knowledge from published data, previous studies, specialist investigations, site visits to the area and is used to understand the possible effects of the proposed project on the environment.

4.1 Topography

The topography of the of the proposed project area, is approximately 585m - 615m above mean sea level. The project area slopes slightly from the west to the east on both sections proposed for agricultural activities however, the area is mostly flat and fit for agricultural purposes.

4.2 Climate

Mpumalanga is a province where the climate varies due to its topography. The project site is located on the Lowveld Region and has a tropical climate with warm sub-tropical temperatures and experiences high summer rainfalls.

The study area experiences a humid and hot weather during summer seasons. The climatic trends of the area suggest summer season precipitation and dryer periods during winter. The area receives a total of about 800-1000 mm of rain over 12 months.

4.3 Ecology

On a National level, the larger study area can be classified as Lowveld (A10), according to Acocks (1988) and Sour Lowveld Bushveld according to Low & Rebelo (1998). Classified on a regional scale and according to a more detailed system the study area comprises several distinct vegetation units (Mucina & Rutherford, 2006):

Pretoriuskop Sour Bushveld is found in Mpumalanga and Limpopo Provinces along the eastern foothills of the northeastern escarpment. Characteristic trees and shrubs are *Dichrostachys cinerea* and *Terminalia sericea*. The area is classified as open savannah with various *Acacia* species and occurs on the upland areas. The geology is mainly granite from Nelspruit Suite and the soil is shallow to medium deep.

Terrestrial Ecology:

According to the Mpumalanga Biodiversity Sector Plan of 2014, the site cleared of vegetation falls within two classes namely, *Moderately to Heavily Modified (Old Lands)*, or *Other Natural Areas.*

Other Natural Areas: According to the MBSP, Other Natural Areas (ONAs) are not required to meet biodiversity targets, and are not identified as a priority in the MBSP. They do however retain much of their natural character. The biodiversity in these non-priority landscapes may still be of value and contribute to the maintenance of viable species populations and natural ecosystem functioning and Other Natural Areas may provide essential ecological infrastructure and ecosystem services. ONAs offer the greatest flexibility in terms of management objectives and permissible land-uses, and are generally recommended (along with Modified Areas) as the sites for higher-impact land uses. An

overall management objective should be to minimize habitat and species loss and ensure ecosystem functionality through strategic landscape planning. This classification is relevant to the northern section of the property.

Moderately / Heavily modified: MTPA objectives for these areas are quoted as follows: Such areas offer the most flexibility regarding potential land-uses, but these should be managed in a biodiversity-sensitive manner, aiming to maximize ecological functionality and authorization is still required for high impact land uses.

