FINAL BASIC ASSESSMENT REPORT

DEBUSHING OF NATURAL LAND FOR AGRICULTURAL USE: PORTION 10 OF THANKERTON 175 JU: HECTORSPRUIT AREA, MPUMALANGA. PROJECT NUMBER: 17/2/3/E-237

PREPARED BY:

RHENGU ENVIRONMENTAL SERVICES

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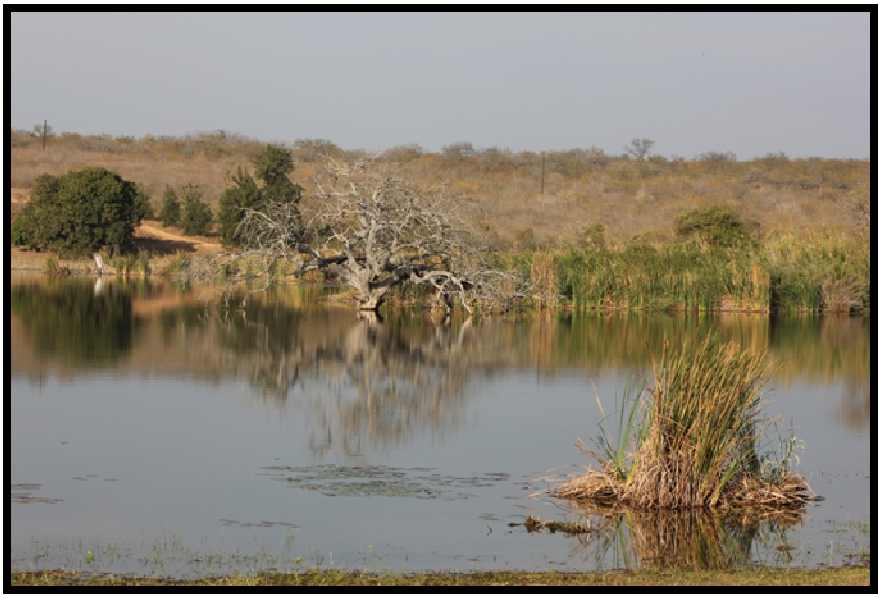
PREPARED FOR:

TULLOH FARM PTY LTD
CONTACT PERSON: MR. LYNTON BALCOMB

FOR SUBMISSION TO:



DEPARTMENT OF ECONOMIC DEVELOPMENT, ENVIRONMENT AND TOURISM, MPUMALANGA PROVINCIAL GOVERNMENT

MAY 2014

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Basic Assessment Report in terms of the Environmental Impact Assessment Regulations, 2010, promulgated in terms of the National Environmental Management Act, 1998(Act No. 107 of 1998), as amended.

	(For applicant / EAP to complete)
File Reference Number:	**Reference: 17/2/3/E-237**
Project Title:	**Debushing of Natural Land for Agricultural Use: Portion 10 of Thankerton 175 JU: Hectorspruit Area, Mpumalanga. Project Number: 17/2/3/E-237.**
Name of Responsible Official:	**Ms. Robyn Luyt**

	(For official use only)
NEAS Reference Number:	
Date Received:	

Kindly note that:

1. Required information must be typed within the spaces provided in the form. The size of the spaces provided is not necessarily indicative of the amount of information to be provided. Tables can be extended as each space is filled with typing.
2. Where applicable **black out** the boxes that are not applicable in the form.
3. An incomplete report may be returned to the applicant for revision.
4. The use of "not applicable" in the report must be done with circumspection because if it is used in respect of material information that is required by the competent authority for assessing the application, it may result in the rejection of the application as provided for in the regulations.
5. All reports (draft and final) must be submitted to the Department at the address of the relevant **DISTRICT OFFICE** given below or by delivery thereof to the relevant **DISTRICT OFFICE**. Should the reports not be submitted at the relevant district office, they will not be considered.
6. No faxed or e-mailed reports will be accepted.
7. One copy of the draft version of this report must be submitted to the relevant district office. The case officer may request more than one copy in certain circumstances.
8. **Copies of the draft report must be submitted to the relevant State Departments / Organs of State for comment.** In order to give effect to Regulation 56(7), proof of submission/delivery of the draft documents to the State Departments / Organs of State must be attached to the draft version of this report.
9. Unless protected by law, all information in the report will become public information on receipt by the competent authority. Any interested and affected party should be provided with the information contained in this report on request, during any stage of the application process.
10. All specialist reports must be appended to this document, and all specialists must complete a declaration of independence, which is obtainable from the Department.

SECTION A: BACKGROUND INFORMATION

Project Applicant:	Mr. Lynton Balcomb		
Trading Name (if any):	Tulloh Pty. Ltd.		
Contact Person:	Mr. Lynton Balcomb		
Physical Address:	Tulloh Farm, Hectorspruit, 1330.		
Postal Address:	P. O. Box 340, Malelane.		
Postal Code:	1320	**Cell:**	082 388 2168
Telephone:	082 388 2168	**Fax:**	Not available.
E-mail:	tulloh@mweb.co.za		
Environmental Assessment Practitioner:	Ralf Kalwa (Rhengu Environmental Services)		
Contact Person:	Ralf Kalwa		
Postal Address:	P. O. Box 1046, Malelane.		
Postal Code:	1320	**Cell:**	082 414 7088.
Telephone:	082 414 7088	**Fax:**	086 685 8003.
E-mail:	rhengu@mweb.co.za		
Qualifications:	BSc. Hons. Wildlife Management.		
Professional Affiliations:	The South African Council for Natural Scientific Professions: Registration Number: No. 400046/08. The Southern African Institute of Ecologists and Environmental Scientists. The Grassland Society of Southern Africa. **A Company Portfolio can be submitted on request**.		

SECTION B: DETAILED DESCRIPTION OF THE PROPOSED ACTIVITY

Describe the activity, which is being applied for, in detail. The description must include the size of the proposed activity (or in the case of linear activities, the length) and the size of the area that will be transformed by the activity.

- **Description of Proposed Activities**:
- The proponent wishes to clear virgin bush on approximately 85ha of a 300ha portion of his farm. The property will be used to plant citrus and other suitable crops.
- Approximately 75 ha will be used for agriculture and some 10 ha for the development of a farm road network to access the various orchards and fields.
- Farm roads will be less than 3.5m wide and will be designed to allow for a gradual controlled run off of water using mitre drains and speed humps.
- Modern irrigation systems (micro-jet) will be installed to each orchard/field.
- This portion is equipped with a pump house and an irrigation dam.
- The property is game fenced.
- **Site Locations are as follows**:

See **Section F**: **Appendix 1** for a Layout Map and a complete list of GPS Points.

SECTION C: PROPERTY/SITE DESCRIPTION

Provide a full description of the preferred site alternative (farm name and number, portion number, registration division, erf number etc.):

- The site is fixed on Portion 10 of the Farm: Thankerton 175 JU.
- No alternative site exists.
- This portion is located south of the N4 Toll Road and is surrounded by similar farming land uses (citrus, sugar cane, game farming).
- A portion of this farm is already under cultivation and has been producing crops and fruit for the past 20 years.
- The applicant lives on the portion of the farm north of the N4 Toll Road.
- The Tulloh Farm is well serviced with homesteads, storerooms, warehouses, pack houses and associated infrastructure and equipment. No expansion of these aspects is envisaged with the proposed project.

Indicate the position of the activity using the latitude and longitude of the centre point of the preferred site alternative. The co-ordinates should be in degrees and decimal minutes. The minutes should have at least three decimals to ensure adequate accuracy. The projection that must be used in all cases is the WGS84 spheroid in a national or local projection. The position of alternative sites must be indicated in Section B of this document.

Site Locations are as follows:
See Section B above and Appendix 1.

Label as per Map	Latitude S	Longitude E
A	25º 27' 58.721"	31º 38' 56.930"
B	25º 28' 6.533"	31º 39' 50.228"
C	25º 27' 16.106"	31º 39' 26.189"
D	25º 27' 19.669"	31º 39' 10.092"
E	25º 27' 26.101"	31º 39' 12.058"
F	25º 27' 27.574"	31º 39' 10.893"
G	25º 27' 31.573"	31º 39' 11.401"
H	25º 27' 34.342"	31º 39' 10.654"
I	25º 27' 38.505"	31º 39' 5.342"
J	25º 27' 50.446"	31º 39' 7.415"

In the case of linear activities:

	Latitude (S):	Longitude (E):
• Starting point of the activity	Not applicable.	Not applicable.
• Middle point of the activity	Not applicable.	Not applicable.
• End point of the activity	Not applicable.	Not applicable.

SITE OR ROUTE PLAN: See Appendix 1 for a detailed Site Layout Plan and GPS Points.

A detailed site or route plan(s) must be prepared for each alternative site or alternative activity. It must be attached as an appendix to this document.

The site or route plans must be at least A3 and must include the following:

6.1 a reference no / layout plan no., date, and a legend / land use table
6.2 the scale of the plan which must be at least a scale of 1:2000;
6.3 the current land use as well as the land use zoning of each of the properties adjoining the site or sites;
6.4 the exact position of each element of the application as well as any other structures on the site;
6.5 the position of services, including electricity supply cables (indicate above or underground), water supply pipelines, boreholes, street lights, sewage pipelines, storm water infrastructure and telecommunication infrastructure;
6.6 all indigenous trees taller than 1.8 metres and all vegetation of conservation concern (protected, endemic and/or red data species);
6.8 servitudes indicating the purpose of the servitude;
6.9 sensitive environmental elements within 100 metres of the site or sites including (but not limited thereto):
- watercourses and wetlands;
- the 1:100 year flood line;
- ridges;
- cultural and historical features;

6.9 10 metre contour intervals

SITE PHOTOGRAPHS: APPENDIX 1

Colour photographs from the centre of the site must be taken in at least the eight major compass directions with a description of each photograph. Photographs must be attached as an appendix to this form**.**

FACILITY ILLUSTRATION: Section F

A detailed illustration of the activity must be provided at a scale of 1:200 as an appendix for activities that include structures. The illustrations must be to scale and must represent a realistic image of the planned activity. The illustration must give a representative view of the activity.

SECTION D: BASIC ASSESSMENT REPORT

Prepare a basic assessment report that complies with Regulation 22 of the Environmental Impact Assessment Regulations, 2010. The basic assessment report must be attached to this form and must contain all the information that is necessary for the competent authority to consider the application and to reach a decision contemplated in Regulation 25, and must include:

	(Checklist for official use only)
1. A description of the environment that may be affected by the proposed activity and the manner in which the geographical, physical, biological, social, economic and cultural aspects of the environment may be affected by the proposed activity.	
2. An identification of all legislation and guidelines that have been considered in the preparation of the basic assessment report.	
3. Details of the public participation process conducted in terms of Regulation 21(2)(a) in connection with the application, including – (i) the steps that were taken to notify potentially interested and affected parties of the proposed application; (ii) proof that notice boards, advertisements and notices notifying potentially interested and affected parties of the proposed application have been displayed, placed or given; (iii) a list of all persons, organisations and organs of state that were registered in terms of regulation **55** as interested and affected parties in relation to the application; and (iv) a summary of the issues raised by interested and affected parties, the date of receipt of and the response of the EAP to those issues;	
4. A description of the need and desirability of the proposed activity;	
5. A description of any identified alternatives to the proposed activity that are feasible and reasonable, including the advantages and disadvantages that the proposed activity or alternatives will have on the environment and on the community that may be affected by the activity;	

6. A description and assessment of the significance of any environmental impacts, including— (i) cumulative impacts, that may occur as a result of the undertaking of the activity or identified alternatives or as a result of any construction, erection or decommissioning associated with the undertaking of the activity; (ii) the nature of the impact; (iii) the extent and duration of the impact; (iv) the probability of the impact occurring; (v) the degree to which the impact can be reversed; (vi) the degree to which the impact may cause irreplaceable loss of resources; and (vii) the degree to which the impact can be mitigated;	
7. Any environmental management and mitigation measures proposed by the EAP;	
8. Any inputs and recommendations made by specialists to the extent that may be necessary;	
9. A draft environmental management programme containing the aspects contemplated in regulation **33**;	
10. A description of any assumptions, uncertainties and gaps in knowledge;	
11. A reasoned opinion as to whether the activity should or should not be authorised, and if the opinion is that it should be authorised, any conditions that should be made in respect of that authorisation	
12. Any representations, and comments received in connection with the application or the basic assessment report;	
13. The minutes of any meetings held by the EAP with interested and affected parties and other role players which record the views of the participants;	
14. Any responses by the EAP to those representations, comments and views;	
15. Any specific information required by the competent authority; and	
16. Any other matters required in terms of sections 24(4)(a) and (b) of the Act.	

