Propose clearance of approximately 14 hectares of vegetation for the purpose of Macadamia farming, on portion 74 of the farm Abek 6-JU, Hazyview, Mpumalanga Province

Draft Basic Assessment Report

2 December 2020

CORE Environmental Services

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Professional Registration -
SACNASP: 300067/15
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EXECUTIVE SUMMARY

Shekinah Glory Boerdery (Pty) Ltd is proposing to clear approximately 14 hectares of vegetation on portion 74 of the farm Abek 6-JU 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 any clearance activities can take place.

Shekinah Glory Boerdery (Pty) Ltd 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;*
- *Impact on heritage;*
- *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	High	Medium
Generation of dust	Low	Very Low
Erosion	Medium	Low
Soil Pollution	Low	Very Low
Impact on water resources	Low	Very Low
Impact on heritage	Low	Very Low
Job opportunities	Low (+)	Medium (+)
Health and Safety	Low	Very Low
Operational Phase Impacts		
Biodiversity Impact Alien invasive species)	High	Medium
Loss of habitat for fauna	High	Medium
Erosion	Medium	Low
Soil contamination	Medium	Low
Impact on water resource	Medium	Low
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.

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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

Shekinah Glory Boerdery (Pty) Ltd is proposing to clear approximately 14 hectares of vegetation on portion 74 of the farm Abek 6-JU 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 any clearance activities can take place.

Shekinah Glory Boerdery (Pty) Ltd 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 along the R536, Hazyviev, on portion 74 of the farm Abek 6-JU

Coordinates:

25° 03'00.26"S
31° 04'07.69"E

Surveyor General Code: T0JU00000000000600074

Please refer to the locality map below, Figure 1, 2 and 3.

