



Proposed clearance of vegetation for agricultural purposes on portion 3 of the farm Boerlands 631-JT, near Barberton, City of Mbombela, Mpumalanga Province
Draft Basic Assessment Report

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CORE Environmental Services

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EXECUTIVE SUMMARY

MS Teck Farming (Pty) Ltd is proposing to clear approximately 19 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 and GNR 985 of 2014 (as amended in 2017), an Environmental Authorisation (EA) is required before any clearance activities can take place.

MS Teck Farming 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 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
Heritage Impacts	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 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 the ephemeral drainage lines be protected during the operation of the agricultural activities and 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.

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

MS Teck Farming (Pty) Ltd is proposing to clear approximately 19.5 hectares of indigenous vegetation to establish an agricultural area for the purpose of macadamia or similar 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.

MS Teck Farming 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 R38 between Barberton and Badplaas, on portion 3 of the farm Boerlands 631-JT, near Barberton, City of Mbombela, Mpumalanga Province.

Coordinates:

25° 45'58.20"S

30° 53'42.77"E

Surveyor General Code: T0JT00000000063100003

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

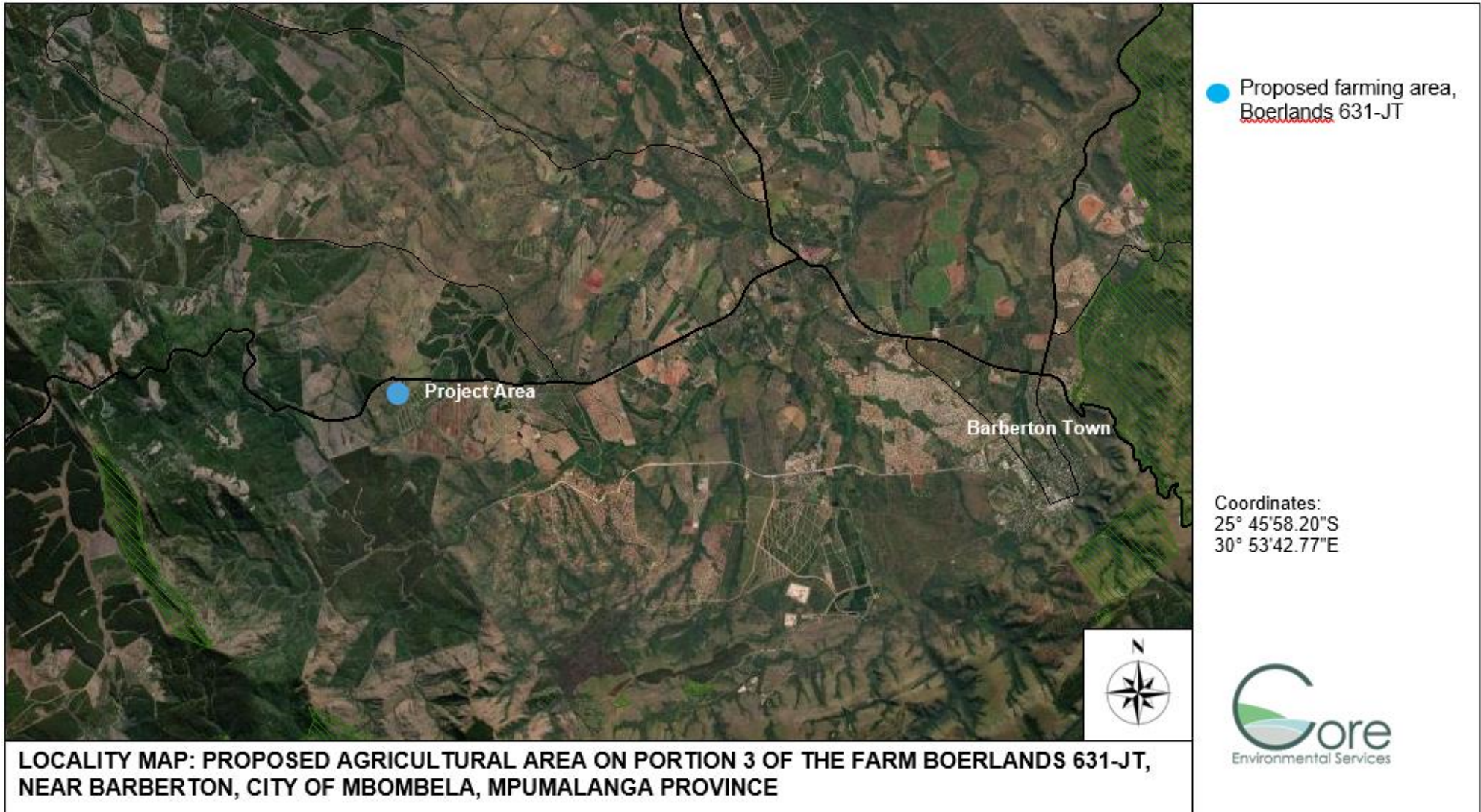


FIGURE 1: LOCALITY MAP – PROPOSED PROJECT AREA ON PORTION 3 OF THE FARM BOERLANDS 631-JT

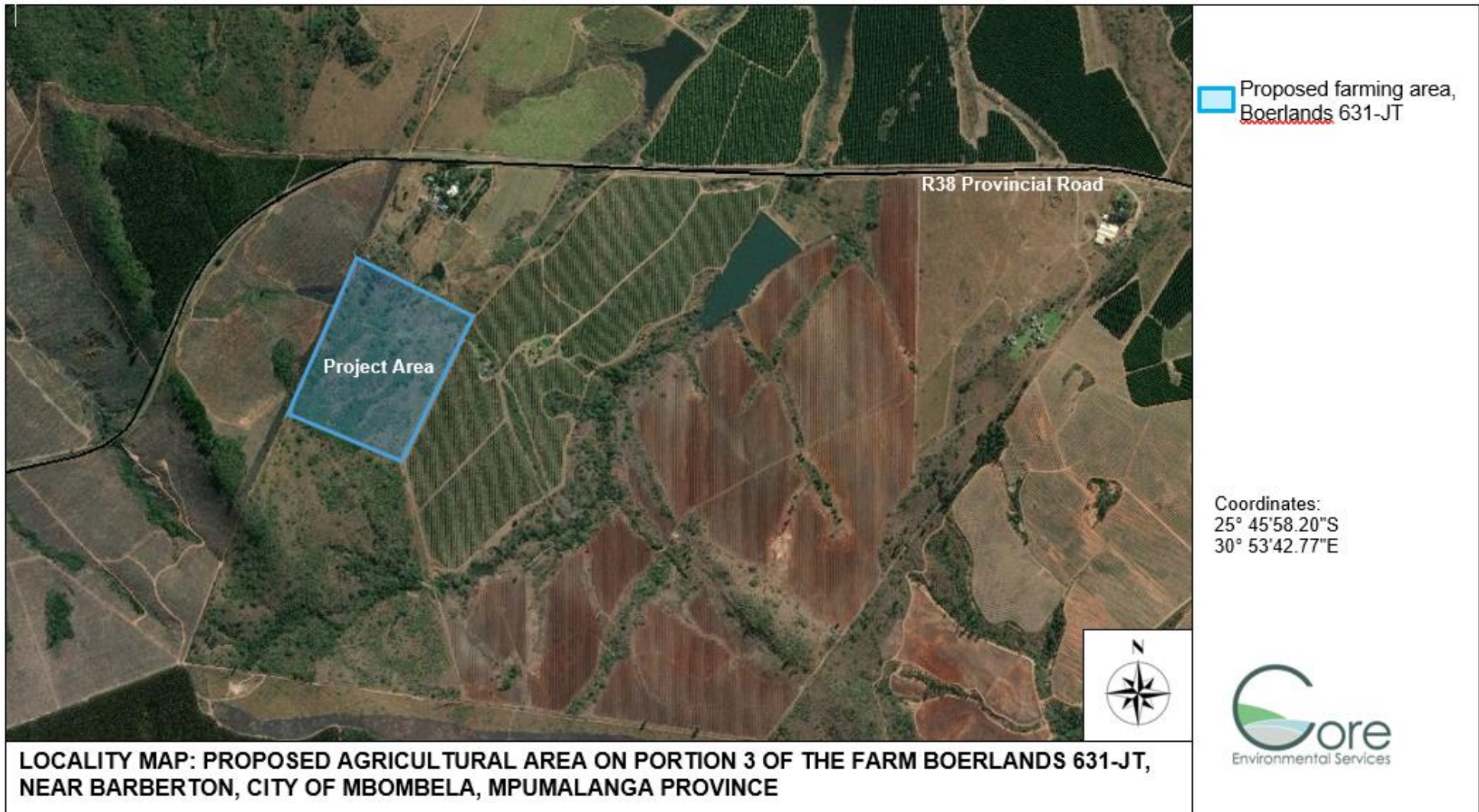


FIGURE 2: ZOOMED LOCALITY MAP OF THE PROPOSED AGRICULTURAL AREA, PORTION 3 OF THE FARM BOERLANDS 361-JT

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 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	<p>MS Teck Farming (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.</p> <p>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.</p>