The basic assessment report must take into account –

(a) any relevant guidelines; and
(b) any departmental policies, environmental management instruments and other decision making instruments that have been developed or adopted by the competent authority in respect of the kind of activity which is the subject of the application.

* In terms of Regulation 22(4), the EAP managing the application must provide the competent authority with detailed, written proof of an investigation as required by section 24(4)(b)(i) of the Act and motivation if no reasonable or feasible alternatives, as contemplated in subregulation 22(2)(h), exist.

Have reasonable and feasible alternatives been identified, described and assessed?	YES **X**	NO
If NO, the motivation and investigation required in terms of Regulation 22(4) must be attached as an Appendix to this document.		

SECTION D: 2: LEGISLATION

Legislation and guidelines that are being considered for the environmental impact assessment process are as follows:

Constitution of the Republic of South Africa (No. 108, 1996):

The Constitution is the supreme law of South Africa, against which all other laws are measured. It sets out a number of fundamental environmental rights, which include:

The Environmental Clause:

Section 24 of the Constitution outlines the basic framework for all environmental policy and legislation:

It states that everyone has the right to an environment that is not harmful to their health or well-being; and to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that prevent pollution and ecological degradation; promote conservation; and secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development.

Access to Information:

Section 32 of the Constitution provides that everyone has the right of access to any information held by the State or another juristic person and that is required for the exercise or protection of any rights.

Fair Administrative Action:

Section 33 of the Constitution provides for the right to lawful, reasonable and procedurally fair administrative action.

Enforcement of Rights and Administrative Review:

Section 38 of the Constitution guarantees the right to approach a court of law and to seek legal relief in the case where any of the rights that are entrenched in the Bill of Rights are infringed or threatened.

National Environmental Management Act (No. 107, 1998):

The National Environmental Management Act (NEMA) is South Africa's overarching environmental legislation. The Act gives meaning to the right to an environment that is not harmful to health or well-being, entrenched in Section 24 of the Constitution of the Republic of South Africa, Act 108 of 1996. The National Environmental Management Act (NEMA, Act No. 107 of 1998) establishes a set of principles, which all authorities (organs of State) have to consider when exercising their powers, for example during the granting of permits. These include the following:

- Development must be sustainable.
- Pollution must be avoided or minimised and remedied.

- Waste must be avoided or minimised, reused or recycled.
- Negative impacts must be minimised.
- Responsibility for the environmental consequences of a policy, project, product or service applies throughout its life cycle.

NEMA further provides for an equitable access to natural resources, environmental protection and the formulation of environmental management frameworks. The Act is underpinned by the global concept of sustainable development.

The interpretation, administration and application of NEMA are guided by fundamental principles of sustainable development, provided in Chapter 1 of the Act. “Development must be socially, environmentally and economically sustainable” (s 2(3)) and requires the consideration of all relevant factors, which are elaborated by eight sub-principles”.

These principles include:
- The polluter pays principle (s 2(4)(p)).
- The public trust doctrine (s2(4)(o)).
- The equitable access to natural resources (s 2(4)(d)).

Section 24 of the Act states that all activities that may significantly affect the environment and require authorisation by law must be assessed prior to their approval.

The Act goes on to list the requirements for an assessment. These include:
- The environment likely to be affected by the activity and viable alternatives.
- Cumulative effects and their potential significance.
- Mitigation measures including the “no go” option.

Section 28(1) states that “every person who causes, has caused or may cause significant pollution or degradation of the environment must take reasonable measures to prevent such pollution or degradation from occurring, continuing or recurring”.

If such degradation/pollution cannot be prevented, then appropriate measures must be taken to minimise or rectify such pollution. These measures may include:
- Assessing the impact on the environment.
- Informing and educating employees about the environmental risks of their work and ways of minimizing these risks.
- Ceasing, modifying or controlling actions which cause pollution/degradation.
- Containing pollutants or preventing movement of pollutants.
- Eliminating the source of pollution.
- Remedying the effects of the pollution.

National Water Act (No. 36, 1998):

The Act details the management of South Africa's water resources in terms of utilisation and duty of care to prevent water pollution. The act further details the legislation pertaining to the pollution of water reserves (surface and ground water) and the remediation/rehabilitation thereof.

Mpumalanga Nature Conservation Act (No. 10, 1998):

An Act to consolidate and amend the laws relating to nature conservation within the Province and to provide for matters connected therewith. This Act makes provision with respect to nature conservation in the Mpumalanga Province. It provides for, among other things, protection of wildlife, hunting, fisheries, protection of endangered fauna and flora as listed in the Convention on International Trade in Endangered Species of Wild Fauna and Flora, the control of harmful animals, freshwater pollution and enforcement. The Mpumalanga Parks Board, established by section 2 of the Eastern Transvaal Parks Board Act, 1995, shall be responsible for the administration of the Act.

Conservation of Agricultural Resources Act (No. 43, 1983):

This Act provides for control over the utilization of the natural agricultural resources of the Republic in order to promote the conservation of the soil, the water sources and the vegetation and the combating of weeds and invader plants and for matters connected therewith.

National Environmental Management: Biodiversity Act (No.10, 2004):

To provide for, inter alia, the management and conservation of South Africa's biodiversity, to protect species and ecosystems. The Act also covers alien- and invasive species and genetically modified organisms that pose a threat to biodiversity.

The objectives of this Act are to within the framework of the National Environmental Management Act to provide for:

- The management and conservation of biological diversity within the Republic and of the components of such biological diversity.
- The use of indigenous biological resources in a sustainable manner.
- The fair and equitable sharing among stakeholders of benefits arising.
- To give effect to ratified international agreements relating to biodiversity.
- To provide for co-operative governance in biodiversity management and conservation.
- To provide for a South African National Biodiversity Institute to assist in achieving these objectives of this act.

National Environmental Management: Protected Areas Act (No. 57, 2003) as amended by the National Environmental Management: Protected Areas Amendment Act (No 31 of 2004):

To provide for the protection and conservation of ecologically viable areas representative of South Africa's biological diversity and its natural landscapes and seascapes; for the establishment of a national register of all national-, provincial- and local protected areas; for the management of those areas in accordance with national norms and standards; for inter-governmental co-operation and public consultation in matters concerning protected areas; and for matters in connection therewith.

National Environment Conservation Act (No 73, 1989):

The purpose of the Act is to provide for the effective protection and controlled utilization of the environment and for matters incidental thereto. It embodies the concept of control of activities which may have detrimental effects on the environment which may be:

- Land use and transformation.
- Water use and disposal.
- Resource removal, including natural living resources.
- Resource renewal and,
- Agricultural processes.

The Act also provides for the control of Environmental Pollution through:

- Prohibition of littering.
- Removal of litter.
- Waste management.

In addition to the above the Act provides for the regulations regarding waste management such as:

- The classification of different types of waste and the handling, storage, transport and disposal of waste.
- Reduction of waste.
- Utilisation of waste by way of recovery, re-use or processing of waste.
- Location, planning and design of disposal sites and the site used for waste disposal.
- Administrative arrangements for the effective disposal of waste.
- Dissemination of information to the public on effective waste disposal.
- Control over the import and export of waste, etc.

National Heritage Resources Act (No. 25,1999):

The protection and management of South Africa's heritage resources are controlled by the National Heritage Resources Act (Act No. 25 of 1999). The enforcing authority for this act is the South African National Heritage Resources Agency (SAHRA). In terms of the Act, historically important features such as graves, trees, archaeology and fossil beds are protected. Similarly, culturally significant symbols, spaces and landscapes are also afforded protection.

In terms of Section 38 of the National Heritage Resources Act, SAHRA can call for a Heritage Impact Assessment (HIA) where certain categories of development are proposed. The Act also makes provision for the assessment of heritage impacts as part of an EIA process and indicates that if such an assessment is deemed adequate, a separate HIA is not required. Legal Requirement to Comply with:

According to the National Heritage Resources Act (Section 38(8)), such an assessment has to meet the requirements of the relevant heritage authority. The following requires the approval of SAHRA:

- Subject to the provisions of subsections (7), (8) and (9), any person who intends to undertake a development categorised.
- The construction of a road, wall, power line, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length.
- Any development or other activity which will change the character of a site-exceeding 5 000 m² in extent; or involving three or more erven or divisions thereof which have been consolidated within the past five years.
- The costs of which will exceed a sum set in terms of regulations by SAHRA or a provincial heritage resources authority.
- The re-zoning of a site exceeding 10 000 m² in extent.
- Any other category of development provided for in regulations by SAHRA or a provincial heritage resources authority, must at the very earliest stages of initiating such a development notify the responsible heritage resources authority and furnish it with details regarding the location, nature and extent of the proposed development.

Occupational Health and Safety Act (No. 85, 1993):

To provide for the health and safety of persons at work and for the health and safety of persons in connection with the use of plant and machinery; the protection of persons other than persons at work against hazards to health and safety arising out of or in connection with the activities of persons at work; to establish an advisory council for occupational health and safety; and to provide for matters connected therewith.

Promotion of Access to Information Act (No 2, 2000):

To give effect to the constitutional right of access to any information held by the State and any information that is held by another person and that is required for the exercise or protection of any rights and to provide for matters connected therewith.

National Environment Management: Waste Act, 2008 (No 59 of 2008):

To reform the law regulating waste management in order to protect health and the environment by providing reasonable measures for the prevention of pollution and ecological degradation and for securing ecologically sustainable development.

- To provide for institutional arrangements and planning matters.
- To provide for national norms and standards for regulating the management of waste by all spheres of government.
- To provide for specific waste management measures.
- To provide for the licensing and control of waste management activities.
- To provide for the remediation of contaminated land.
- To provide for the national waste information system.
- To provide for compliance and enforcement.
- To provide for matters connected therewith.

Section 24 of the National Environmental Management Act (1998) requires that activities that require authorization or permission by law which may significantly affect the environment, must be considered, investigated and assessed prior to their implementation and reported to the organ of state charged by law with authorizing, permitting, or otherwise allowing the implementation of an activity. The EIA process is the tool used to apply for authorization from the regulating authority for the relevant activities identified that may impact on the environment.

National Forests Act, 1998 (Act No. 84 of 1998):

No person may cut, disturb, damage or destroy any protected tree or possess, collect, remove, transport, export, purchase, sell, donate or in any other manner acquire or dispose of any protected tree or any forest product derived from a protected tree, except under a licence or exemption granted by the Minister to an applicant and subject to such period and conditions as may be stipulated.