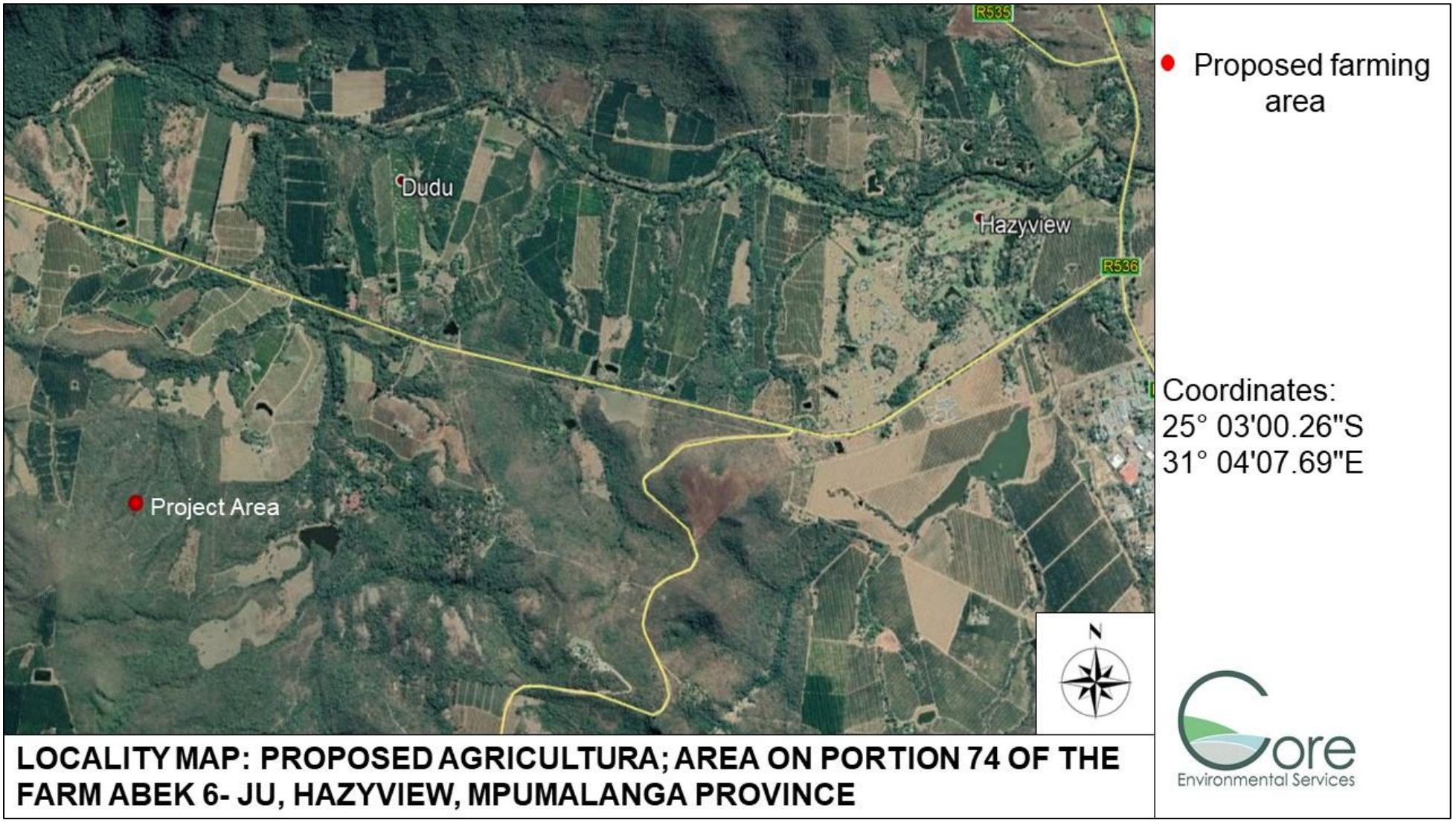

FIGURE 1: LOCALITY MAP – PROPOSED FARMING AREA ON PORTION 74 OF THE FARM ABEK 6-JU

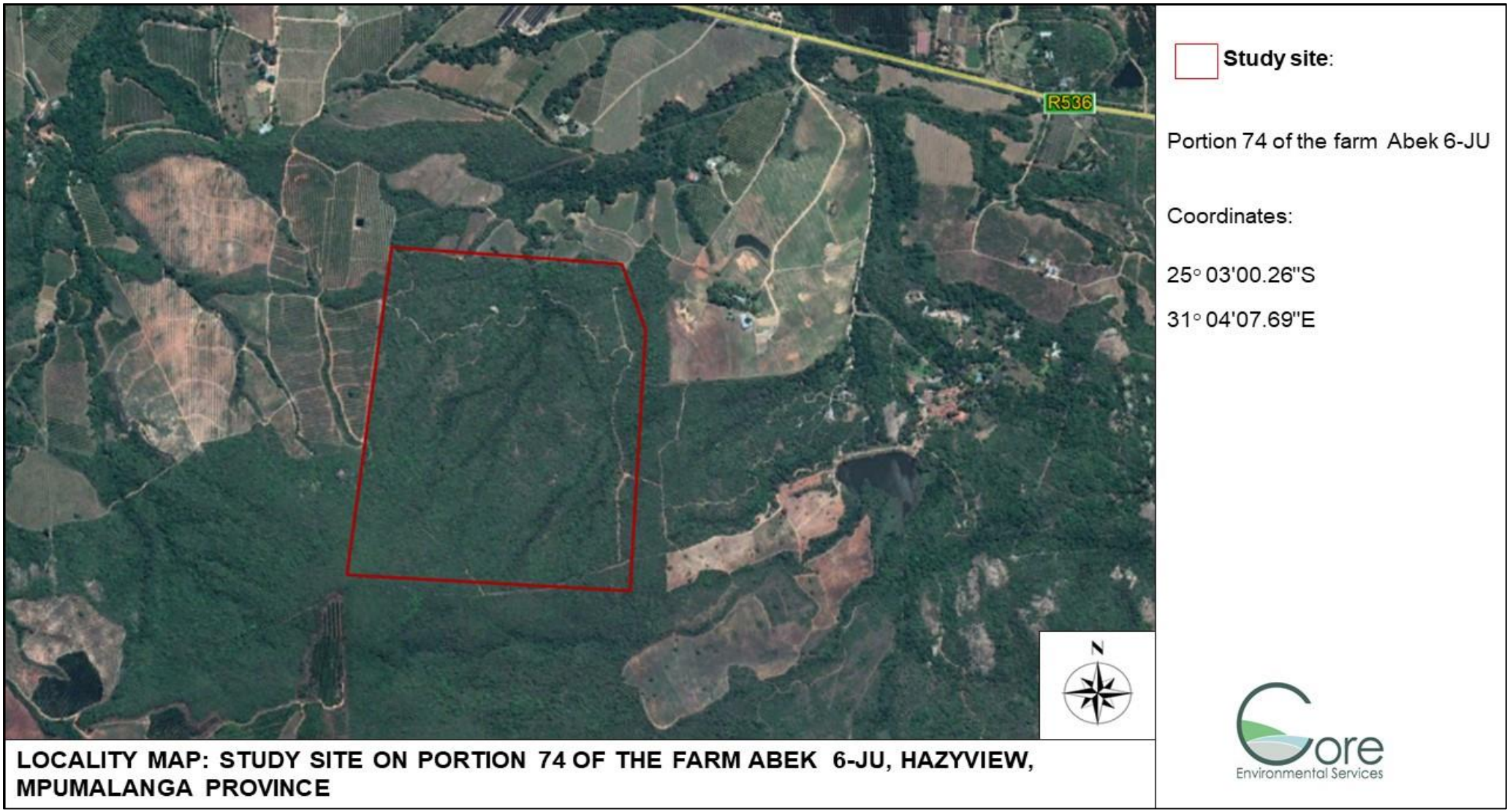

FIGURE 2: LOCALITY MAP- STUDY SITE ON PORTION 74 OF THE FARM ABEK 6- J

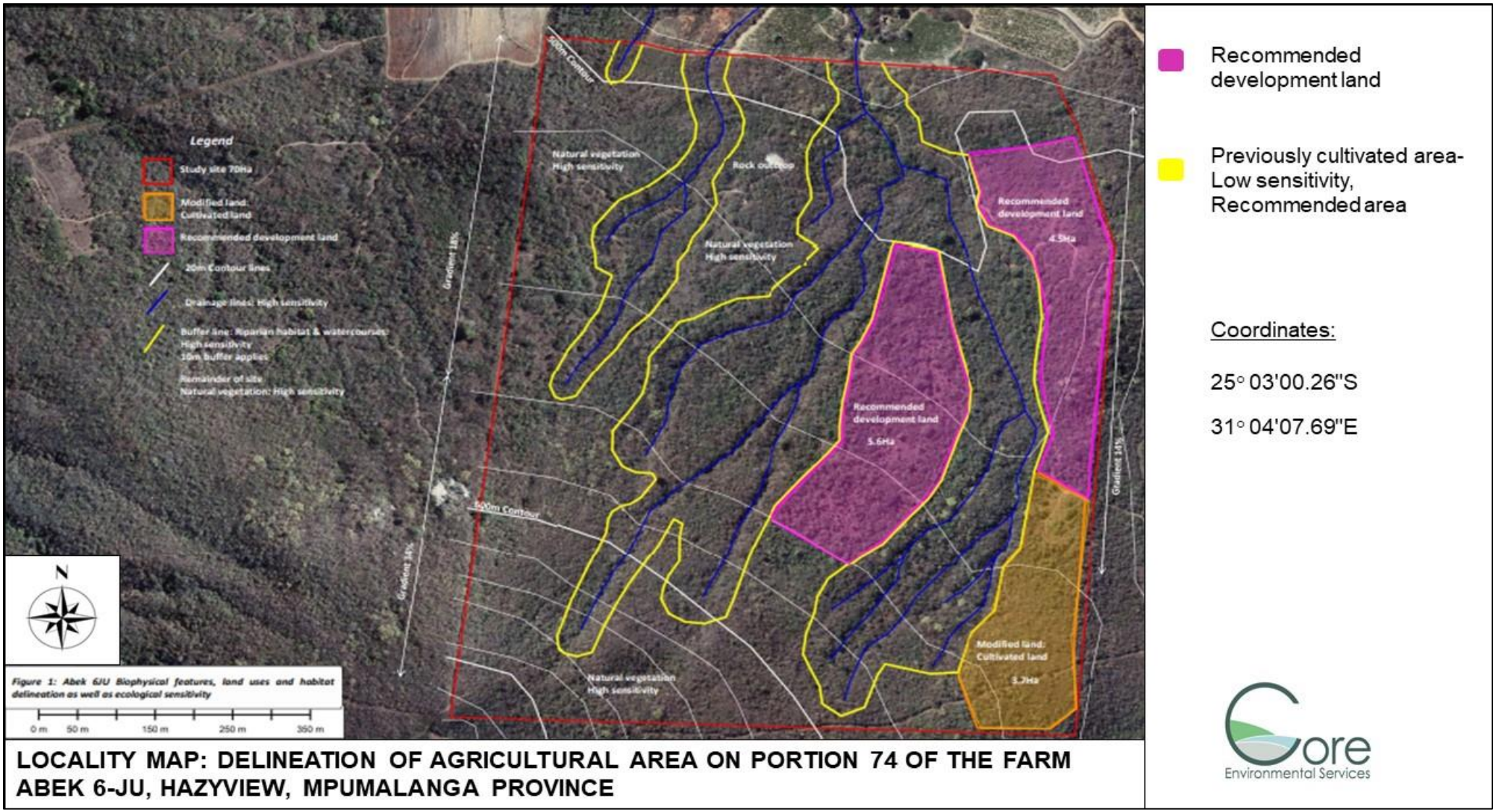

Figure 1: Abek 6/U Biophysical features, land uses and habitat delineation as well as ecological sensitivity

LOCALITY MAP: DELINEATION OF AGRICULTURAL AREA ON PORTION 74 OF THE FARM ABEK 6-JU, HAZYVIEW, MPUMALANGA PROVINCE

FIGURE 3: RECOMMENDED DEVELOPMENT LAND ON PORTION 74 OF THE FARM ABEK 6- J

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	Shekinah Glory Boerdery (Pty) Ltd 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:

GNR 983, Activity 27, 2014 (as amended in 2017):
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

Shekinah Glory Boerdery (Pty) Ltd is proposing to clear approximately 14 hectares of vegetation on portion 74 of the farm Abek 6-JU to establish an agricultural area for the purpose of Macadamia farming activities.

In terms of water use, the applicant has water rights from the Department of Water and Sanitation. Water will be abstracted from the Sabani Tributary of Sabie River. The applicant has 250 000m^3 of water rights per annum for portion 74 of the farm Abek 6-JU.