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)	<p>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.</p> <p>The National Biodiversity Act, 2004, must therefore be considered prior to the clearance of vegetation</p>

	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. The Heritage Specialist did not identify any artefacts which could be of historical or cultural importance, 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.
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.

GNR 985, Activity 12, 2014 (as amended in 2017):

The clearance of an area of 300 square meters or more of indigenous vegetation except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan:

Within (f) Mpumalanga, (ii) within a Critical Biodiversity Area identified in bioregional plans

1.6 Description of the project

MS Teck Farming is proposing to clear approximately 19 hectares of indigenous vegetation to establish an agricultural area for the purpose of macadamia farming activities. The larger portion of the proposed project area is heavily invested with alien invasive species and it is evident that the areas was previously disturbed.

In terms of water use, it is estimated that one hectare of full-grown macadamia trees will require 7200 m³ of water per annum in addition to natural rainfall for this area. Thus, with a total of 19 hectares, approximately 136 800m³ of water per year will be required for irrigating purposes. Water will be abstracted from a borehole located on the property. The borehole was tested to deliver a sustainable yield of 432m³ per day, which equates to 157 680m³ per year, which is more than the water requirement of 136 800m³ per year. The borehole test results are attached as Appendix F.

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 24 March 2020 (see **Annexure C.3**).
- Placing of a notice at the proposed site took place on 17 March 2020 (see **Annexure C.4**);

The draft Basic Assessment Report will be made available for public review from 8 June 2020 – 8 July 2020.

The following comments have been received by I&AP's and is also attached as Appendix C:

Interested and Affected Party / Organ of State	Comment	Response
Ms. Louise van Wyk (Sappi) (Adjacent land user)	Our main concern is water availability. On 21 February Sappi hosted a meeting for the IUCMA's Crocodile Catchment Forum. During this forum meeting, the most highlighted topic was that of water availability. Many farmers in this region do not have access to water throughout the year and face extensive restrictions most part of the year. The other concern is that there are no dams within this catchment area and for this reason there is no way to store water more available in the wet season for the dry season. It is predicted that there will be no water in the Barberton region for the dry season to come. Water will have to	Thank you for your response, please note that you have been registered on the database to receive all further communication. <u>Water availability:</u> Refer to Section 1.6, 7.2.3; and Appendix F.

be sourced from any water resource possible, which again will place strain on that water system. This will not only have a socio-economic impact, but also ecological impacts for aquatic biota in these systems.

Further to this, due to the lack of water availability, surrounding farmers have sent requests to the timber plantations. Plantations within these regions have been there for many years, some for more than 50 years. Yet, when water availability starts getting low, farmers expects surrounding Timber plantations to extract and reduce areas of planted timber, thereby jeopardising an existing water use and sustainable business for a new water use, due to continual expansion of agriculture and over allocation of water within these catchments. This is not only true for forestry, but for other long-standing agricultural practices and businesses in the region.

It is for this reason that we caution against further expansion in an already stressed catchment. There is simply not enough water and the applicant will need to clearly strategize and communicate how this will be mitigated for Sappi not to strongly object against this project.