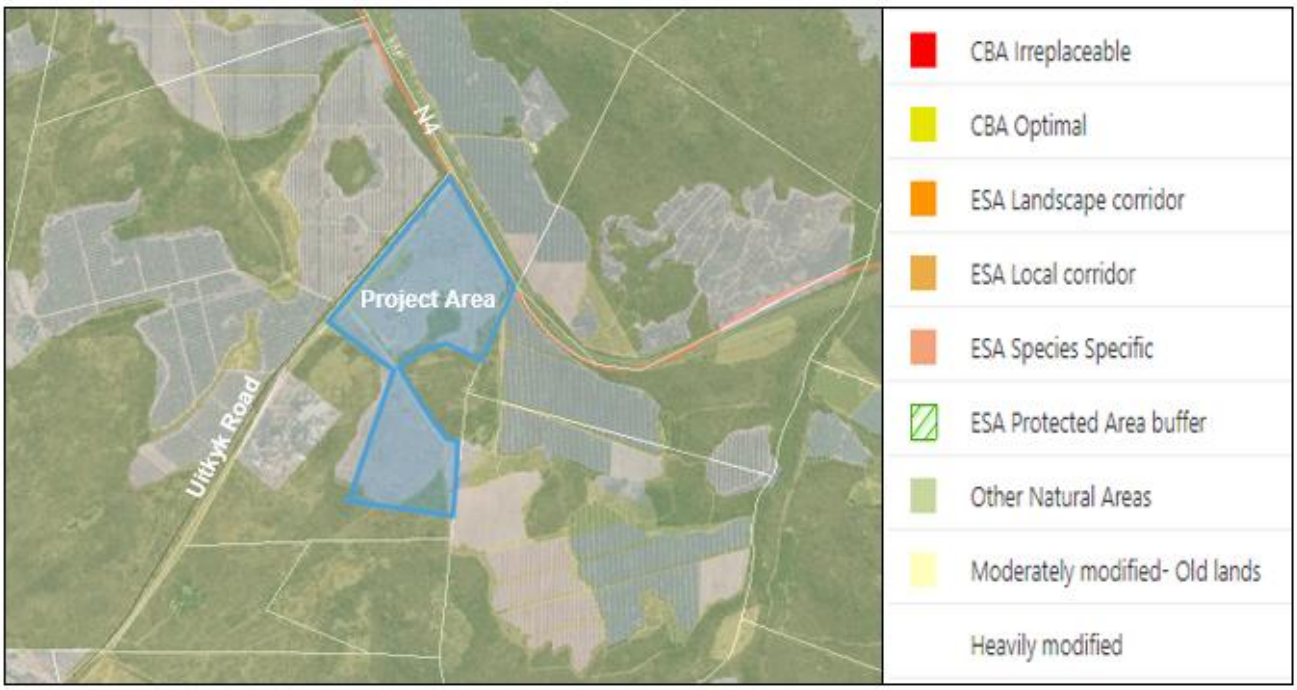

FIGURE 3: TERRESTRIAL ECOLOGY ACCORDING TO THE MPUMALANGA BIODIVERSITY SECTOR PLAN, 2014

Freshwater Ecology: The area is classified as an Ecological Support Area (Important Sub catchment). The MTPA requirements for an Ecological Support Area (important sub catchment) are quoted as follows: This sub-category includes National Freshwater Ecosystems Priority Areas (FEPA) sub-catchments and Fish Support Areas. A river FEPA is the river reach that is required for meeting biodiversity targets for river ecosystems and threatened fish species. In managing the condition of a river FEPA, it is important to manage not only the river itself, but also the network of streams and wetlands as well as land-based activities in the sub-catchment that supports the river FEPA. A proportion of tributaries and wetlands need to remain healthy and functional in order for the river FEPA to be kept in a good ecological condition. This requires that management activities are focused on maintaining water quantity and quality and the integrity of natural habitat in the sub-catchment.

The vegetation cover is however dominated by alien invasive vegetation and the degree of invasive vegetation is severe as the larger section of the proposed project area was previously used for cultivation. Due to the degree of alien invasive vegetation, the biodiversity and ecological sensitivity of the proposed footprint is very low.

FIGURE 4: FRESHWATER ECOLOGY ACCORDING TO THE MPUMALANGA BIODIVERSITY SECTOR PLAN, 2014

4.4 Surface and Groundwater

There is no water resource within the perimeter of the proposed property. The Tipperary Spruit is located approximately 600m south from the project area and an irrigation dam is located approximately 400m east of the project area on an adjacent land owner's property.

4.5 Land use

The area is zoned for agricultural purposes and most of the surrounding land is being used for agricultural purposes. Fruit and nut production are intensively practiced to the north, east and west of the project area. The proposed farm is currently owned by Mabalel Lodge which is located approximately 150m south and west of the proposed project area. Mabalel lodge is in the process of selling the proposed project area to Louis Walters Trust and for this reason a Land Owners Consent has been attached to the application submitted.

4.6 Geology and Soils

Mbombela is underlain with the Granite Group with highly permeable and erodible, colluvial sands and residual soils overlaying the granitic bedrock.

4.8 Heritage

The largest area of the proposed project area was previously cultivated. This is assumed as a result of the dominance by alien invasive vegetation on the study area. The Department of Environmental Affairs' Screening Report indicated no intersection of any heritage sensitivities within the project area. Due to the previous transformation of the site, it is highly unlikely that any artefacts of cultural or historical significance will be found within the project area. However, should any items of significance be discovered during establishment, a Heritage Specialist must be contacted immediately, and work

must cease until confirmation from the Specialist is received. For this reason, the applicant must adhere to the regulations stipulated within the National Heritage Resources Act, 1999.