Approximately 312 trees will be planted per hectare on this portion of which 14 hectares would be cultivated. Each mature tree requires a 0.18m^3 of water per week, which totals a current water use of 40 884.48m^3 per annum. The applicant therefore has sufficient water for the proposed cultivation and will have a surplus of 209 115.52m^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 10 September 2020 (see **Annexure C.3**).
- Placing of a notice at the proposed site took place on 25 Augustus 2020 (see **Annexure C.4**);

The draft Basic Assessment Report will be made available for public review from November 2020 – January 2021.

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, is largely natural but heavily invaded by *Lantana camara* and *Chromolaena odorata*. Although the property is largely natural, specific areas may be considered for cultivation where potential impacts on the natural environment can be managed to an acceptable level. Alien invasive vegetation control will be a crucial part of mitigation during the entire lifespan of the project.

3.1.2 Layout alternatives

An Ecological and Heritage Impact Assessment was conducted to identify any ecological and heritage sensitivities within the proposed project areas. The specialist reports therefore informed the layout and areas to be used for agricultural purposes

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 605m – 665m above mean sea level. The project area slopes slightly from the north to the south west on the areas proposed for agricultural activities however, the area is mostly flat and fit for agricultural purposes.

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

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. It is characterized by moderate climatic conditions with a mean maximum temperature of 28^{o}C during January and 22^{o}C during June.

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. Winter rainfall is almost non-existent. Its lowest rainfall (4mm) is in June and highest (158mm) in January. 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 mainly to the east of Hazyview and around Pretoriuskop (KNP) in Mpumalanga Province. The topography consists of plains and gentle slopes with intermittent drainage lines. The vegetation structure is open savannah with few low shrubs and a well-developed grass component. Pretoriuskop Sour Bushveld is rated as Least Threatened as almost 40% is conserved within the Kruger National Park according to the National Spatial Biodiversity Assessment (Driver *et al*, 2004) on a regional level. Applicable to the southern section of the site.