SECTION E: CONSULTATION WITH OTHER STATE DEPARTMENTS

Provide a list of all State Departments / Organs of State that have been consulted and registered as interested and affected parties, and to whom draft reports have been submitted for comment. **Proof of submission / delivery of the draft report to all State Department / Organs of State must be attached to this document.**

Department:	Department of Economic Development, Environment and Tourism: Mpumalanga Provincial Government (DEDET): Nelspruit Office.		
Contact person:	Ms. Robyn Luyt.		
Postal address:	Private Bag X 11215, Nelspruit.		
Postal code:	1200	**Cell:**	082 672 7868
Telephone:	013 766 4826	**Fax:**	013 766 4614
E-mail:	RLuyt@mpg.gov.za		
Department:	South African Heritage Resources Agency		
Contact person:	Ms. Mariagrazia Galimberti		
Postal address:	P. O. Box 4637, Cape Town.		
Postal code:	8000	**Cell:**	Not available.
Telephone:	021 462 4502	**Fax:**	021 462 4509
E-mail:	mgalimberti@sahra.org.za		

Department:	Nkomazi Local Council		
Contact person:	Mr. Doctor Nkosi/Ms. Shirley Matsane		
Postal address:	Private Bag X 101, Malelane, 1320.		
Postal code:	1320.	**Cell:**	Not available.
Telephone:	013 790 0381/790 1303	**Fax:**	013 790 0886
E-mail:	Doctor.nkosi@nkomazi.gov.za Shirley.shabangu@nkomazi.gov.za		
Department:	Department of Agriculture, Forestry and Fisheries		
Contact person:	Mr. Zinzile Mtotywa		
Postal address:	Private Bag X 11243, Nelspruit, 1200.		
Postal code:	1200	**Cell:**	071 883 2768
Telephone:	013 754 0761	**Fax:**	086 628 7237
E-mail:	ZinzileM@nda.agric.za		

Department:	Department of Agriculture: Resource Management: Provincial		
Contact person:	Mr. Louw Bierman		
Postal address:	P. O. Box 266, Nelspruit, 1200.		
Postal code:	1200	**Cell:**	076 486 9485
Telephone:	Not available.	**Fax:**	Not available.
E-mail:	lbierman@mpg.gov.za		
Department:	Department of Water Affairs		
Contact person:	Mr. Sampie Shabangu		
Postal address:	Private Bag X 11259, Nelspruit, 1200.		
Postal code:	1200	**Cell:**	Not available.
Telephone:	013 759 7419	**Fax:**	013 759 7460
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Department:	Department of Agriculture, Forestry and Fisheries		
Contact person:	Mr. Love Shabane		
Postal address:	P. O. Box 8806, Nelspruit, 1200.		
Postal code:	1200	**Cell:**	Not available.
Telephone:	013 754 0734	**Fax:**	013 754 0735
E-mail:	LoveS@nda.agric.za		
Department:	Mpumalanga Tourism and Parks Agency		
Contact person:	Mr. Frans Krige Ms. K. Narasoo		
Postal address:	Private Bag X 11338, Nelspruit, 1200.		
Postal code:	1200	**Cell:**	Not available.
Telephone:	013 759 5300	**Fax:**	013 755 3928
E-mail:	frans@mtpa.co.za		

SECTION F: APPENDICES

The following appendices must be attached to the basic assessment report as appropriate:

Site plan(s)

Photographs

Facility illustration(s)

Specialist reports

Comments and responses report

Other information

1. EXECUTIVE SUMMARY

The **Environmental Investigation Process** was conducted over a period of 6 months in the Hectorspruit-Komatipoort area of Nkomazi. The proposed debushing of natural land will allow the applicant the opportunity to expand his farming enterprise and ensure a long term sustainable approach to his **citrus business** activities.

The public participation process was advertised locally and regionally in the printed media, on site and at various sites of interest and public access in the towns of Hectorspruit and Malelane. The immediate neighbours of the property were contacted specifically via e mail and requested to attend the Site Meeting.

This **Draft Report** was made available for comment at the **Malelane Library, the farm office of the applicant, the offices of Nkomazi Council and to all individuals and government departments that registered and or attended the Public Site Meeting.** No comments and or additional input were submitted by Interested and Affected Parties. SAHRA submitted a belated reply with no objections to the development. See Appendix 4.7. for a copy of the SAHRA letter.

This **study and evaluation** has looked at the various aspects that could be affected by the implementation of such a proposal.

The **Impact Assessment** investigated the **significance** of impacts, **alternative** options and **mitigation** measures where applicable. The Report also includes a **Development Environmental Management Programme (EMP) and Specialist Studies** on the **ecology** of the designated project site and a **Heritage Impact Assessment (HIA).**

An analysis of the environmental impacts and issues has not revealed any **fatal flaws**. All the impacts and issues identified and discussed during the investigation can be mitigated to an acceptable degree.

Provided the developer implements the implications of this report, the contents of the EMP and the mitigation measures proposed it is recommended that the application is approved.

2. ABBREVIATIONS

ASAP	As Soon As Possible
Asl	Above sea level
cm	centimetre
DAFF	Department of Agriculture, Forestry and Fisheries
DARDLA	Department of Agriculture: Resource Management: Provincial
DEDET	Department of Economic Development, Environment and Tourism
DWA	Department of Water Affairs
EAP	Environmental Assessment Practitioner
ECO	Environmental Control Officer
EIA	Environmental Impact Assessment
EIR	Environmental Impact Report
EMP	Environmental Management Programme
ESCOM	Electricity Supply Commission
GPS	Geographical Positioning System
HIA	Heritage Impact Assessment
HIV	Human Immunodeficiency Virus
I&AP's	Interested and Affected Parties
IEM	Integrated Environmental Management
LSA	Late Stone Age
m	metre
mm	millimetre
m/s	metre per second
NA	Not Applicable
NDA	National Department of Agriculture
NEMA	National Environmental Management Act
MTPA	Mpumalanga Tourism and Parks Agency
OMP	Operational Management Programme
PDI	Previously Disadvantaged Individual
RES	Rhengu Environmental Services
ROD	Record of Decision
SABS	South African Bureau of Standards

SAHRA	South African Heritage Resources Agency
sqm	square metre

3. GENERAL INFORMATION

Project Title	Environmental Impact Assessment: Basic Assessment Report: The Debushing of Natural Land for Agricultural Use: Portion 10 of the Farm Thankerton 175 JU, Hectorspruit, Nkomazi Local Municipality, Mpumalanga Province. Project Reference: 17/2/3/E-237

Name of Applicant	Mr. Lynton Balcomb
Address	P. O. Box 340, Malelane, 1320.
Contact Person	Mr. Lynton Balcomb
Telephone Number	082 388 2168
Cell Number	082 388 2168
Fax Number	Not available.

Name of Consultant	Rhengu Environmental Services (RES)
Address	P. O. Box 1046 Malelane 1320
Contact Person/s	Ralf Kalwa
Telephone Number	082 414 7088
Fax Number	086 685 8003
Date of Report	March 2014.

Date of Public/Focus Group/Departmental Meeting/s	1. Meeting 1: 20/01/2014
Persons/Officials Present	**Meeting 1: Interested and Affected Parties: Neighbour/s and Government Officials:** • Louw Bierman — DARDLA • Lynton Balcomb — Applicant: Farm: Thankerton • Zinzile Mtotywa — DAFF • Nakeni Khoza — DAFF • Shirley Matsane — Nkomazi Municipality • Andrew Deacon — Specialist Ecologist • Christine Rowe — Specialist Archaeologist • Stefenie Botha — Neighbour
Advertisments: Media	1. Corridor Newspaper: 7 November 2013. 2. Lowvelder Newspaper: 8 November 2013.

4. LOCALITY INFORMATION

Name of Place and Locality.	The development site is located on Portion 10 of the Farm Thankerton 175 JU, Hectorspruit, Nkomazi Local Municipality, Mpumalanga Province. The farm portion is located south off the N4 National Highway between Malelane and Hectorspruit. The farm is bordered in three wind directions by farms practicing agricultural- and tourism land uses.
Region/District	The property is found in the Nkomazi Region near the towns of Hectorspruit and Malelane in Mpumalanga.
Title Deed	See **Appendix Document: Appendix 4.1 (Section F).**
Size of Portion 10: Thankerton 175 JU.	Approximately 300 ha.
Local Authority	Nkomazi Local Authority.
Nearest Town/s	Hectorspruit-Malelane.
Nearest Main Road	Main road N4 between Hectorspruit and Malelane.

Type of area where the proposed development will take place (mark all applicable blocks).

CBD		Rural	**X**	City		Recreational area	**X**
Commercial	**X**	Agricultural	**X**	Town		Other:	
Industrial		Staff Housing		Township			
Tourism	**X**	Road	**X**	In a Building			

5. PROJECT INFORMATION

5.1. Current Status and Infrastructure:

- **Current Land Use:** The farm portions south of the N4 Toll Road are used for mixed farming: mango, citrus and recreational use.
- The greater farm is well serviced with homesteads and support infra-structure which includes store rooms, warehouses and garages.
- Various access roads and service lines supply potable/irrigation water and power supply (ESCOM).
- A staff compliment of **72** occupy various permanent positions on the farm.
- An all weather gravel access road links the property to the National tar road (N4).

5.2. Planned/Proposed Activity, Infrastructure Specifics and Project Specifics:

- **Description of Proposed Activities**:
- The proponent wishes to clear virgin bush on approximately 85ha of a 300ha portion of his farm. The property will be used to plant citrus and other suitable crops.
- Approximately 75 ha will be used for agriculture and some 10 ha for the development of a farm road network to access the various orchards and fields.
- Farm roads will be less than 3.5m wide and will be designed to allow for a gradual controlled run off of water using mitre drains and speed humps.
- Modern irrigation systems (micro-jet) will be installed to each orchard/field.
- This portion is equipped with a pump house and an irrigation dam.
- The property is game fenced.
- **Development- and current Infrastructure Specifications:**
- **Power**: The property is well serviced with an existing ESCOM electricity supply (pump house) and overhead power lines traverse the farm as part of the National Escom Grid.
- **Water Supply**: Additional water provision services (irrigation lines and pumps) will be installed by the proponent. The current land use is entitled to agricultural water rights.
- An analysis of the water availability has summised that an adequate water supply is available under existing entitlements registered in favour of the applicant. See **Appendix 4.3**.
- **Solid Waste Management**: Currently the solid waste that is produced on the farm and adjoining land uses is transferred for disposal to the Nkomazi Landfill Site near the TSB factory.
- Very little additional waste will be generated by the expansion process. Bar a few fertilizer bags, waste production will be low.