4.9 Socio-Economic Environment

The project area is located within the City of Mbombela. The larger portion of the 695 913 individuals within the Mbombela Local Municipality, lives in peri-urban and rural areas. Approximately 75% of the people live within communal areas on the eastern axis of the City which is far from the city.

The City of Mbombela currently has an unemployment rate of 28% with 50% of the people living below the poverty line. The levels of skill and qualifications of the population is also fairly low which is problematic for future economic development. The socio-economic context of the surrounding environment can therefore be described as a community with a low percentage of education and high unemployment rate.

5. SPECIALIST ASSESSMENT REQUIREMENTS AS IDENTIFIED IN THE SCREENING REPORT

The following specialist assessments were identified within the Department of Environmental Affairs Screening Report to be conducted as part of the Basic Environmental Impact Assessment:

- Visual Impact Assessment

The proposed area is currently zoned for agricultural purposes and most of the surrounding properties are currently cultivated. The cultivation of an area of approximately 18 hectares, will therefore fit with all the surrounding land uses and will therefore not have a significant visual impact. For this reason, no visual impact assessment was conducted.

- Heritage Impact Assessment

According to the National Heritage Resources Act 25 of 1999, a Heritage Impact Assessment is required when more than five hectares are proposed to be transformed. As the larger part of the project area was previously transformed by agricultural activities, the remainder of the areas still to be transformed accounts to approximately three hectares. The Department of Environmental Affairs' Screening Report indicated no intersection with any heritage or cultural sensitivities and due to this and the fact that the natural area to be transformed is less than five hectares, a Heritage Impact Assessment was not found to be necessary.

- Paleontological Assessment

The Screening Report issued by the Department of Environmental Affairs showed no paleontological sensitivities. The proposed activities will also have no impact on the geological formations of the site as all activities are surface based. For this reason, no paleontological assessment was conducted.

- Terrestrial Biodiversity Assessment / Plant and Animal Species Assessment

The Screening Report indicated that the Terrestrial Biodiversity Theme is of low significance. As mentioned, the larger section of the project area was also previously cultivated and transformed and now heavily invaded with alien invasive species. For this reason, no Biodiversity Assessment was conducted for the proposed project site.

- Avian Impact Assessment

As the proposed project area is heavily invested with alien invasive species, the main anticipated impact on the environment will not be the loss or fragmentation of natural habitat and therefore a comprehensive faunal assessment was not deemed to be necessary.

- Socio-economic Assessment

The proposed project will not have any negative impact on the socio-economic environment. Contrary to this, additional job opportunities will be created during the operational phase of the project, which will impact the surrounding community positively.

As no negative socio-economic impact is expected with the proposed project, it is the opinion of the EAP that no Socio-Economic Impact Assessment is required.

6. METHODOLOGY OF ASSESSING THE SIGNIFICANCE OF IMPACTS

This section outlines the method used for assessing the significance of the potential environmental impacts during the construction/establishment, operational and decommissioning phases.

For each impact, the EXTENT (spatial scale), MAGNITUDE and DURATION (time scale) would be described, as shown in **Table 2**. These criteria are then used to determine the SIGNIFICANCE of the impact, firstly in the case of no mitigation and then with the most effective mitigation measure(s) in place. The mitigation described in the Report represents the full range of plausible and pragmatic measures but does not necessarily imply that they would be implemented.

The following tables show the scale used to assess these variables and defines each of the rating categories.

TABLE 2: ASSESSMENT CRITERIA FOR THE EVALUATION OF IMPACTS

Criteria	Category	Description
Extent or spatial influence of impact	**Regional**	Beyond a 30km radius of the candidate site.
	Local	Within a 30km radius of the candidate site.
	Site-specific	On site or within 100 m of the candidate site.
Magnitude of impact (at the indicated spatial scale)	**High**	Natural and/ or social functions and/ or processes are *severely* altered
	Medium	Natural and/ or social functions and/ or processes are *notably* altered
	Low	Natural and/ or social functions and/ or processes are *slightly* altered
	Very low	Natural and/ or social functions and/ or processes are *negligibly* altered
	Zero	Natural and/ or social functions and/ or processes remain *unaltered*
Duration of impact	**Long-term**	More than 10 years after construction
	Medium-term	Up to 5 years after construction
	Construction-term	Up to 3 years

The SIGNIFICANCE of an impact is derived by taking into account magnitude, duration and extent of each impact. The criteria employed in arriving at the different significance ratings is shown in Table 3.