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 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 applicant, MS Teck Farming (Pty) Ltd, has been farming on the property for numerous years. The portion of the property proposed for cultivation, was previously used for grazing purposes and is subsequently heavily modified. As the proposed location was previously used for agricultural activities and of low ecological significance, no other location alternatives were investigated.

3.1.2 Layout alternatives

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

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 845m - 880m above mean sea level. A slightly elevated rocky ridge is located on the north-eastern corner of the site. The project area slopes slightly from the south to the north but is mostly flat and fit for agricultural purposes.

4.2 Climate

Mpumalanga is a province where the climate varies due to its topography. Barberton 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):

Legogote Sour Bushveld is found in Mpumalanga and Limpopo Provinces along the eastern foothills of the northeastern 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).

Terrestrial Ecology: According to the Mpumalanga Biodiversity Sector Plan, 2014, the site falls within an area classified as a Critical Biodiversity Area (Optimal). The classification is relevant to the largest proportion section of the property *Optimal* CBA's are considered to be the most optimally located and the most efficient solution (i.e. occupying the smallest possible area) to meet biodiversity targets as well as other criteria such as avoiding high cost areas where there are competing land-uses. Permissible land uses are those that are compatible with maintaining the natural vegetation cover of CBAs in a healthy ecological state, and that do not result in loss or degradation of natural habitat. Some low-intensity agricultural land-uses, such as grazing of livestock, may be acceptable in CBAs, on condition that best-practice guidelines aimed at benefiting the biodiversity assets and reducing the

vulnerability of each site are implemented. If small-scale land-use change is unavoidable, it must be located and designed to be biodiversity sensitive.



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. It is therefore assumed that the area was previously used for afforestation or cultivation many years ago. 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

Two first order ephemeral drainage lines are located on the northern section of the project area and drains from the northwest to the southeast. These have well defined active channels for the most part. Obligate riparian vegetation is present but fragmented.

4.5 Land use

The area is zoned for agricultural purposes and all surrounding land is being used for agricultural and afforestation purposes. Fruit and nut production are intensively practiced to the south and the east.

4.6 Geology and Soils

According to the published 1:250 000 geological map sheet 2530 Barberton, the project area is regionally underlain by Kaap Valley Granite rocks of the Swazian Era. The Kaap Valley Granites are predominantly honblende - Biotite Granites. A series of diabase dykes / linear intrusions are mapped at regional scale with a northwest southeast striking direction. The site is structurally characterised by regionally intrusive dolerite dyke and sills structures (1: 250 000 geological map sheet 2530 Barberton). The intrusive dolerite occurs across the site area creating potential groundwater flow paths.

4.8 Heritage

A Heritage Impact Assessment was conducted, and although it cannot be confirmed, it is assumed that 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 farm on which the application for cultivation is proposed, belonged to the Tecklenburg family since 1884, and was continually used to farm maize and vegetables. The survey did not reveal any archaeological or historical features. However, a burial site, consisting of 15 graves belonging to the Hlatshwayo family, is situated on a low ridge, outside the proposed development area. The grave sites will however not be impacted by the proposed agricultural activities.

4.9 Socio-Economic Environment

Barberton 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 all surrounding properties are currently cultivated or used for afforestation. The cultivation of an area of approximately 19 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

As the proposed project area exceeds 5 hectares, a Heritage Impact Assessment was conducted on the 19-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. Please also see above in Section 4.8 as well 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

The Screening Report indicated that the Terrestrial Biodiversity Theme is of high significance and for this reason a Biodiversity Assessment was conducted on the proposed project area. It was concluded that the area is heavily invested with alien invasive plant species and therefore the area was found to be of low biodiversity and ecological sensitivity. Please refer to Appendix D for more detail on the findings made by the Biodiversity Specialist.

- 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 <i>severely</i> altered
	Medium	Natural and/ or social functions and/ or processes are <i>notably</i> altered
	Low	Natural and/ or social functions and/ or processes are <i>slightly</i> altered
	Very low	Natural and/ or social functions and/ or processes are <i>negligibly</i> altered
	Zero	Natural and/ or social functions and/ or processes remain <i>unaltered</i>
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	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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 a Critical Biodiversity Area (CBA), 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 and afforestation), the fauna assemblage is already impacted negatively.