5.3. Needs- and Desirability of Proposed Activity: Expansion of Agriculture: Citrus Production

- **Introduction**: Development proposals should always follow an **integrated approach** to project planning. With this in mind the project must make economic sense, whilst at the same time environmental damage and impact must be kept to a minimum and or mitigated fully. Finally the needs and aspirations of society must be met with the view to producing the best long term product for the community at large. Having said this it must be noted that developers are spending thousands of Rand of hard earned money to ensure the financial viability of each proposed project. Developers, in most cases, think long and hard before they channel money towards a specific project. It is not in their interest to embark upon a project without having assessed all the risks involved. They, just as society, are keen to see that the project is a long term **sustainable** success.
- **Strategic Regional Initiatives**: During the late 90's the Government in conjunction with local businesses and councils implemented the Maputo Corridor initiative in the Nkomazi Region of Mpumalanga. The Premier of the Province at the time (Mr. Mathews Phosa) went on record in the media and other forums where he encouraged local businesses and developers to embrace this initiative in all its facets. The corridor was to become the umbilical cord which linked South Africa to the Port of Maputo and to the economic opportunities of both countries.
- Specific emphasis was placed on the tourism potential; resources (e.g. gas); service provision; agricultural markets and the export possibilities via the harbor, e.g. coal.
- The local Nkomazi Council is thus very supportive of developments associated with the Maputo Corridor, and the expansion of agriculture and sustainable land use envisaged by this project proposal under investigation compliments the regional vision that the authorities have for this area.
- **Neighbouring Land Uses and Compatibility**: The project area is surrounded by agriculture and a diversity of similar farming operations which include sugar cane-, citrus- and game production.
- No objections or negative comments to the project proposal (change in land use) have to date been submitted by any of the neighbours.
- **Land Claim, Financial Viability and Agricultural Potential of the Property**: The project site was used for pasture (wildlife) and as a recreational opportunity by the applicant.
- An old mango orchard is also found on this portion of the farm.
- The Onderberg Area was subjected to various land claim assessments by the Land Claims Commissioner in the past few years and combined with a recession in the agricultural sector; farmers were until recently reluctant to expand their enterprises under prevailing uncertain conditions.
- The project area has been given the all clear from the Land Claims Commissioner and together with a need for more agricultural production the time is ripe to capitalise on the economic opportunity for this farm. **(See Appendix 4.2.)**
- The financial model for this property based on crop production outweighs the potential of the land to produce the same economic benefits from providing pasture for a few antelope species.
- To this end the proposal then makes economic sense as crop production is a long term solution.
- This also provides the proponent an opportunity to remain financially competitive in an ever challenging and diverse business market.

- Finally, the Department of Agriculture: Provincial has assessed the potential of the project site for agriculture and supports the intentions of the applicant. See letter in **Appendix 4.4.**
- **Social Commitment and Job Creation**: A number of business sectors and community members will benefit if this project is successful.
- The proponent and his family will benefit financially in the long term. In the short to medium term however, the development node will require substantial capital to install services (irrigation) and develop the lands/fields necessary to convert this virgin bush into a citrus orchard.
- The Onderberg Region and outlying rural areas have been classified as one of the poorest in South Africa. Conservative estimates list jobless figures in the region of 30%. HIV infections are just under 40% and many job seeking immigrants from neighbouring countries migrate to this area and add to the challenges faced by rural communities.
- The current status of the property would provide work for 2 or 3 farm workers in the long term. The advent of the proposed project could however see this climb to 20 during the development phase **(temporary jobs)** and 14 **permanent job opportunities** in the long term after the project is completed and fully operational. Job opportunities will include but not be limited to: maintenance positions on the irrigation systems and fences; weeding and fertilizer operations; planting and harvesting.
- Unskilled labour will earn in the region of R 2310.00 per person per month.
- Additional to this 10 temporary workers will be employed annually for 4 weeks at a time.
- The opportunities above do not include subsidiary services such as an increase in maintenance of vehicles; retail needs and medical facilities. This development will thus benefit the businesses in Hectorspruit, Komatipoort and Malelane.
- **Location**: Is this the correct location for the project? The site is fixed and the proponent does not own similar land elsewhere. In terms of compatibility of land uses and whether this development will fit in with similar developments in the area the location is regarded as ideal.
- The site is close to the N4 and the citrus processing facilities in Malelane. Access to markets and the processing facilities are thus conveniently positioned.
- Finally, the project site is surrounded in all wind directions with similar land uses.
- **Environmental (Ecological) Implications/Limitations**: An assessment of the prevailing fauna and flora has not revealed any threats to species/habitat and or highlighted any critical limitations to the development which can be of ecological significance.
- Detail studies were commissioned to ensure that impacts on the environment are clearly understood and the results are included in the Specialist Report in **Appendix 4.6.**
- It must also be remembered that more than a third of the Project Area will remain intact as natural bush to ensure that ecological corridors are maintained on the farm.
- **Positive Impacts**: The creation of permanent jobs with a long term potential and job security is regarded as a significant impact which will spill over into the well being of a number of families in the local community.
- Furthermore, the financial viability of the project will translate into economic growth for the investors and the local Nkomazi area as a whole, albeit in the medium to long term.
- Finally, the growth in citrus production will be optimized on a piece of land which has become uneconomical from an agricultural perspective.

- **Access Road:** The access to the Project Area from the N4 tar road is functional and does not require any changes or upgrading. Fruit/crop trucks will thus have a reliable access to harvest and collect the produce.
- Existing farm roads in the project area will be used where possible.
- **Timing:** Is this the right time to implement such a development? The farms in the Onderberg have been subjected to an analysis and a court case to determine land rights and whether these farms should be subjected to land claims. This process lasted for more than 6 years and in the case of the proposed project site (and many other farms in the Onderberg) the Lands Claim Commissioner decided in favour of the present landowners.
- This protracted and painful process for all parties resulted in little or no new developments being initiated on these farms and properties until the outcome of the process was made known.
- In the light of the above many projects were put on hold and the timing of this proposed project could thus not be more relevant and applicable following this long and arduous delay. See **Appendix 4.2**. for a copy of the Lands Claims Decision. Additional documentation regarding this process can be provided on request.
- **Integrated Environmental Management**: The objective of integrated environmental management is to balance all interests towards sustainability. For many the word "sustainability" remains a unicorn of environmental management; a myth that is often poorly defined and or understood.
- As participants in environmental management we can at best evaluate the project for its inherent advantages and disadvantages. With the help and input of the Public, Specialists and Project Consultants we endeavour to draw a clearer picture with which we all can associate and hopefully agree to and support.
- We raise questions which include but are not limited to: Is the proposed activity/development harmful to the environment?; Did we ensure that all perceived impacts were mitigated adequately in favour of maintaining the environmental integrity?; Will the local/regional/national community benefit from this development and or is the development an improvement on an old, outdated concept?; Did we ensure that the general public participated in this project from day of advertisement till submission of documentation? Did we ensure that the economics of the activity were in place prior to project implementation? Is the project feasible? What are the alternatives? Have we taken into account the various Government role players with regards to sharing information and or authorisation requirements of the project? The list goes on, however the team associated with this proposal is confident that we have ticked the right boxes and can answer in the positive to the questions listed above. In some cases we have had to suggest measures of mitigation to soften the impact towards a degree of sustainability.
- **Need and Desirability of the Proposed Project**: In conclusion, it is the opinion of the EAP that the cummulative effect of the factors listed above will result in a positive contribution in the fields of economic benefit and social upliftment in the region, with little or at most manageable impacts in the environmental arena.

6. DESCRIPTION OF NATURAL ENVIRONMENT (Mucina and Rutherford, 2006)

Topography	Mountain	Midslope	Flats	Valley Bottom	Wetland	River	Other
		X	X	X	X	X	

Geology	• Veld Type: SVI 3 Granite Lowveld: Mucina and Rutherford (2006). • From north to south, the Swazian Goudplaats Gneiss, Makhutswi Gneiss and Nelspruit Suite (granite gneiss and migmatite) and further south, the younger Mpuluzi Granite (Randian) form the major basement geology of the area. • Archaean granite and gneiss weather into sandy soils in the uplands and clayey soils with high sodium content in the lowland**s.**		
Climate	• Summer rainfall with dry winters. • The annual average for rainfall in the area is around 630 mm. • Generally a frost free region. • Mean annual maximum and minimum temperatures for Skukuza are 39.5ºC and -0.1ºC for January and June respectively.		
Soil Description	**Depth**	**Texture**	**Dominant Soil Forms**
	Not Applicable	Valley Bottom: Sandy/Loam Midslopes: Coarse Sandy/Coarse Gravel.	Not Applicable
Stability	Buildings, e.g. pump houses, homesteads, workshops etc.; have been developed on these soils using normal construction methods and processes. Soils are considered as stable.		

Flora Description	• As per the classification by Mucina and Rutherford (2006) the farm falls within the Granite Lowveld Veld Type. • **Tree species** that **<u>normally dominate</u>** this veld type under natural conditions include: *Sclerocarya birrea; Ficus sansibarica; Trichilia emetica; Peltophorum africanum; Terminalia sericea; Acacia nigrescens; Acacia nilotica; Albizia harveyi; Combretum apiculatum; Combretum imberbe; Combretum zeyheri; Ficus stuhlmannii; Pterocarpus rotundifolius; Acacia exuvialis; Acacia gerrardii; Bolusanthus speciosus; Cassia abbreviata; Combretum collinum; Dalbergia melanoxylon; Gymnosporia glaucophylla; Lannea schweinfurthii; Pavetta schumanniana; Plectroniella armata* and *Terminalia prunioides.* • **Shrub species** in this vegetation type include: *Combretum hereroense; Dichrostachys cinerea; Euclea divinorum; Strychnos madagascariensis; Gardenia volkensii; Hibiscus micranthus; Tephrosia polystachya; Abutilon austro-africanum; Agathisanthemum bojeri; Aptosimum lineare; Baleria elegans; Clerodendrum ternatum; Commiphora africana; Gossypium herbaceum* and *Pavonia burchellii.* • **Woody Climbers** include: *Sphedamnocarpus pruniensis*. • **Herbaceous climbers** include*: Rhynchosia totta.* • **Grasses and other Graminoids** include: *Brachiaria nigropedata; Digitaria eriantha; Eragrostis rigidior; Melinis repens; Panicum maximum; Pogonarthria squarrosa; Aristida congesta; Bulbostylis hispidula; Chloris mosambicensis; Enneapogon cenchroides; Heteropogon contortus; Leptochloa eleusine; Perotis patens;*

	Schmidtia pappophoroides; Sehima galpinii; Tricholaena monachne and *Urochloa mosambicenis.* • **Herbs** include: *Achyranthes aspersa; Aspilia mosambicensis; Becium filamentosum; Chamaecrista absus; Commelina benghalensis; Commelina erecta; Cucumis africanus; ; Evolvulus alsinoides; Heliotropium strigosum; Hermbstaedtia odorata; Hibiscus praeteritus; Indigofera filipes; Indigofera sanguinea; Kohautia virgata; Kyphocarpa angustifolia; Leucas glabrata; Ocimum gratissimum; Phyllanthus maderaspatensis; Pupalia lappacea; Vahlia capensis; Waltheria indica; Orbea rogersii* and *Stapelia leendertziae.*

Conservation Status	• This veld type is classified as vulnerable. 17% is statutorily conserved in the Kruger National Park. About 20% of this vegetation type has been transformed mainly by cultivation and settlement development.

Current Ecological Status of the Proposed Site:

- The chapter above describes the **expected pristine state** of the natural flora and its associated biodiversity.
- However, the natural status of the proposed site has been **partially transformed**. An old mango orchard, ESCOM and SASOL servitude and many farm roads has depleted/transformed the natural bush on approximately 20% of the portion under application.
- **Woody Vegetation**: Species that make up the **present** woody vegetation composition include *Sclerocarya birrea; Acacia nigrescens; Combretum apiculatum; Combretum imberbe; Combretum zeyheri; Combretum hereroense; Dichrostachys cinerea; Euclea species, Grewia species* and *Strychnos madagascariensis.*
- Special attention will be afforded to ***Combretum imberbe*** and ***Sclerocarya birrea*** trees which are on the Protected Trees List.
- **Grasses** include: *Brachiaria nigropedata; Digitaria eriantha; Eragrostis rigidior; Melinis repens; Panicum maximum; Pogonarthria squarrosa; Aristida congesta; Enneapogon cenchroides; Heteropogon contortus; Perotis patens* and *Urochloa mosambicenis.*
- An ESCOM overhead power line cuts through the natural bush and farm roads link various sections of the property.
- The SASOL Gas Pipeline cuts a 50m wide servitude through the project site.