Legogote Sour Bushveld. This ecosystem is found in Mpumalanga and Limpopo Provinces along the eastern foothills of the north-eastern escarpment. Characteristic trees and shrubs are *Parinari curatellifolia* and *Bauhinia galpinii*. It may form a dense woodland with diverse shrubs to transitional forest where *Sterculia murex* and *Combretum molle* is commonly found. This veld type is not well protected (1% formally protected) and already 50% is transformed and as such is rated as Endangered (having lost more than 40% of its original extent). Applicable to the northern section of the site.

Terrestrial Ecology:

According to the Mpumalanga Biodiversity Sector Plan of 2014, the site falls *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 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. Primary objectives: 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 aquatic ecological importance of the northern section of the property.

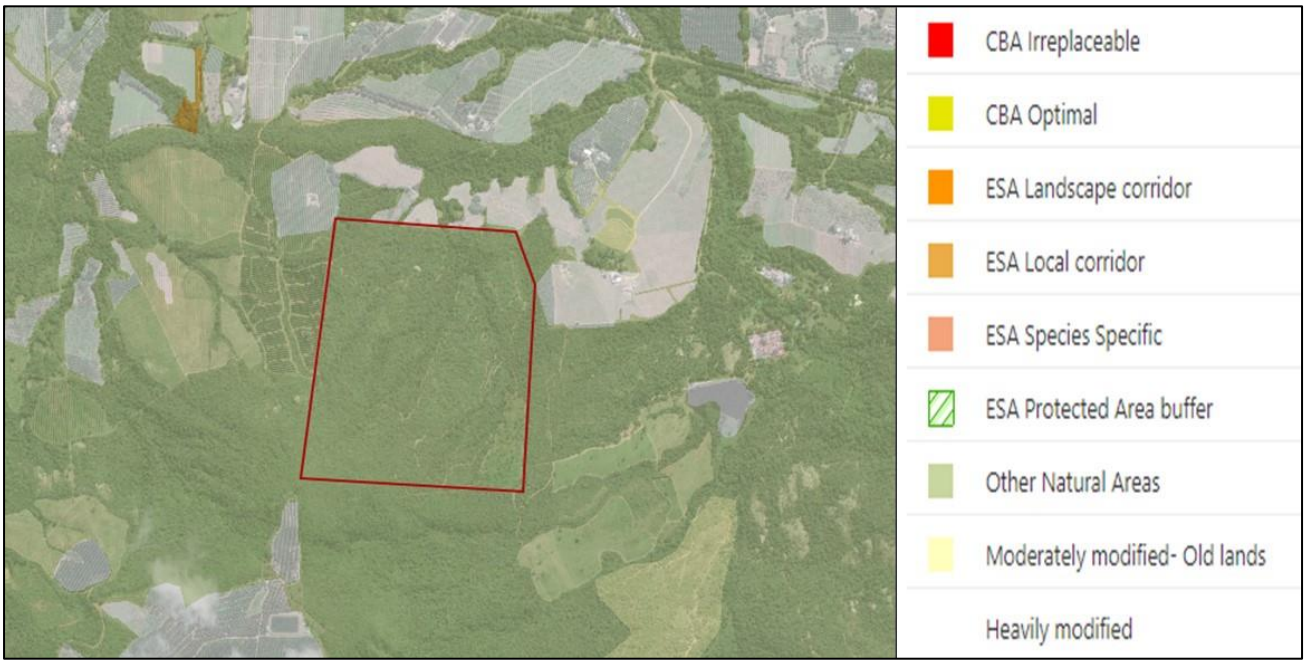

FIGURE 5: TERRESTRIAL ECOLOGY ACCORDING TO THE MPUMALANGA BIODIVERSITY SECTOR PLAN, 2014

Freshwater Ecology: The area is classified as an Ecological Support Area (Important Sub catchment). 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.