TABLE 3: DEFINITION OF SIGNIFICANCE RATINGS

Significance ratings	Level of criteria required
High	• High magnitude with a regional extent and long-term duration • High magnitude with either a regional extent and medium-term duration or a local extent and long-term duration • Medium magnitude with a regional extent and long-term duration
Medium	• High magnitude with a local extent and medium-term duration • High magnitude with a regional extent and construction period or a site-specific extent and long-term duration • High magnitude with either a local extent and construction period duration or a site-specific extent and medium-term duration • Medium magnitude with any combination of extent and duration except site specific and construction period or regional and long term • Low magnitude with a regional extent and long-term duration
Low	• High magnitude with a site-specific extent and construction period duration • Medium magnitude with a site-specific extent and construction period duration • Low magnitude with any combination of extent and duration except site specific and construction period or regional and long term • Very low magnitude with a regional extent and long-term duration
Very low	• Low magnitude with a site-specific extent and construction period duration • Very low magnitude with any combination of extent and duration except regional and long term
Neutral	• Zero magnitude with any combination of extent and duration

Once the significance of an impact has been determined, the **PROBABILITY** and **CONFIDENCE** of this impact are determined using the rating systems outlined in **Table 4** and **Table 5.** The significance of an impact should always be considered in concert with the probability of that impact occurring. Lastly, the **REVERSIBILITY** of the impact is estimated using the rating system outlined in **Table 6.**

TABLE 4: DEFINITION OF PROBABILITY RATINGS

Probability ratings	Criteria
Definite	Estimated greater than 95 % chance of the impact occurring.
Probable	Estimated 5 to 95 % chance of the impact occurring.
Unlikely	Estimated less than 5 % chance of the impact occurring.

TABLE 5: DEFINITION OF CONFIDENCE RATINGS

Confidence ratings	Criteria
Certain	Wealth of information on and sound understanding of the environmental factors potentially influencing the impact.
Sure	Reasonable amount of useful information on and relatively sound understanding of the environmental factors potentially influencing the impact.
Unsure	Limited useful information on and understanding of the environmental factors potentially influencing this impact.

TABLE 6: DEFINITION OF REVERSIBILITY RATINGS

Reversibility ratings	Criteria
Irreversible	The activity will lead to an impact that is in all practical terms permanent.
Reversible	The impact is reversible within 2 years after the cause of the impact is removed.

7. ENVIRONMENTAL IMPACT ASSESSMENT

The biophysical and social environment will be impacted during the establishment and operational phases of the agricultural activities. For this reason, the impacts below are assessed for both phases.

7.1 Impacts during establishment of the agricultural area

The establishment of the agricultural area is likely to result in environmental and socio-economic impacts. The identified impacts are listed below and discussed thereafter:

- *Impact on biodiversity;*
- *Generation of dust;*
- *Impact on soil;*
- *Impact on water resources;*
- *Socio-economic impact.*

7.1.1. Impact on biodiversity

Description of the potential impact
During the establishment of the agricultural area, vegetation within the footprint of the site must be cleared.

According to the Mpumalanga Biodiversity Sector Plan, 2014, the site falls within heavily modified and other natural areas, however, the degree of alien invasive vegetation is severe and subsequently, the habitat is of low sensitivity. Due to the low sensitivity of the habitat and the fragmentation of habitat caused by the surrounding land uses (agriculture), the fauna assemblage is already impacted negatively.

Significance of the impacts

As the proposed activity site footprint is limited to areas of ***Very Low*** biodiversity and ecological sensitivity it is not anticipated that the activity will compromise biodiversity or ecological functions.

The proposed agricultural areas are mostly limited to the areas which was previously modified and therefore the impact is of low significance.