Did the applicant undertake a soil suitability evaluation?

Yes	No
X	

Comments:

A Soil Specialist (Mr. Chris Kellerman) was commissioned to assess the suitability of the soils for citrus production. The soil specialist has confirmed that the soils on site are suitable for agriculture with special reference to the production of citrus. **See Appendix 4.5**.

Has the applicant proof of sufficient water for the proposed development?

Yes	No
X	

Comments:

Water rights are available for crop production and the applicant has calculated that his current supply will suffice using the latest irrigation methods and technology available in the market. **See Appendix 4.3.**

Wetlands/Rivers and Watercourses bordering proposed development	• A drainage line is found in the western section of the Portion. This drainage line feeds a man made irrigation dam.

Are there any known Red Data biota on or near the proposed development?

Yes	No
	X

- No rare biota was observed during the site visits or during any other visits to the site.
- See **Appendix 4.6.** for detail in this regard.

Comments:

Fauna Description	• Portion 10 is surrounded on all fronts by agriculture and farms practising a variety of agricultural land uses including sugar cane, citrus and or game farming. • A large section of Portion 10 was set aside by the owner for personal recreational use. • The application will ensure that the natural section is reduced in size but will still allow for an ecological corridor and habitat niches for game and naturalised fauna. Many smaller and larger animals will be allowed to seek refuge in this natural corridor.

Are there any known rare bird breeding sites on or near the proposed development?

Yes	No
	X

Comments

No rare species breeding sites were discovered at or near the project site.

Are there any known archaeological, cultural- or historical sites on or near the proposed development?

Yes	No
	X

- A **Heritage- and Culture Specialist** was commissioned to assess the potential presence of historical sites and artefacts. See **Appendix 4.7**. for detail in this regard.
- No artefacts of cultural significance have been observed during the farming activities (or during the specialist survey) which have occurred on the property for decades.
- Should any artefacts or a find be discovered during the development process, the proponent must engage the services of an accredited archaeologist to deal with the find.
- Should the application be approved, it is recommended that an Ecological Control Officer (ECO) oversee the implementation of the development phase and the handling of finds will be addressed as per the Environmental Management Programme (EMP).

What general precautionary measures will be taken if an archaeological, cultural- or historical site is discovered?

- Should any artefact, or historical site be discovered during the removal of vegetation and or installation of irrigation systems as well as in future, all works must cease with immediate effect.
- The find must be reported to the Project Manager for the development and the ECO for the project. These representatives will initiate an Action Plan in conjunction with SAHRA to address the management and handling of the find.

7. ENVIRONMENTAL ISSUES

This chapter describes the **issues, concerns and opinions** identified:

- during the **public participation process, i.e. focus group meetings;**
- by **authorities and the applicant/management authority** during consultation- and pre-application meetings and telephonic discussions;
- by the **consultant** based on previous experience in the area.

7.1. Key Issues: See Issues and Responses Report in Appendix 2.

- The response to the on-site and newspaper advertisements was **poor.** The call for potential Interested and Affected Parties to attend the on-site meeting **did not result** in a significant interest.
- The EAP also had to make a **special effort** to engage the local council to ensure that this very important role-player was kept abreast of the progress of all aspects of the project.
- The following key **issues/impacts** were identified during the meetings with neighbours and representatives from various government departments and by the EAP:

Environmental Aspects	• Specialist Study on Terrestrial Ecology. • Irrigation Systems. • Water Balance. • Protected Tree Species. • Soil Type and Suitability. • Agricultural Potential. • Alien/Invasive Plants.
Economic-Operational Aspects	• Job Opportunities. • Economic Sustainability.
Social Aspects	• Cultural Artefacts. • Job Opportunities. • Land Claim. • Needs and Desirability of Project.

7.2. Ranking of Environmental Issues Identified

To identify the issues, these were ranked as per the four different criteria outlined in the Environmental Impact Assessment Guideline Document for assessing impacts in Environmental Impact Reports.
The environmental elements (issues/impacts) are evaluated according to the following criteria:

1. **Intensity** – 4 Categories were distinguished:
   Positive (**+**), Negative (**-**), No Impact (**0**), and Uncertain (**U**).

   The positive- and negative categories were further divided to distinguish between low-, medium-, and significant impacts.
   Scores were awarded as follows:
   Low = 1, Medium = 2, and Significant = 3.

   Issues/Impacts were ranked in order of importance as:

   1. Critical Issues/Impacts with scores ≥ -5,
   2. Important Issues/Impacts with scores < - 5 to - 1, and
   3. Operational/Management Issues/Impacts with scores ≥ 0.

2. **Duration** - Is the impact – **S**hort-, **M**edium term, or **P**ermanent.

3. **Probability** of impact – Improbable (**I**); Probable (**?**); Definite (**D**),

4. **Extent** – Is the effect **L**ocal; **R**egional; **N**ational; or **I**nternational.
5. **NA -** Not Applicable.

7.3. Environmental Screening and Rating

KEY OF SYMBOLS TO BE USED IN TABLE			
Intensity of impact/issue:	Significant Impact	Medium Impact	Low Impact
Positive (**+**)	**+ 3**	**+ 2**	**+ 1**
Negative (**-**)	**- 3**	**- 2**	**- 1**
Impact uncertain (**U**)	**U**		
No envisaged impact (**0**)	**0**		
Duration of impact/issue	**S**hort Term = **S**	**M**edium Term = **M**	**P**ermanent = **P**
Probability of impact/issue	**I**mprobable = **I**	**P**robable = **?**	**D**efinite = **D**
Extent of impact/issue	**L**ocal = **L**	**R**egional = **R**	**N**ational/International = **N**
NA: Not **A**pplicable	**TABLE FOR IDENTIFICATION OF POTENTIAL ENVIRONMENTAL IMPACTS**		

ENVIRONMENTAL ELEMENT	**DEVELOPMENT PHASE**	**OPERATIONAL PHASE**	**TOTAL SCORE**
ENVIRONMENTAL ASPECTS: GENERAL			
Specialist Study on Terrestrial Ecology.	-1,P,D,L	0,P,D,L	-1
Irrigation Systems.	0,P,D,L	+1,P,D,L	+1
Water Balance.	-1,P,D,L	-1,P,D,L	-2
Protected Tree Species.	-1,P,D,L	0,P,D,L	-1
Soil Type and Suitability.	0,P,D,L	0,P,D,L	0
Agricultural Potential.	0,M,D,L	+2,P,D,L	+2
Alien/Invasive Plants.	-1,M,D,L	0,P,D,L	-1
ECONOMIC ASPECTS:			
Job Opportunities.	+1,M,D,L	+2,P,D,L	+3
Economic Sustainability.	0,M,D,L	+1,P,D,L	+1
SOCIAL ASPECTS			
Cultural Artefacts.	0,S,D,L	0,P,D,L	0
Job Opportunities.	+1,M,D,L	+2,P,D,L	+3
Land Claim.	0,S,D,L	0,P,D,L	0
Needs and Desirability of Project.	+1,M,D,L	+2,P,D,L	+3

7.4. Issues Identified

7.4.1 Critical Issues

No **Critical Issues** were identified during the screening process.

7.4.2 Important Issues

- Specialist Study on Terrestrial Ecology.
- Water Balance.
- Protected Tree Species.
- Alien- and Invasive Plants.

7.4.3. Operational/Management Issues

- Soil Type and Suitability.
- Cultural Artefacts.
- Land Claim.

7.4.4. Positive Impacts

- Irrigation Systems.
- Agricultural Potential.
- Job Opportunities.
- Needs and Desirability of Project.
- Economic Sustainability.

7.5. Impacts/Issues: (This Section must be read in conjunction with the contents of the Development Environmental Management Programme)

Important Issues	Discussion/Mitigation/Recommended Management Approach
1. Specialist Study on Terrestrial Ecology.	See **Appendix 4.6** for detail on all aspects of the biodiversity associated with the Project Area. • **Project Area**: The applicant proposes to clear approximately 85ha of natural bush on a 300 ha portion on the farm Thankerton 175 JU. The project area is earmarked for the production of citrus. • **Mitigation**: A natural ecological corridor will remain intact as is and allow for continued movement of all forms of fauna species through the farm. This area will include the drainage line, the man made dam that was constructed many years ago and the undulating sections adjacent to the drainage line. • By keeping this drainage line intact, the riparian zone (with adjacent bushveld habitat) will act as a functional corridor for migrating animals between the relatively large area covered by the game farm to the south and other corridors north of the Portion 10. • **Habitat Integrity**: The farm is situated in the Granite Lowveld vegetation type and the landscape is well protected, rendering its Ecosystem Status as "Vulnerable". Broad-scale vegetation units were identified on the basis of structural and functional criteria and these units are demarcated as: • Area 1: Woodland dominated by *Combretum apiculatum*. • Area 2: Woodland dominated by *Dichrostachys cinerea*. • Area 3: Woodland with a mix of *Combretum apiculatum* and *Sclerocarya birrea*. • Area 4: Woodland mixed with *Terminalia sericea* prominent. • Area 5: Low-lying, undulating zone with tall woodland. • Area 6: The broad riparian zone adjacent to the larger drainage line feeding the farm dam. • Area 7: Woodland mixed with *Combretum apiculatum*, *Sclerocarya birrea* and *Philenoptera violacea*. • Area 8: Woodland with a mix of *Combretum apiculatum* and *Strychnos madagascariensis*. • Area 9: Old agricultural fields, with some fruit trees and *Dichrostachys cinerea* encroaching the area. • **Riparian Zone**: The **drainage wetland area** was included in the assessment although it was anticipated that this area will be earmarked for exclusion from any of the proposed developments. Additionally, indirect impacts caused by the development may have had an influence on the area. However, after assessing the biogeography of the area and associated biota, **no significant adverse affects** were identified emanating from the adjacent development. Seepage from the irrigated orchards may cause higher moisture soil content to areas in the drainage line, but this should not be detrimental to the local ecology, and may even be beneficial to the wetland features of the drainage line in the area.

	• The major drainage line and associated vegetation zone is considered important in the regional context as the drainage line interlinks the area between the game farms to the south, and the riverine environment of the Crocodile River to the north. By keeping this drainage line intact, the riparian zone will act as a functional corridor for migrating animals between the relatively large area covered by the game farms and the Crocodile River (a major river flowing through the lowveld from the Highveld to the Mozambique border). • **Fauna and Flora:** A number of species of plants and animals are expected to occur in the study area. At least 215 plant species are expected in the project region, while 610 vertebrates are expected to utilize the habitats present. The drainage lines and riparian area can accommodate all 610 vertebrate species due to the presence of additional wetland features, while the area proposed for the citrus project, has habitat for 507 animal species. • **Special Plants**: One plant of Special Concern (*Elaeodendron transvaalense*) was observed during the survey. The lack of good deep clay soils or deep sand on the farm, may explain the absence of *Adenium swazicum* and *Crinum stuhlmannii* in the project area. • **Reptiles and Frogs**: Of the 29 frog species that have distribution ranges coinciding with the study area, 27 species are expected to occur in the area. Taking into account the presence of suitable habitat, **no threatened species is expected to occur in the project area**. Of the 57 reptile species expected to be found on the site, one endemic- (Distant's thread snake, *Leptotyphlops distanti*) and two threatened reptile species, the Southern African python (*Python natalensis*) and Nile crocodile (*Crocodylus niloticus*), are expected to occur in the area. • **Birds**: The 301 bird species that have both distribution records and favourable habitat in the proposed project area, include 20 species that are considered threatened, of which five are vulture- and six are raptor species, as well as 5 stork species. The raptor, vulture and stork species are highly mobile and will visit the project area in search of food (carrion and prey); no nesting sites of these species or territorial birds were observed during the study. • The remaining birds, southern ground-hornbill (*Bucorvus leadbeateri),* European roller (*Coracias garrulus*) and red-billed oxpecker (*Buphagus erythrorhynchus*), are also mobile and will move away **once activities of disturbance take place in the area**. The European roller is a migrating visitor and will not breed in the area. The red-billed oxpecker and southern ground-hornbill might breed in dead tree stumps or trees in the study area. No such activity has been observed recently. • **Mammals**: Of the 77 mammal species that are expected to occur here, five threatened species have habitat available in the study area. These are the three medium-sized species: serval (*Felis serval*), honey badger (*Mellivora capensis*) and pangolin (*Manis temminckii*), as well as two otters (spotted-necked otter (*Lutra maculicollis*) and Cape clawless otter (*Aonyx capensis*).