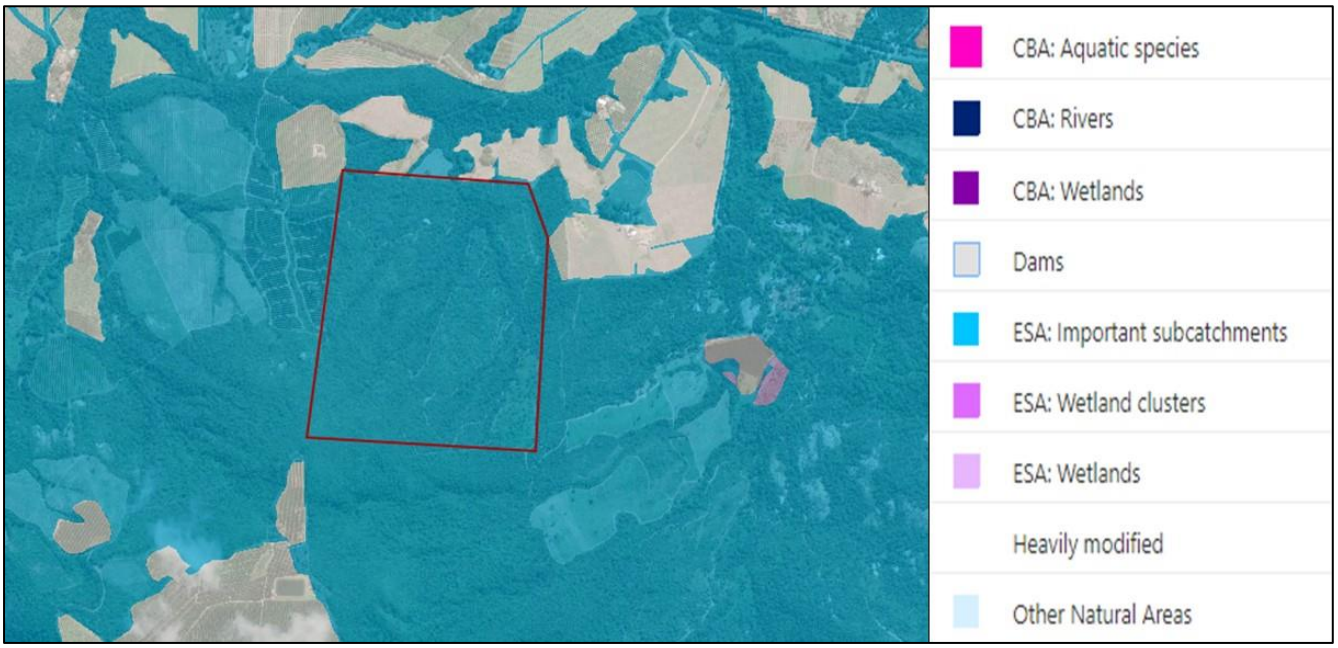

FIGURE 6: FRESHWATER ECOLOGY ACCORDING TO THE MPUMALANGA BIODIVERSITY SECTOR PLAN, 2014

4.4 Surface and Groundwater

Water will be abstracted from the Sabani Tributary of Sabie River for irrigation. Several drainage lines have evolved on the slopes. These are all first or second order watercourses that drain surface water from the higher lying land in the south to the Sabie River in the north. These drainage lines form relatively deep channels with very steep but stable banks on the higher slopes. These channels become progressively wider and shallower on the lower slopes and foot slope. These watercourses are strictly ephemeral

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 around the project area.

4.6 Geology and Soils

The regional geology comprises of Archaean granite of the Nelspruit Suite. Which have weathered down to form shallow, leached, red to yellow–brown sand to sandy loam of the Glenrosa, Hutton and Clovelly forms. According to the geological map of the area, the Hazyview area is on Archaeozoic, Swazian, Archaean super group.

The most extensive soil types within the area are shallow, sandy lithosols. The average topsoil cover is 200mm. The topsoil layer, which is +/- 200mm, comprises of sandy material with vegetation root. The remaining layer, from 600mm, comprises of light reddish mixture type from depth below 600mm.