TABLE 7: SIGNIFICANCE OF BIODIVERSITY IMPACT

IMPACT	BEFORE MITIGATION					AFTER MITIGATION
	Significance	Probability	Confidence	Reversibility	Impact Rating	Impact Rating
Impact on biodiversity [NEGATIVE]	**Low**	**Probable**	**Sure**	**Reversible**	**Low**	**Very Low**

Mitigation measures

- Where possible, large trees on site must be retained;
- Implement an alien invader vegetation control program;
- It is recommended that an Ecologist conducts a site survey prior to the clearance of vegetation in order to identify any protected species.
- Stipulations of the Environmental Management Program (EMPr) should be adhered to during the establishment and operational phases of the project.

7.1.2. Generation of dust

Description of the potential impact

Vegetation will be removed, and soil will be disturbed during the establishment of the agricultural area. Heavy moving vehicles used to clear vegetation on site, could generate dust affecting adjacent owners and road users.

Significance of the impact

Mabalel Lodge is located approximately 150m from the proposed site and could therefore be affected by the generation of dust. The impacts associated with the generation of dust is however of short duration and therefore the significance of the impact is low. Mitigation measures must however be implemented to minimise the possibility of the impact occurring.

TABLE 8: DUST GENERATION

IMPACT	BEFORE MITIGATION					AFTER MITIGATION
	Significance	Probability	Confidence	Reversibility	Impact Rating	Impact Rating
Dust generation [NEGATIVE]	**Low**	**Probable**	**Sure**	**Reversible**	**Low**	**Very Low**

Mitigation measures

- Areas may not be disturbed and left unattended for long periods of time.
- Heavy moving vehicles and other vehicles must adhere to a speed limit of 40km/h.

7.1.3 Impact on soil

Description of the potential impact

Removal of vegetation will disturb the soil surface and increase the possibility of soil erosion. The topography of the site is however relatively flat and therefore the possibility of erosion occurring during the establishment phase is relatively low. Mitigation measures to minimise the possibility of erosion is however imperative.

Other activities which could have an impact on soil, include the uncontrolled use of hazardous substances and/or heavy machinery. Hazardous substances such as oil, diesel etc., could be spilled while refuelling or using machinery, leading to the pollution of soil which can alter microbial processes and be toxic to soil organisms.

Significance of the impact

During establishment, soil could be impacted by the following:

- Erosion; and
- Contamination with the use and possible spillage of hazardous substances.

The slope of the proposed project area is relatively flat and for this reason the possibility of erosion occurring is unlikely. The impact is subsequently classified to be of low significance prior to the implementation of mitigation measures.

Another factor impacting soil would be the possible spillage of hazardous substances. This impact is of medium magnitude, site specific and short duration and for this reason the impact is of also of low significance prior to the implementation of mitigation measures.

TABLE 9: IMPACT ON SOIL

IMPACT	BEFORE MITIGATION					AFTER MITIGATION
	Significance	Probability	Confidence	Reversibility	Impact Rating	Impact Rating
Erosion [NEGATIVE]	**Low**	**Unlikely**	**Sure**	**Reversible**	**Low**	**Very Low**
Soil pollution [NEGATIVE]	**Medium**	**Unlikely**	**Sure**	**Reversible**	**Low**	**Very Low**

Mitigation measures

- To minimise the possibility of erosion, it is recommended that no disturbed areas be left unattended. Disturbance and clearance of vegetative cover must be restricted to the proposed footprint.
- Measures to reduce the velocity of water, must be taken on areas prone to erosion.
- Should there be any spillage of hazardous substances during the establishment phase, soil must be removed up to a depth of 300mm and be disposed of at a registered hazardous waste disposal facility. Proof of such disposal must be kept on file.

7.1.4 Impact on water resources

Description of the potential impact

In terms of the freshwater ecological classification, the project area falls within an Ecological Support Area. This requires that management activities are focused on maintaining water quantity and quality and the integrity of natural habitat in the sub-catchment.

The Tipperary Spruit is located 600m south from the project area. An irrigation dam is located approximately 400m east from the project area on an adjacent property. This water resource does not form part of the proposed project area and will therefore not be impacted during the establishment phase of the project.

Significance of the impact

The possibility of impacting the water resource during establishment is very low and therefore the significance of the impact is also very low.