	• **Conservation Plan**: With reference to the Mpumalanga Conservation Plan the entire area earmarked for development in the study area is classified as **"Least Concern"**. Biodiversity assets in these landscapes contribute to natural ecosystem functioning, ensure the maintenance of viable species populations and provide essential ecological and environmental goods and services across the landscape. • The land-use tables state that irrigated crops are allowed in areas that are classed as "Least Concern". This could change the project area status from "Least Concern" to a status of "No natural habitat remaining". In areas of "No natural habitat remaining", the changed area will offer little in support of biodiversity. According to the Mpumalanga Conservation Plan: "…this land use can make no significant contribution to biodiversity conservation but some may be used tactically to ensure a degree of local connectivity". • **Conclusion**: Despite the potential presence of one near-threatened plant species, and the potential presence of 15 threatened animal species, none of these of these Species of Special Concern appears to be present in any numbers, or are breeding or resident in the study area. • The project area has been defined as an area of "Least Concern". Provided the applicant implements the mitigation measures listed below, no significant impacts are known which could prevent the proposed project from going ahead. • **Mitigation:** • **General**: Protecting smaller habitat units and associated sub-habitats e.g. logs, rocks, termite mounds, will go a long way towards maintaining the integrity of these smaller species. • Smaller mammals, e.g. genets; squirrels, mongoose will continue to migrate into this protected system along existing corridors. • Bird life will always thrive as long as suitable habitat is protected. • **Removal of Vegetation:** All trees and other plants of commercial use (e.g. *Aloes*) should be made available to nurseries and wood factories. In this way the removal of the plants will benefit the communities economically, creating jobs and business opportunities as a spin-off of the project. • **Plants of Special Concern:** One plant of Special Concern was observed during the survey; it is suggested that these trees either be removed and replanted in another suitable site, or seedlings cultivated and planted on the farm in an area that will not be impacted by the project. • **Vegetation Clearing:** During the clearing of vegetation in the project area most vertebrates will move away from the project site. During this activity the project team may encounter slow moving reptiles and smaller mammals. These animals should be allowed to move away unharmed or be assisted and relocated to the **Dam Zone**.

	• **Riparian- and Ecological Corridor (Zone D, Fig. 25, Appendix 4.6):** To ensure a sustainable citrus orchard whilst optimising the conservation of biodiversity, it is proposed that the major drainage line that interlinks the area between the game farms to the south, and the riverine environment of the Crocodile River to the north, is excluded from the development. The riparian zone will act as a corridor for migrating animals between the large area covered by the game farms to the south and the Crocodile River along the border with the Kruger National Park.
2. Water Balance.	**Water Allocation and Use:** The applicant has acquired the water use entitlements for irrigation purposes on the farm. **See Appendix 4.3**. for copies of Water Permits, Registration Documents and Authorisations. • **b and h Irrigation cc** have calculated that the current water availability on the farm can accommodate an **expansion of 81ha** of citrus agriculture. • **Mitigation**: Provided the applicant implements a water saving approach to irrigation (e.g. uses a dripline system) together with additional monitoring-control methods (e.g. mechanization and computerization) the expansion of his citrus production facet should have access to adequate water for irrigation and fruit production. • **Scheduling:** Modern irrigation controllers allow the user to easily adjust their watering schedules to suit all sorts of landscape watering needs. **Zones can be scheduled individually** in the irrigation system to account for sun, shade and wind exposure. **Consideration is given to the soil type in each zone,** as it affects how quickly water can be applied and infiltrate without runoff. **Watering schedules** can be adjusted seasonally to account for changing water needs. Monthly or weekly adjustments will save substantially more water and improve plant health. • **Timing:** Watering at the right time of day, when the sun is low, the winds are calm and temperatures are cool will save a lot of water - as much as 30% - by reducing evaporative losses. The best time to water is late afternoon, evening and just before sunrise. **Regular** short watering periods when applicable (3x per day) instead of extended longer periods improves water intake and prevents soil erosion and reduces run-off. Installing “smart” technology that automatically adjusts the system to apply water based on factors such as evaporation, precipitation, plant water use or soil moisture will optimise water saving and conservation. • **Rain Sensor**: This device senses precipitation and depending on the amount of rainfall, stops the system from irrigating. When the rain stops the system picks up right where it should. These long metal probes measure the soil’s moisture content at the root zone. Basic sensors turn off the system when water is adequate and turns the system on to maintain correct moisture levels.

3. Protected Tree Species.	• **Protected Tree Species**: The following **protected trees** (Department of Water Affairs and Forestry. 2007) were observed in the project area: • **Leadwood***: Combretum imberbe* • **Marula***: Sclerocarya birrea* subsp. *caffra* • **Bushveld Saffron***: Elaeodendron transvaalense* • **Least Concern**: With reference to the Mpumalanga Conservation Plan the project area which is earmarked for development is classified as **"Least Concern".** In essence this classification allows for agricultural development provided all legislative requirements are met. This vegetation type is conserved in other landscapes, e.g. Kruger National Park, and has thus been earmarked to be used for agricultural practices amongst other land uses. • Be that as it may development must be seen as sustainable and must be undertaken in a responsible manner. To achieve this, the following measures of mitigation are listed for implementation. • **Mitigation**: The Department of Agriculture, Forestry and Fisheries (DAFF) was involved in the Public Participation- and Consultation Process from the onset of this project. • They have advised the project team that all protected/commercial tree species found in the project area should be used in a sustainable way, creating job opportunities and empowering the communities at large. • The project team, have identified a number of local wood carvers, carpenters, builders and furniture craftsmen who will be allowed to remove the commercial species under a DAFF/MTPA permit. • Specifically the local Lugedlane Community, who have re-occupied land in the area after submitting a successful land claim have indicated that they have found a need for certain species, e.g. leadwood at the Mjejane Game Reserve. • The leadwood species would be used by the community in the building- and construction process at River Lodge (Mjejane Game Reserve). • Where possible, the applicant will replant a number of trees in the ecological corridor area. • A number of dead trees (large, 3m and higher) will be positioned near the dam to function as potential perching sites for water fowl, raptors and kingfishers. • Finally, a local nursery has indicated that they would source a number of species, e.g. *Aloe marlothii*, to be resold in the commercial sector. This approach will create a number of temporary job opportunities for labourers during the excavation process whilst benefitting existing nursery staff as additional work is created. • All plant removals/transfers will be permitted by the DAFF and the MTPA.

Operational Issues	
1. Soil Type and Suitability.	• **See Appendix 4.5** for detail on the soils of the project area. • **Suitability and Potential**: As per the contents of the Soil Study for the Project Area the soils have the potential to be used for crop production. Soil depth is adequate and clay content is manageable. Drainage is good and most irrigation systems can be implemented on these soils. • The soil potential for the study area thus varies from moderate (poor for sugar cane; good for citrus) to high potential on the eastern boundary of Portion 10. • **Mitigation Measures for Citrus Production**: • No extra-ordinary agronomic measures are under discussion at the moment e.g. orchard layout, but the following environmental requirements are included for clarity: • Citrus production in South Africa is confined to areas with mild- and almost frost-free winters. This coincides with our development site. • It is necessary to supplement moisture with irrigation to ensure that moisture stress does not suppress growth and production. Water for irrigation is available within the allocated quota. • Citrus can be grown in a wide variety of soil types. The **site specific soil type** in the Project Area is suited for the cultivation of citrus. • The layout of the orchard largely depends on the irrigation system used and the desired number of trees per hectare. • To conserve water the installation of a micro-irrigation system will be implemented and tree spacing will be in line with best practice for this soil type.

2. Cultural Artefacts.	• See **Appendix 4.7** for detail on the Heritage aspects of the project area. • A **specialist study** on the cultural importance of the project area was undertaken by Christine Rowe. • **Key Issues from the HIA**: The survey revealed no archaeological or historical structures of significance in the study area. • The survey revealed a few isolated Late Stone Age (LSA) flakes, a number of indistinct clay potsherds and three upper grinders. • The LSA flakes, potsherds and upper grinders are all out of context and in disturbed sections, and are not believed to be of any significance. • A burial site is situated on the eastern border of the property but **falls outside** the proposed agricultural development. • It is recommended that the owner be made aware that distinct archaeological material or human remains may only be revealed during the debushing/agricultural operation. • It is recommended that earthmoving activities be monitored by a qualified archaeologist. • Based on the survey and the findings in this report, Adansonia Heritage Consultants state that there are no compelling reasons which may prevent the proposed development to continue. • The specialist study was submitted to SAHRA for verification/information. See **Appendix 4.7**. • **Mitigation**: **No artefacts** have been observed during the farming activities which have occurred on the property for decades. • The developer has farmed this site for more than 20 years and has not **unearthed/located** any grave sites; historical sites or artefacts which are of historical importance. • However, should any artefacts or a find be incidentally discovered during trenching/ploughing activities, the proponent **must engage the services of an accredited archaeologist** to deal with the find. • It is recommended that an **Environmental Control Officer** (ECO) oversee the implementation of the development phase and the handling procedure of any finds is described in the Development Environmental Management Programme (EMP). • Should any artefact, or historical site be **incidentally** discovered during excavations for foundations as well as in future, all works must cease with immediate effect. • **The find must be reported to the Project Manager for the development and the ECO for the project. These representatives will initiate an Action Plan in conjunction with SAHRA and the developer to address the management and handling of the find.**

3. Land Claim.	• See **Appendix 4.2**. for detail on the Land Claim process in the project area. • As per the contents of the letter from the Lands Claim Commissioner, the proposed project area has been exempted from any land claims. • The applicant is free to expand his farming activity. • No mitigation measures are applicable.