4.8 Heritage

A Heritage Impact Assessment was conducted. According to the Heritage Impact Assessment Report, the proposed study area's visibility in most sections were restricted, although the two managers, who worked and resided on the farm for at least 22 years, (and who indicated that they knew the farm very well), were not aware of any structures or foundations of a historical nature. The three graves which were pointed out by Mr. Makabela, were outside of the study area. Apart from a few undecorated clay potsherds, the survey revealed no other archaeological or historical features or structures of significance within the study area.

It is recommended that the owners be made aware that distinct archaeological material or human remains may only be revealed during the de-bushing operations of the proposed agricultural development. Since visibility on the farm was severely restricted, it is recommended that a qualified archaeologist be contacted to monitor the de-bushing activities and to make a recommendation, should any archaeological or human remains be revealed.

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

Job opportunities will be created by the establishment of the farming activities of which all jobs accrued to previously disadvantaged individuals. Seasonally, the farming activities will be providing more job opportunities on a temporary basis.

The livelihood of the individuals is therefore impacted positively by agricultural activities.

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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 used for agricultural activities. The cultivation of an area of approximately 14 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

A Heritage Impact Assessment was conducted on the approximately 14-hectare property to identify any possible artefacts or structures which could be of heritage or cultural significance. The findings of the investigation are discussed in Section 4.8 above and the Heritage Impact Assessment is attached as Appendix D. .

- 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

An Ecological Impact Assessment was conducted on the approximately 70-hectare property to identify any ecological sensitive areas within the project area. The specialist delineated the project area so that it is best fit for agricultural activities. However, important natural communities remain intact (riparian habitats) adjacent to the proposed development site. It is recommended that these natural areas should be conserved to ensure that the present state of biodiversity is not affected and that the operational plan be designed to conserve these areas within a buffer zone.

- Avian Impact Assessment

The main anticipated impact on the environment will not be the loss or fragmentation of natural habitat as large tress will be conserved and cultivation is proposed underneath such trees. For this reason 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;*
- *Impact on heritage 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 Other Natural Areas. The portion of the property proposed for cultivation, is largely natural but heavily invaded by *Lantana camara* and *Chromolaena odorata*. Although the property is largely natural, specific areas may be considered for development where potential impacts on the natural environment can be managed to an acceptable level. The habitat is however considered to be of high sensitivity, but no Red Data Listed (RDL) species were recorded. Due to the high sensitivity of the habitat, buffer zones and mitigation measures will be implemented.

Significance of the impacts

As the proposed activity site footprint is limited to areas of ***high*** biodiversity and ecological sensitivity it is not anticipated that the activity will compromise biodiversity or ecological functions as the site is also heavily invaded by *Lantana camara* and *Chromolaena odorata*. No threatened or RDL biota was recorded on the sites and none is expected to be negatively affected

The specialist reports therefore informed the layout and areas to be used for agricultural purposes to have the least impact on the biodiversity and ecology.

TABLE 7: SIGNIFICANCE OF BIODIVERSITY IMPACT

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

Mitigation measures

- Where possible, large trees on site must be retained and cultivation must take place underneath such large trees;
- No development activities that will lead to a loss of natural vegetation are recommended within the wetland and riparian area;
- A buffer zone of 10m must be implemented to protect the above-mentioned habitats. The buffer zone may include a fence and a service road/firebreak;
- Implement an alien invader vegetation control program;
- Spoil material may not be pushed into the natural habitats, buffer zones or riparian and wetland habitats.
- It is recommended that an Environmental Control Officer (ECO) is appointed who will be responsible to actually delineate the buffer zone on site (considering actual on-site conditions and to ensure that large trees are not destroyed for this purpose).
- 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

Shiloh Coffee Estate and Casa do Sol Hotel and Resort is located approximately 900m 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 slope of the proposed project area is elevated and for this reason the possibility of erosion occurring is possible. 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 elevated and for this reason the possibility of erosion occurring is possible. The impact is subsequently classified to be of medium 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]	**Medium**	**Unlikely**	**Sure**	**Reversible**	**Medium**	**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.

Sabani Tributary of Sabie River is located approximately 6km south-east from the project area. An irrigation dam is located approximately 700m east from the project area. These watercourses do not fall within the footprint of the proposed project area and will therefore not be impacted during the establishment phase.