TABLE 10: IMPACT ON WATER RESOURCES

IMPACT	BEFORE MITIGATION					AFTER MITIGATION
	Significance	Probability	Confidence	Reversibility	Impact Rating	Impact Rating
Impact on water resources [NEGATIVE]	Low	Unlikely	Sure	Reversible	Low	Very Low

Mitigation measures

- No mitigation required as there are no water resources within the perimeter of the project site.

7.1.5 Socio-economic Impact

Description of the potential impact

During establishment, various temporary job opportunities will be created for the clearance and preparation of the agricultural area.

In terms of safety and security, there is always risk associated when working with machinery and therefore it is essential that all workers comply with the Health and Safety Act 85 of 1993.

Significance of the impacts

Based on the methodology detailed in **Section 5**, the following ratings have been assigned to the 'employment opportunities' and impact associated with health and safety of employees respectively.

The job opportunities during the establishment is short-lived and therefore the impact is only of medium (+) significance. In terms of the health and safety aspects of workforce, the significance of the impact has been rated to be of low significance due to the short construction timeframe. Mitigation measures must however be adhered to.

TABLE 12: SOCIO-ECONOMIC IMPACT

IMPACT	BEFORE MITIGATION					AFTER MITIGATION
	Significance	Probability	Confidence	Reversibility	Impact Rating	Impact Rating
Job opportunities [POSITIVE]	Medium	Definite	Sure	Reversible	Low	Medium (+)
Health and Safety [NEGATIVE]	Medium	Probable	Sure	Reversible	Low	Very Low

Mitigation measures

The applicant and/or farm manager must ensure that local residents receive preference for job opportunities where local labour might be required.

It is imperative that all personnel adhere to the Occupational Health and Safety Act 85 of 1998 and that no personnel enter any other surrounding properties.

7.2 Operational Phase Impacts

During operation, the agricultural activities are likely to result in the following environmental and socio-economic impacts:

- *Impact on biodiversity;*
- *Impact on soil;*
- *Impact on water resources; and*
- *Socio-economic*

7.2.1. Biodiversity Impact

Description of the potential impact

The single most important impact on biodiversity as consequence of transforming land to agriculture, is the loss of vegetation and loss and fragmentation of natural habitats and consequently the loss of fauna. However, the affected areas were previously used for cultivation purposes. With the data obtained within the MBCP, 2014 and the fact that the majority of the property was previously cultivated, it is concluded that the ecological sensitivity of the affected areas is rated to be low.

Significance of the impacts

Invasion of alien invasive species and use of pesticides and herbicides:

When natural vegetation is removed and activities are undertaken, the opportunity for invasive plant species within the perimeter of the site will increase and will be problematic if not adequately removed or managed. Alien vegetation is normally removed mechanically or chemically. Using harmful chemicals would kill all pest and alien vegetation but also affect other insects and mammals which must be protected. Mechanical removal or removal of alien vegetation by hand is therefore preferred above the chemical treatment thereof.

Stinkbugs are a major challenge for the South African macadamia industry, but recent research finding show that natural pest control using bats could save the South African macadamia nut industry millions of Rands. Studies have shown that crop damage is increased when birds and bats are excluded from orchards. Efforts to retain bat populations through using safe pesticides or retaining natural vegetation corridors and bat houses, is therefore encouraged. Biological pest control is therefore also preferred above chemical pest control.

The impact of alien vegetation and the control thereof is therefore of medium significance prior to the implementation of mitigation measures.

Loss of habitat for fauna:
The loss of habitat for fauna can to some extent be mitigated by making use of bees to pollinate the macadamia trees and also encouraging biological pest control by using bats and birds. At least two colonies of bees are required to pollinate one hectare of macadamia trees. Thus, by adding beehives to the macadamia orchards, the farmer will be attracting bee-eating birds, mammals, reptiles and other insects, while preserving and aiding in saving the bee population which has been declining rapidly.

Using bees as pollinators, plays an important part in every aspect of the ecosystem. They support the growth of trees, flowers, and other plants which serve as food and shelter for creatures large and small and therefore the surrounding natural environment would benefit from the implementation of beehives. The farmer would to some extent be mitigating for the loss of natural vegetation.

Taking into consideration the sensitivity of the site in accordance with the MBCP, 2014, the impact associated with the loss of fauna is of low significance prior to the implementation of mitigation measures.