Positive Issues	
1. Irrigation Systems.	• **Dripline Irrigation**: The efficient use of water and the implementation of a site specific irrigation system will go a long way towards the sustainable use of irrigation water on the new crop fields. • It is therefore essential that a cost effective system is used which optimises the use of water and prevents run-off and erosion. For this reason the **dripline irrigation method** is proposed for consideration. • The following measures of mitigation will be implemented: • **Mitigation: Irrigation Scheduling**: Irrigation scheduling involves deciding when and how much water to apply to a field. Good scheduling will apply water at the right time and in the right quantity in order to optimise production and minimise adverse environmental impacts. Bad scheduling will mean that either not enough water is applied or it is not applied at the right time, resulting in under-watering, or too much is applied or it is applied too soon resulting in over-watering. Under or overwatering can lead to reduced yields, lower quality and inefficient use of nutrients. • **Water Efficiency**: The efficiency of water use in agricultural production is generally low. Only 40% to 60% of the water is effectively used by the crop, the rest of the water is lost in the system or on the farm either through evaporation, run-off or by percolation into the groundwater. **Irrigation scheduling**, if properly managed can offer a good solution to **improve water efficiency** in the farm. • Various methods and tools have been developed to determine when crops require water and how much irrigation water needs to be applied. These include the various soil- and plant monitoring methods as well as the more common **soil water balance and scheduling simulation models**. • **Advantages of Irrigation Scheduling**: It can: • Enable farmers to schedule watering to minimise crop water stress and maximize yields. • Reduce farmer's costs of water and labour through less irrigation, thereby making maximum use of soil moisture storage. • Lower fertiliser costs by reducing surface run-off and deep percolation (leaching) to a minimum. • Increase net returns by increasing crop yields and crop quality. • Minimise water-logging problems by reducing the drainage requirements. • **What is Drip Irrigation?** Drip irrigation, also referred to as dripline, sub-surface or low volume irrigation, is the process of delivering precise amounts of water and nutrients directly to the plant's root zone, drop by drop, offering users exact irrigation control and efficient use of limited water resources. • **Why Should One Use Dripline or Low Volume Irrigation?** This method saves water use**.** It is far

	more water-efficient than sprinklers. In general these applications use 30% - 70% less water than an overhead irrigation system and plants grow to maturity about 50% faster. • Water loss due to evaporation, mist, surface run-off or wind interference is virtually eliminated. Because of the conserving nature of low volume products, users report that they are typically granted an exemption from their water management district when other forms of irrigation are being restricted or banned. • **Advantages of Dripline Irrigation**: Notable advantages are: • A slow, even flow of water application to the plants and soil. Plants will thrive under these conditions. • A slow, steady application of water and nutrients directly to the plant's roots is the best way to ensure plant health and vitality (Improved plant growth). • The system is easy to install, it is flexible and adaptable. • It solves spray- and rotor irrigation problems. • No damaging spray finds its way onto unwanted areas, e.g. roads and buildings. This prevents erosion and unnecessary run-off. • The adjacent soil and foliage are kept dry, reducing fungal diseases. • Soil aeration is improved because soil particles are not washed down, thus decreasing soil compaction and improving root growth. • The system saves on maintenance and labour. • The system does not make use of moving sprinkler parts which require intensive maintenance to repair. • Unobtrusive and aesthetic. Sprayers are hidden under mulch or beneath the soil. • The system does not interfere with landscaping or scenery. • Less labour is required to install and maintain plus lower overall material cost. • Security/Less theft. No exposed sprinkler heads, pipes or surface driplines to tamper with.
2. Agricultural Potential.	• **See Appendix 4.5** for detail on the soils of the project area. • **Suitability and Potential**: As per the contents of the Soil Study for the Project Area the soils have the potential to be used for crop production. Soil depth is adequate and clay content is manageable. Drainage is good and most irrigation systems can be implemented on these soils. • The soil potential for the study area varies from moderate to high potential on the eastern boundary of Portion 10. • **Mitigation Measures for Citrus Production**: • No extra-ordinary agronomic measures are under discussion at the moment e.g. orchard layout, but the following environmental requirements are included for clarity:

	• Citrus production in South Africa is confined to areas with mild- and almost frost-free winters. This coincides with our development site. • It is necessary to supplement moisture by irrigation to ensure that moisture stress does not suppress growth and production. Water for irrigation is available within the allocated quota. • Citrus can be grown in a wide variety of soil types. The site specific soil type is suited for the cultivation of citrus. • The layout of the orchard largely depends on the irrigation system used and the desired number of trees per hectare. • To conserve water the installation of a micro-irrigation system will be implemented and tree spacing will be in line with best practice for this soil type.
3. Job Opportunities.	• **More Jobs (Temporary and Permanent)**: The current status of the property would provide work for 2 or 3 farm workers in the long term. The advent of the proposed project could however see this climb to 20 during the development phase **(temporary jobs)** and 14 **permanent job opportunities** in the long term after the project is completed and fully operational. • Job opportunities will include but not be limited to: Maintenance positions on the irrigation systems and fences; weeding and fertilizer operations; planting and harvesting. • Unskilled labour will earn in the region of R 2310.00 per person per month. • Additional to this 10 temporary workers will be employed annually for 4 weeks at a time. • The opportunities above do not include subsidiary services such as an increase in the maintenance of vehicles; retail needs and medical facilities. This development will thus benefit the businesses in Hectorspruit, Komatipoort and Malelane.

4. Needs and Desirability of Project.	• **Introduction**: Development proposals should always follow an **integrated approach** to project planning. With this in mind the project must make economic sense, whilst at the same time environmental damage and impact must be kept to a minimum and or mitigated fully. Finally the needs and aspirations of society must be met with the view to producing the best long term product for the community at large. Having said this it must be noted that developers are spending thousands of Rand of hard earned money to ensure the financial viability of each proposed project. Developers, in most cases, think long and hard before they channel money towards a specific project. It is not in their interest to embark upon a project without having assessed all the risks involved. They, just as society, are keen to see that the project is a long term **sustainable** success. • The local Nkomazi Council is very supportive of developments associated with the Maputo Corridor, and the expansion of agriculture and sustainable land use envisaged by this project proposal under investigation compliments the regional vision that the authorities have for this area. • **Neighbouring Land Uses and Compatibility**: The project area is surrounded by agriculture and a diversity of similar farming operations which include sugar cane and citrus production. • No objections to the project proposal (change in land use) have to date been submitted by any of the neighbours. • **Financial Viability and Agricultural Potential of the Property**: • The financial model for citrus production requires the applicant to expand his operation by at least 50ha. • To this end the proposal then makes economic sense as citrus production is a long term solution. • This also provides the proponent an opportunity to remain financially competitive in an ever challenging and diverse business market. • Finally, the Department of Agriculture: Provincial has assessed the potential of the project site for agriculture and supports the intentions of the applicant. See letter in **Appendix 4.4**. • **Social Commitment and Job Creation**: A number of business sectors and community members will benefit if this project is successful. • The proponent and his family will benefit financially in the long term. In the short to medium term however, the development node will require substantial capital (approximately R 4.1 million) to install services (irrigation) and develop the lands/fields necessary to convert this virgin bush into a citrus orchard. • The Onderberg Region and outlying rural areas have been classified as one of the poorest in South Africa. Conservative estimates list jobless figures in the region of 30%. HIV infections are just under

	40% and many job seeking immigrants from neighbouring countries migrate to this area and add to the challenges faced by rural communities. • The current status of the property would provide work for 2 or 3 farm workers in the long term. The advent of the proposed project could however see this climb to 20 during the development phase **(temporary jobs)** and **14 permanent job opportunities** in the long term after the project is completed and fully operational. Job opportunities will include but not be limited to: maintenance positions on the irrigation systems and fences; weeding and fertilizer operations; planting and harvesting. • Unskilled labour will earn in the region of R 2310.00 per person per month. • Additional to this 10 temporary workers will be employed annually for 4 weeks at a time. • The opportunities above do not include subsidiary services such as an increase in maintenance of vehicles; retail needs and medical facilities. This development will thus benefit the businesses in Hectorspruit, Komatipoort and Malelane. • **Location**: Is this the correct location for the project? The site is fixed and the proponent does not own similar land elsewhere. In terms of compatibility of land uses and whether this development will fit in with similar developments in the area the location is regarded as ideal. • The site is close to the N4 and the citrus processing factories in Malelane. Access to markets and the processing facilities are thus conveniently located. • Finally, the project site is surrounded in all wind directions with similar land uses. • **Positive Impacts**: The creation of permanent jobs with a long term potential and job security is regarded as a significant impact which will spill over into the well being of a number of families in the local community. • Furthermore, the financial viability of the project will translate into economic growth for the investors and the local Nkomazi area as a whole, albeit in the medium to long term. • Finally, the growth in citrus production will be optimised on a piece of land which has become uneconomical from an agricultural perspective. • **Integrated Environmental Management**: The objective of integrated environmental management is to balance all interests towards sustainability. For many the word “sustainability” remains a unicorn of environmental management; a myth that is often poorly defined and or understood. • As participants in environmental management we can at best evaluate the project for its inherent advantages and disadvantages. With the help and input of the Public, Specialists and Project Consultants we endeavour to draw a clearer picture with which we all can associate and hopefully agree to and support.

	• We raise questions which include but are not limited to: Is the proposed activity/development harmful to the environment?; Did we ensure that all perceived impacts were mitigated adequately in favour of maintaining the environmental integrity?; Will the local/regional/national community benefit from this development and or is the development an improvement on an old, outdated concept?; Did we ensure that the general public participated in this project from day of advertisement till submission of documentation? Did we ensure that the economics of the activity were in place prior to project implementation? Is the project feasible? What are the alternatives? Have we taken into account the various Government role players with regards to sharing information and or authorisation requirements of the project? The list goes on, however the team associated with this proposal is confident that we have ticked the right boxes and can answer in the positive to the questions listed above. In some cases we have had to suggest measures of mitigation to soften the impact towards a degree of sustainability. • **Need and Desirability of the Proposed Project**: In conclusion, it is the opinion of the EAP that the cummulative effect of the factors listed above will result in a positive contribution in the fields of economic benefit and social upliftment in the region, with little or at most manageable impacts in the environmental arena.
5.Economic Sustainability	• **Financial Viability and Agricultural Potential of the Property**: The project site was used as a recreational opportunity by the applicant. • The Onderberg Area was subjected to various land claim assessments by the Land Claims Commissioner in the past few years and combined with a recession in the agricultural sector, farmers were until recently reluctant to expand their enterprises under prevailing uncertain conditions. • The project area has been given the all clear from the Land Claims Commissioner and together with a need for agricultural growth the time is ripe to capitalise on the economic opportunity for this farm. **(See Appendix 4.2.)** • The financial model for citrus production requires the applicant to expand his operation by at least 50ha. • To this end the proposal then makes economic sense as citrus production is a long term solution. • This also provides the proponent an opportunity to remain financially competitive in an ever challenging and diverse business market. • Inherent Costs associated with the project: More than **R 4.1 million** will be spent during the installation of irrigation systems and the preparation of the fields. • Annually more than **R 1 million** will find its way back into the local economy for transport, harvesting and wage costs **(30% of this package will be for wages).**

7.6. Description of Options, Phases and Alternatives

7.6.1. Site Alternatives:

No Site Alternatives: The land earmarked for development is fixed and is part and parcel of an existing farming enterprise. The land has been in the family for a number of years and is used for recreational purposes and the provision of water to the various cane fields and orchards on other portions of the farm. By virtue of its position it links into existing agricultural land uses in the surrounding area. By optimising the potential of the proposed portion of the farm the applicant is confident that the land can continue to contribute sustainably to the agricultural business opportunities in and around Hectorspruit and the surrounding Maputo. It is also important to note that **2 alternative land uses** are envisaged for the site: Conservation of biodiversity (approximately 30%) and crop production (70% for agriculture).

The No Go Option will affect economic growth and negate economic opportunity in the area. The developer has ownership of a property within the borders of the agricultural business sector in the Hectorspruit/Malelane area and has expressed the wish to formalise the portion into a sustainable business (job creation, service delivery, diversity of business opportunities) opportunity. The farming activity is already in place on the remainder of the farm. This application is for an **expansion** of the same activity. This will make the citrus production economically more viable. A no go approach would remove these options out of the economic- and social equation in the area. No known environmental reasons were identified which could make this a "No Go" option.
Indirect Impact: The land will stand derelict and fall into disrepair and become a financial burden to the owner.