The two first order ephemeral drainage lines consist of obligate riparian vegetation but if fragmented. The habitat in the drainage lines provides limited ecological functions and present refuge to biota. The ecological importance is rated as Medium. No development activities that will lead to a loss of natural vegetation are planned within or nearby this zone and will subsequently not be impacted.

The sensitivity zoning (based upon natural integrity, fauna potential and ecological functions) for the different ecological communities are delineated in Figure 5 and summarized as follows:

Vegetation Community

Alien invasive thicket
Riparian zone

Sensitivity Rating

Very Low
Medium

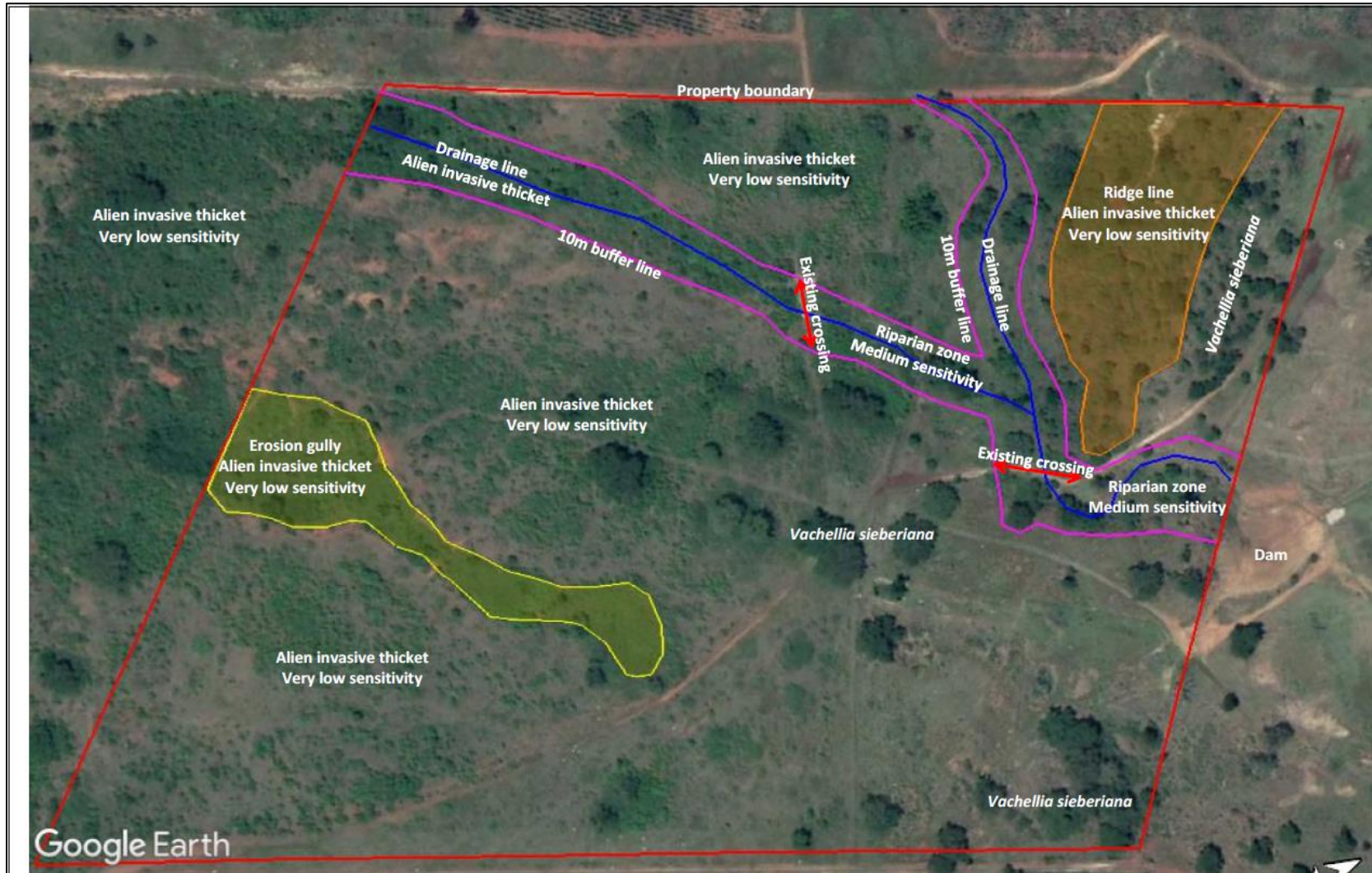


FIGURE 5: BIOPHYSICAL FEATURES OF THE SITE, LAND TYPES, ECOLOGICAL SENSITIVITY AND BUFFER LINES

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 maintenance or ecological functions as long as the watercourses (and riparian zone) are protected (10m buffer). It is found that the integrity of the optimal Critical Biodiversity Area and the ESA is very low due to the consequences of the alien invasive vegetation. No sensitive biota or ecological features / functions are present on site or in the surrounding area.

The proposed agricultural areas are limited to the areas which has previously been modified and been rated to be of low biodiversity and ecological sensitivity. The riparian habitat is therefore excluded from the proposed agricultural area.

Furthermore, no threatened or RDL biota was recorded on the sites and none is expected to be negatively affected.

As the proposed activity site footprint is limited to areas of very low biodiversity and ecological sensitivity, it is not anticipated that the proposed activity will compromise the integrity of the Critical Biodiversity Area or the Ecological Support Area in terms of the Freshwater Ecology. For this reason, 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;
- Spoil material may not be pushed into the drainage lines or natural habitats.
- A Buffer zone of 10m to protect the riparian zone is recommended as delineated in Figure 5 (purple line). The buffer line is applied and may be wider than 10m in placed in order to include large indigenous trees that are marginal;
- 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

Besides the house which is owned and occupied by the farm owner, there are on surrounding land users who could be affected by the generation of dust. The impacts associated with the generation of dust is also of 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 for 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.

Two first order ephemeral drainage lines are located on the northern section of the project area and drains from the northwest to the southeast. These have well defined active channels for the most part.

North of the project area is a small dam. 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