As the proposed activity site footprint is limited to areas of ***Low*** biodiversity and ecological sensitivity it is not anticipated that the activity will compromise biodiversity or ecological functions.

The impact of the proposed agricultural activities on the ecology and biodiversity is therefore of low significance.

TABLE 13: IMPACT ON BIODIVERSITY

IMPACT	BEFORE MITIGATION					AFTER MITIGATION
	Significance	Probability	Confidence	Reversibility	Impact Rating	Impact Rating
Impact on biodiversity (Alien invasive species) [NEGATIVE]	**Medium**	**Definite**	**Sure**	**Reversible**	**Medium**	**Low**
Loss of habitat for fauna [NEGATIVE]	**Low**	**Probable**	**Sure**	**Reversible**	**Low**	**Very Low**

Mitigation measures

- An Invasive Species Management Programme must be compiled and complied with during the operational phase of the project;

- Stipulations of the Environmental Management Program (EMPr) should be adhered to during the establishment and operational phases of the project.

7.2.2 Impact on soil

Description of the potential impact

During operation, pesticides and herbicides are applied to agricultural land to control pests that disrupt crop production. Soil will become contaminated when pesticides persist and accumulate in soils, which can alter microbial processes and are toxic to soil organisms.

Significance of the impact

During operation, soil could be impacted by the following:

- Erosion; and
- Contamination by means of the use of pesticides.

The slope of the area on which cultivation is proposed is relatively flat and therefore, the probability of erosion occurring is low. For this reason, the impact is classified to be of very low significance.

Another factor impacting soil would be the use of pesticides and herbicides which could accumulate in soil, altering the microbial process. This impact is however of medium magnitude, local extent and long duration and for this reason the impact is of medium significance prior to the implementation of mitigation measures.

TABLE 14: IMPACT ON SOIL

IMPACT	BEFORE MITIGATION					AFTER MITIGATION
	Significance	Probability	Confidence	Reversibility	Impact Rating	Impact Rating
Erosion [NEGATIVE]	**Medium**	**Unlikely**	**Sure**	**Reversible**	**Low**	**Very Low**
Soil contamination [NEGATIVE]	**High**	**Probable**	**Sure**	**Reversible**	**Medium**	**Low**

Mitigation measures

- It is recommended that alternatives for the management of pests are investigated. Only approved pesticides and herbicides may be used for the management of pests.

7.2.3 Impact on water resources

Description of the potential impact

Water will be required for irrigation purposes and will be abstracted from the Crocodile River. As mentioned, there are no water resource within the perimeter of the project site, however, the applicant does have a surplus of water rights for their adjacent properties and will therefore be irrigating with the surplus of water which is available on these properties.

In terms of water use, the applicant has water rights on adjoining properties (Portion 11 and 12 of the farm Karino 134-JU) and permission is granted to abstract water from the Crocodile River according to the Crocodile River Major Irrigation Board (Please refer to Appendix E). According to the documentation obtained, the applicant has 8 000m^3 of water rights per hectare per annum for portion 11 and 12 of the farm Karino 134-JU. This equates to a total of 265 600 m^3 of water per annum.

Currently 312 trees are planted per hectare on these portions of which 31 hectares are being cultivated. Each mature tree requires a 0.18m^3 of water per week, which totals a current water use of 90 529m^3 per annum.

With the additional 18 hectares of macadamia trees proposed to be planted, an additional 52 565m^3 of water will be required for irrigation purposes. Even with the additional 18 hectares of cultivated land, the applicant still has a surplus of 122 506m^3 per annum available for irrigation purposes.

Significance of the impact

Water is a scarce resource in South Africa and therefore unsustainable abstraction from rivers can change the natural flow regime which will result in lower flows and reduced water table levels. The applicant does however not intend on extracting more than what is required and available according to the Crocodile River Major Irrigation Board. As water is a scarce commodity, the impact is however of medium significance and appropriate measures must be adhered to ensure proper management of water use.

TABLE 15: IMPACT ON WATER RESOURCES

IMPACT	BEFORE MITIGATION					AFTER MITIGATION
	Significance	Probability	Confidence	Reversibility	Impact Rating	Impact Rating
Water resource use [NEGATIVE]	High	Probable	Sure	Reversible	High	Medium

Mitigation Measures

Water abstraction must be regulated and monitored.