7.6.2. Demand Alternatives:

1. Power Supply:

ESCOM Supply: ESCOM remains the only viable and practical option for an agricultural activity of this nature. The electricity will be required to pump water and run pumps to the various orchards. ESCOM supply is in place and a pump house is functional and in working order.
Solar Power: Solar power (panels and energizers) have been installed to electrify the boundary fence and these units provide security and controlled access to the site.

2. Water Supply and Irrigation Options:

Water supply will be made available from the existing farm dam and in accordance with the water entitlements of the farm.

Dripline Irrigation: Advantages	Overhead/Sprinkler Systems: Advantages
• Efficient use of available irrigation water.	• Easy to install.
• Water is deposited on the plant roots, optimizing plant growth.	• Labour intensive creating more job opportunities during operational and maintenance phases.
• Cost effective as it limits wastage.	• Applies vast quantities of water in a short period.
• Reduces evaporation and overspray.	
• The system is easy to install, it is flexible and adaptable.	
• No damaging spray finds its way onto unwanted areas, e.g. roads and buildings. This prevents erosion and unnecessary run-off.	
• The adjacent soil and foliage are kept dry, reducing fungal diseases.	
• Water and nutrients are delivered directly to the root zone which promotes healthy plant growth and reduces plant stress.	
• Soil aeration is improved because soil particles are not washed down, thus decreasing soil compaction and improving root growth.	
• The system saves on maintenance and labour.	
• The system does not make use of moving sprinkler parts which require intensive maintenance to repair.	
• Unobtrusive and aesthetic. Hidden under mulch or beneath the soil.	
• The system does not interfere with landscaping or scenery.	
• Reduces labour to install and maintain plus lower overall material cost.	
• Security. No exposed sprinkler heads, pipes or surface driplines to tamper with.	
Dripline Irrigation: Disadvantages	**Overhead/Sprinkler Systems: Disadvantages**
• Blockages can be troublesome.	• Water loss and wastage is high.
• Less labour required during various phases.	• Water application per plant not always effective.
	• More water is irrigated increasing costs and more electricity is used.
	• Unwanted areas, e.g. roads are often covered in water and spray.
	• More incidents of erosion and run-off are associated with this irrigation method.
	• Less effective during windy periods.
	• Susceptible to theft of the various components.
	• High maintenance costs.

7.6.3. Scheduling Phases/Alternatives:

1. Time of Year (Season):

To ensure a safe working environment and to reduce the potential impact to the surrounding natural environment, it remains imperative that the orchards are prepared in the period February to July. With the exception of heavy rainfall the debushing period should take place when windy events are low (dust emissions). Moist, stable soils will be less susceptible to damage and top soil loss during these moderate conditions.

2. Time of Week:

It is recommended to keep the preparation/debushing period as short as possible. Preparation work will be limited to normal agricultural working hours daily (07h00-17h00) from Monday through to Saturday.

7.6.4. Input/Systems Alternatives:

1. Plant Variety:

Citrus varieties are numerous and each type has its own set of advantages and disadvantages. These characteristics vary from being disease resistant; water friendly (require less irrigation); producing more/larger fruit per plant (less is more) and being adaptable to soil diversity. The local Agriculture Extension Officials will play a vital role in matching the project site with a plant variety that will best fit the local project site conditions.

Summary of Preferred Alternatives: Key Points:

- The project site is fixed. More than 70% of the site could be used for agriculture and the remainder will be conserved for the maintenance of biodiversity and ecological corridors.
- Service provision for power will be supplied by ESCOM and water will be sourced from the existing dam on site.
- Preparation will commence during the early season avoiding windy conditions and very wet periods where possible.
- A dripline/dripper system will be used for purposes of irrigation. This will be combined with a computerized water/moisture maintenance facility to maximize water application at the correct times and only when necessary.
- Extension officers will assist with the choice of citrus variety. This will be determined once the final soil map is completed.

8. PUBLIC PARTICIPATION

1. Following a meeting with representatives from DEDET the process was advertised as follows:
1.1. At all the major centres and facilities in the towns of Hectorspruit and Malelane.
1.2. On site at the entrance to the farm on the N4 Toll Road.
1.3. The proposed project and the Environmental Impact Assessment process was advertised in a Regional Newspaper (The Lowvelder: 7 November 2013) and in a Local Newspaper (The Corridor: 8 November 2013).
1.4. Advertisements and Site Notices were placed on site, at the Post Office in Hectorspruit and the SPAR Centre in Malelane.

See Appendix 2 for copies of Notices, Advertisements and Newspaper clippings.

2. Although the intention to implement this activity was advertised as prescribed by DEDET and potential Interested and Affected Parties were given more than 21 days to register, little involvement from the broader Public nor any Interest Groups was forthcoming. Participation by Interested Groups was therefore limited and channelled towards neighbours and officials from the DWA, DARDLA, DAFF and NDA: Agriculture. Copies of all reports were also submitted to MTPA and the Nkomazi Municipality.

3. Consultation was formalised through an **on-site** Public Meeting held on the **20 January 2014**. Copies of all reports were made available to Interested and Affected Parties for comments and input.

4. Issues and Impacts were determined by RES and complimented by those raised during discussions with neighbours and officials from the various departments. Many of these were also gleaned from similar projects in the Onderberg valley and from previous experience obtained on projects recently completed in the area.

5. See **Appendix 2** for a comprehensive set of minutes and the Issues and Responses Report.

6. The Draft BAR was made available for comments to Interested and Affected Parties for more than four weeks. No comments were submitted on the contents of the Draft BAR.

Are any organisations or individuals known that objected/raised concerns towards the proposed development?	Yes	No
		X

No objections were raised. Concerns and suggestions were noted and addressed in the Issues and Responses Report.

How many organisations or individuals objected/raised concerns/issues towards the proposed development?	**4**

Comments:

See **Appendix 2** for a detailed copy of the Issues and Responses Report.

Any **social benefits** that will result from this proposed development?

Yes	No
X	

Comments:

- The development process will result in significant job- and business opportunities during various stages of the process.
- Development labour and expertise will be required to remove the vegetation and install the irrigation systems and associated infra-structure. This phase will require input from both informal and formal sectors of the agricultural industry.
- Some 20 job opportunities and small business enterprises (construction plant and associated equipment) will be required initially.
- Labour and services will be sourced from the local business- and informal sector community as a matter of priority.
- The expansion of the citrus product will result in 14 new permanent job opportunities in the long term. This approach will enhance community involvement and empowerment on all fronts.
- Finally, the removal of certain tree species will be made available to the wood carving-, furniture manufacturing and associated industries as recommended and permitted by officials from DAFF and MTPA.
- This approach will add much needed capital to the local economic equation.

9. DECOMMISSIONING PHASE

The applicant accepts responsibility for the Cradle to Grave concept.
It is unlikely that the proposed development will be decommissioned in the foreseeable future however elements of the site may require a change in land use or have to undergo a process of decommissioning in some form or another. For this event a number of **objectives/conditions** are submitted for the record and consideration.

9.1. Decommissioning Objectives

The applicant/developer remains responsible for the life cycle of the project and all the decommissioning activities in the project area. The infrastructure will undergo a full and comprehensive decommissioning programme. This programme must be described in a **decommissioning plan**.

It is recommended that an **Independent Environmental Assessment Practitioner (EAP)** is appointed at the time **to compile a detailed decommissioning plan** to address all the aspects of the decommissioning process prevalent at the time.

9.2. Decommissioning Approach (Under guidance of an EAP)

Essentially the following approach must be implemented:

9.2.1. Removable concrete structures

- All foreign material such as gravel and concrete (Pump House?) must be broken up and removed to a designated gravel pit, which will be identified by the Nkomazi Municipality for purposes of rehabilitation.
- All roads, buildings and service infra-structure must be demolished and removed off site.
- All service lines, where applicable (electrical- and water supply) must be removed and trenches rehabilitated.
- The lie of the land must be returned to fit in with the adjoining land surface.

9.2.2. Reinstatement

- All foreign material must be removed and disposed of at a borrow pit earmarked for rehabilitation.
- The disturbed area must be levelled off and contoured to fit in with the rest of the landscape.
- The disturbed area must be ripped and fertilised to enhance re-vegetation.
- The exposed soil must be brush packed with brush and grass material from the area, to serve as a seed bank for re-vegetation.
- The reinstated area must be irrigated once a week to promote the re-vegetation process.
- These aspects will require on site monitoring, as the occurrence of natural rainfall will determine the frequency of irrigation required.

10. MONITORING AND AUDITING

It is recommended, that in the event that this proposal/application is approved, that the developer/applicant appoint an independent **Environmental Control Officer (ECO)** to oversee the implementation of the **Environmental Management Programme (EMP)** and **monitor compliance** of the **Environmental Impact Assessment (EIA).**

Furthermore, if the proposal is approved, the ECO must ensure that all the **conditions** as set out in the **Authorisation/Record of Decision (ROD)** issued by the DEDET, are met and implemented as stipulated. The ECO must submit a monthly Audit Report to the applicant and DEDET for record and implementation purposes.

The **role of the ECO** and independent audit teams are well defined within the framework of the **Integrated Environmental Management (IEM).**

11. RECOMMENDATIONS AND CONCLUSIONS:

1. The developer who has more than 20 years experience of crop farming on the site has expressed the wish to expand his farming operations with at least an additional 50 ha.
2. The final soil layout map will determine the magnitude of the orchards however the **applicant has indicated that 50 ha** would suffice to ensure a sustainable product.
3. More than a third of the portion is set aside for biodiversity conservation and the drainage line with associated dam habitat remains protected and will not be developed.
4. He has access to the equipment, trained staff and knowledge to undertake this expansion project.
5. He has implemented Agriculture Best Practice Techniques on all his farming operations to date and these will continue with this expansion project. These are:

- **Citrus**: Establish the plants on at least 50ha of the project area.
- Design the orchard along the contours of the farm and follow the lie of the land.
- Promote controlled, gradual runoff and drainage channels.
- Space crop plants as per crop type specifications.
- Use disease free plants from recognized, accredited nurseries.
- Prepare the land using fertilizers recommended by an accredited agronomist and ensure that lands are weed free.
- Install water saving irrigation systems which conserve water use over the long term, e.g. drip line system.

6. The farm is well developed in terms of road access to the fields and market trends have indicated that additional citrus is in high demand.
7. The farm is serviced by an adequate water supply and the developer owns the water rights (approximately 81ha) to accommodate the expansion.
8. The applicant must maintain the integrity of the riparian zone and the ecological corridor as indicated on the map (Zone D, Fig. 25, Appendix 4.6.)
9. Ensure that all Protected Trees are harvested by the local community and wood carvers as discussed in the EIA. All translocations must be permitted by DAFF and MTPA as required and where applicable.

The project satisfies the requirements of sustainable integrated environmental management. Provided the developer implements the implications of this report, and the mitigation measures proposed, it is recommended that the change in land use is approved.

12. REFERENCES

Department of Environmental Affairs and Tourism, 1998. *Guideline Document, EIA Regulations, implementation of sections 21, 22 & 26 of the Environment Conservation Act.* Government Printer, Pretoria.

Gertenbach W P D, 1980. *Rainfall Patterns in the Kruger National Park.* Koedoe 23, National Parks Board, Pp 35 – 43.

Mucina L. and Rutherford M.C., 2006. *The Vegetation of South Africa, Lesotho and Swaziland.*