If any activities were to take place within the drainage lines located north of the project area, water resources would be impacted negatively. However, as a buffer of 10m will be implemented to protect the drainage lines within the project area, 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]	Medium	Unlikely	Sure	Reversible	Low	Very Low

Mitigation measures

- No activities may take place within the 10m buffer of the riparian area.

7.1.5 Impact on heritage resources

Description of the potential impact

A Heritage Impact Assessment was conducted, and the survey did not reveal any archaeological or historical features within the perimeter of the proposed site. A burial site consisting of 15 graves belonging to the Hlatshwayo family, is situated on a low ridge outside the proposed development area. These burial sites will therefore not be impacted by the proposed agricultural activities.

Significance of the impact

Seeing that no structures or artefacts of historical or cultural significance were found within the boundary of the proposed agricultural area, 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.

7.1.7 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, during operation, this must be managed and mitigated. Invasive plant species within the perimeter will impact the biodiversity of the surrounding areas.

Significance of the impacts

Invasive plant species within the perimeter of the site will be problematic if not adequately removed or managed. The impact is therefore of medium 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]	Medium	Definite	Sure	Reversible	Medium	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

The two ephemeral drainage lines will be protected by a 10m buffer that will be imposed. No activities will take place within 10m of these drainage line and therefore these drainage lines and water resources will be protected during the operational phase.

In terms of water use, it is estimated that one hectare of full-grown macadamia trees will require 7200 m³ of water per annum in addition to natural rainfall for this area. Thus, with a total of 19 hectares, approximately 136 800m³ of water per year will be required for irrigating purposes. Water will be abstracted from a borehole located on the property. The borehole located on the property of the farm owner was tested to deliver a sustainable yield of 432m³ per day, which equates to 157 680m³ per year, which is more than the water requirement of 136 800m³ per year. The borehole test results are attached as Appendix F.

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 test conducted. 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
Heritage Impacts	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. It is recommended that the ephemeral drainage lines be protected during the operation of the agricultural activities and 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.

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 3 of the farm Boerlands 631-JT, May 2002, C van Wyk Rowe

General Biodiversity and Habitat Report for the farm Boerlands 631-JT, March 2020, D van der Walt