Significance of the impact

No wetlands or perennial watercourses are present. Several prominent drainage lines transect the study area and flow from north to south and are tributaries of the Sabie River further to the north. However, a buffer of 10m will be implemented to protect drainage lines within the project area. The possibility of impacting the drainage lines during the proposed clearance activities are low if mitigation measures are adhered to.

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 activities may take place within the 10m buffer of the drainage lines.
- Management activities be focused on maintaining water quantity and quality and the integrity of natural habitat in the sub-catchment.

7.1.5 Impact on Heritage

Description of the potential impact

A Heritage Impact Assessment was conducted on the 14-hectare property to identify any possible artefact or structures which could be of heritage or cultural significance. The specialist assessment concluded that there were no archaeological or historical features within the perimeter of the proposed site.

Significance of the impact

The significance of the impact on heritage resources is of low significance.

TABLE 11: HERITAGE RESOURCES

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

Mitigation Measures

Distinct archaeological material or human remains may only be revealed during the development of the proposed agricultural operations. In such instance, a qualified archaeologist must be contacted to monitor the activities and make recommendations.

7.1.6 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

Although the area is already heavily invested with alien invasive plant species, the spread of such plant species must be managed and mitigated. Invasive plant species within the perimeter will impact the biodiversity of the surrounding areas.

During operation, vegetation will also be permanently lost and fragmented.

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 high significance prior to the implementation of mitigation measures.

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]	**High**	**Definite**	**Sure**	**Reversible**	**High**	**Medium**
Loss of habitat for fauna [NEGATIVE]	**High**	**Definite**	**Sure**	**Reversible**	**High**	**Medium**

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.
- Introducing beehives into the orchards are recommended and would be beneficial to both the farmer and surrounding area;
- Biological pest control must receive preference over chemical pest control. Attracting bats and birds by introducing fragrant flowers, herbs and night blooming plants;

7.2.2 Impact on soil

Description of the potential impact

Due to the topography of the site, the possibility of erosion occurring on site is of medium magnitude. Mitigation measures to minimise the possibility of erosion is therefore imperative.

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 slightly elevated and due to some of the slopes within the project area, the magnitude of erosion is of medium magnitude, while the impact would be of local extent and long duration. For this reason, the impact is classified to be of medium significance prior to the implementation of mitigation measures.

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**	**Medium**	**Low**
Soil contamination [NEGATIVE]	**Medium**	**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.
- Permanent measures must be taken on areas prone to erosion. These measures can include gabions or revegetation with indigenous plant species.

7.2.3 Impact on water resources

Description of the potential impact

In terms of water use, the applicant has water rights from the Department of Water and Sanitation. Water will be abstracted from the Sabani Tributary of Sabie River. According to the documentation obtained, the applicant has 250 000m^3 of water rights per annum for portion 74 of the farm Abek 6-JU. Approximately 312 trees are planted per hectare on this portion of which 14 hectares are being cultivated. Each mature tree requires a 0.18m^3 of water per week, which totals a current water use of 40 884.48m^3 per annum. The applicant still has a surplus of 209 115.52m^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 Department of Water and Sanitation. 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**	**Medium**	**Low**

Mitigation Measures

- Water abstraction must be regulated and monitored.
- No activities may take place within delineated buffer zones

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	High	Medium
Generation of dust	Low	Very Low
Erosion	Medium	Low
Soil Pollution	Low	Very Low
Impact on water resources	Low	Very Low
Impact on heritage	Low	Very Low
Job opportunities	Low (+)	Medium (+)
Health and Safety	Low	Very Low
Operational Phase Impacts		
Biodiversity Impact Alien invasive species)	High	Medium
Loss of habitat for fauna	High	Medium
Erosion	Medium	Low
Soil contamination	Medium	Low
Impact on water resource	Medium	Low
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 m**edium 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

Phase 1 Archaeological / Heritage Impact Assessment on portion 13 of the farm Tevrede 178-JT and portion 74 of the farm Abek 6-JU, November 2020, C van Wyk Rowe

General Biodiversity and Habitat Report for the farm Abek 6-JU, September 2020, D van der Walt