7.2.4 Employment opportunities

Description of the potential impact

Although the agricultural activities will not have a significant socio-economic impact on the local community, the agricultural activities will however provide additional permanent job opportunities for previously disadvantaged individuals and seasonally, the farming activities will be providing even more job opportunities on a temporary basis.

Significance of the impacts

Based on the methodology detailed in **Section 5**, the following ratings have been assigned to the 'employment opportunities' impact before and after mitigation. As job opportunities are limited, the impact is of medium (+) significance.

TABLE 16: SIGNIFICANT IMPACT OF THE 'EMPLOYMENT OPPORTUNITIES' IMPACT

IMPACT	BEFORE MITIGATION					AFTER MITIGATION
	Significance	Probability	Confidence	Reversibility	Impact Rating	Impact Rating
Job opportunities **[POSITIVE]**	**Medium**	**Definite**	**Sure**	**Reversible**	**Low**	**Medium (+)**

Mitigation measures

Creating jobs and business opportunities for the local community will have a positive impact. No mitigation measures would be required to further enhance this impact; however, the applicant must ensure that local residents receive preference for job opportunities.

7.3 Environmental Impact Statement

The table below summarises the impacts identified and assessed for the establishment and operational phases of the project:

TABLE 17: ENVIRONMENTAL IMPACT STATEMENT

IMPACT	SIGNIFICANCE BEFORE MITIGATION MEASURES	SIGNIFICANCE AFTER MITIGATION MEASURES
Establishment and Operational Impacts		
Biodiversity Impact	Low	Very Low
Generation of dust	Low	Very Low
Erosion	Low	Very Low
Soil Pollution	Low	Very Low
Impact on water resources	Low	Very Low
Job opportunities	Low (+)	Medium (+)
Health and Safety	Low	Very Low
Operational Phase Impacts		
Biodiversity Impact	Medium	Low
Erosion	Low	Very Low
Soil contamination	Medium	Low
Impact on water resource	High	Medium
Socio-economic Impact	Low (+)	Medium (+)

8. CONCLUSION AND WAY FORWARD

8.1 Assumptions and Limitations

In undertaking this investigation and compiling the Draft Basic Assessment Report, the following has been assumed:

- The information provided by the proponent is accurate and unbiased, and no information that could change the outcome of the Environmental Authorisation process has been withheld.
- The scope of this investigation is limited to assessing the environmental impacts associated with the establishment and operation of the agricultural area.
- The conclusion and recommendations proposed are based solely on the information, scope of works as agreed with the proponent.

8.2 Conclusion

The essence of all environmental assessment processes is aimed at ensuring informed decision-making and environmental accountability. Furthermore, it assists in achieving environmentally sound and sustainable development. The impact assessment for this project has been undertaken in line with the requirements prescribed in the NEMA regulations.

The assessment of the possible impacts associated with the establishment and operational activities, concluded that the impact on the surrounding environment is of **medium to low significance**. Recommendations have however been made to address the impacts which could affect the biophysical and socio-economic environment. Recommendations for the mitigation of impact are included within Section 6 and also the Draft Environmental Management Plan attached.

The significance of the potential environmental (biophysical and social) impacts associated with the proposed project are discussed in detail under **Section 6**.

It is the opinion of the EAP that the EA for this project should be granted, and the proposed mitigation included as the conditions of the authorisation.

8.2 Way Forward

The next steps for the Basic Assessment process will be to distribute the Draft Basic Assessment Report and make it available to the public (including the registered I&APs) and Organs of State for a period of 30 days, during which the Competent Authority (DARDLEA) will also be given the opportunity to provide comments on the report. After the 30-day comment period, all comments will be addressed by the EAP and incorporated within the Final Basic Assessment Report to be submitted to the DARDLEA for decision making. All registered I&APs will be notified of the decision and will be given an opportunity to appeal as per the NEMA requirements.

9. REFERENCES

National Environmental Management Act 107 of 1998 (NEMA 107, 1998)

General Notice Regulation 982, 983, 984 and 985 of 2014 (as amended in 2017)

Mpumalanga Biodiversity Conservation Plan, 2014