

FINAL BASIC ASSESSMENT REPORT APPENDICES: VOLUME NR. 1

DEVELOP AN AGRICULTURAL ESTATE ON REMAINDER PORTIONS 8, 13 AND 14
OF MALELANE ESTATE 140 JU:
MALELANE, MPUMALANGA
PROJECT REFERENCE: 1/3/1/16/1E-346

PREPARED BY:



RHENGU ENVIRONMENTAL SERVICES

P O Box 1046
MALELANE
1320

Cell: 082 414 7088

Fax: 086 685 8003

E-mail: rhengu@mweb.co.za

PREPARED FOR:

BLUE GRASS TRADING 128 CC: MR. ANDRE DE ZWARDT
(APPLICANT REPRESENTATIVE)

FOR SUBMISSION TO:



DEPARTMENT OF AGRICULTURE, RURAL DEVELOPMENT, LAND AND
ENVIRONMENT AFFAIRS, MPUMALANGA PROVINCIAL GOVERNMENT

SEPTEMBER 2021

Copyright Warning

With exceptions the copyright in all text and presented information is the property of RHENGU ENVIRONMENTAL SERVICES. It is a criminal offence to reproduce and or use, without written consent, any information, technical procedure and or technique contained in this document. Criminal and civil proceedings will be taken as a matter of strict routine against any person and or institution infringing the copyright of RHENGU ENVIRONMENTAL SERVICES CC.

DOCUMENT DISTRIBUTION LIST

ORGANISATION	CONTACT	COPIES
DARDLEA	Ms. Xolani Nkosi	1
IUCMA: Nelspruit	Mr. Thabo Rasiuba Mr. Sandile Dlamini Ms. Thandi Dzhangsi	1
SAHRA: Cape Town Office	Ms. Nokukhanya Khumalo	1
MTPA	Ms. Khumbelo Malele	1
DAFF	Mr. Zinzile Mtotywa	1
DAFF: LUSM	Mr. Frans Mashabela	1
DARDLA	Dr. Eric Maserka	1
SANPARKS: KNP	Dr. Marisa Coetzee	2
Nkomazi Municipality	Mr. Jan Mashele	1
Applicant	Mr. Andre De Zwardt (Applicant Representative)	2
Irrigation Boards: Malelane Office	Ms. Nancy O'Farrell	1
Rhengu Environmental Services	Mr. Ralf Kalwa	1
TOTAL COPIES		14

<u>TABLE OF CONTENTS</u>	<u>PAGE</u>
APPENDIX 1: Site Maps and Photographs	7
APPENDIX 2: Public Participation Process	28
APPENDIX 3: Documentation from DARDLEA	57
APPENDIX 4: Supportive Documentation	61
4.1. Title Deeds	
4.2. Land Claim Document	
4.3. Water Rights	
4.4. Specialist Studies:	
4.4.1. Agricultural Potential of the Project Site	
4.4.2. Terrestrial Ecology/Biodiversity and Riparian Ecology Report	
4.4.3. Fishway/Ladder Report	
4.4.4. Heritage Specialist Study Report	
4.4.5. View Shed Analysis	
APPENDIX 5: Environmental Management Programme	357

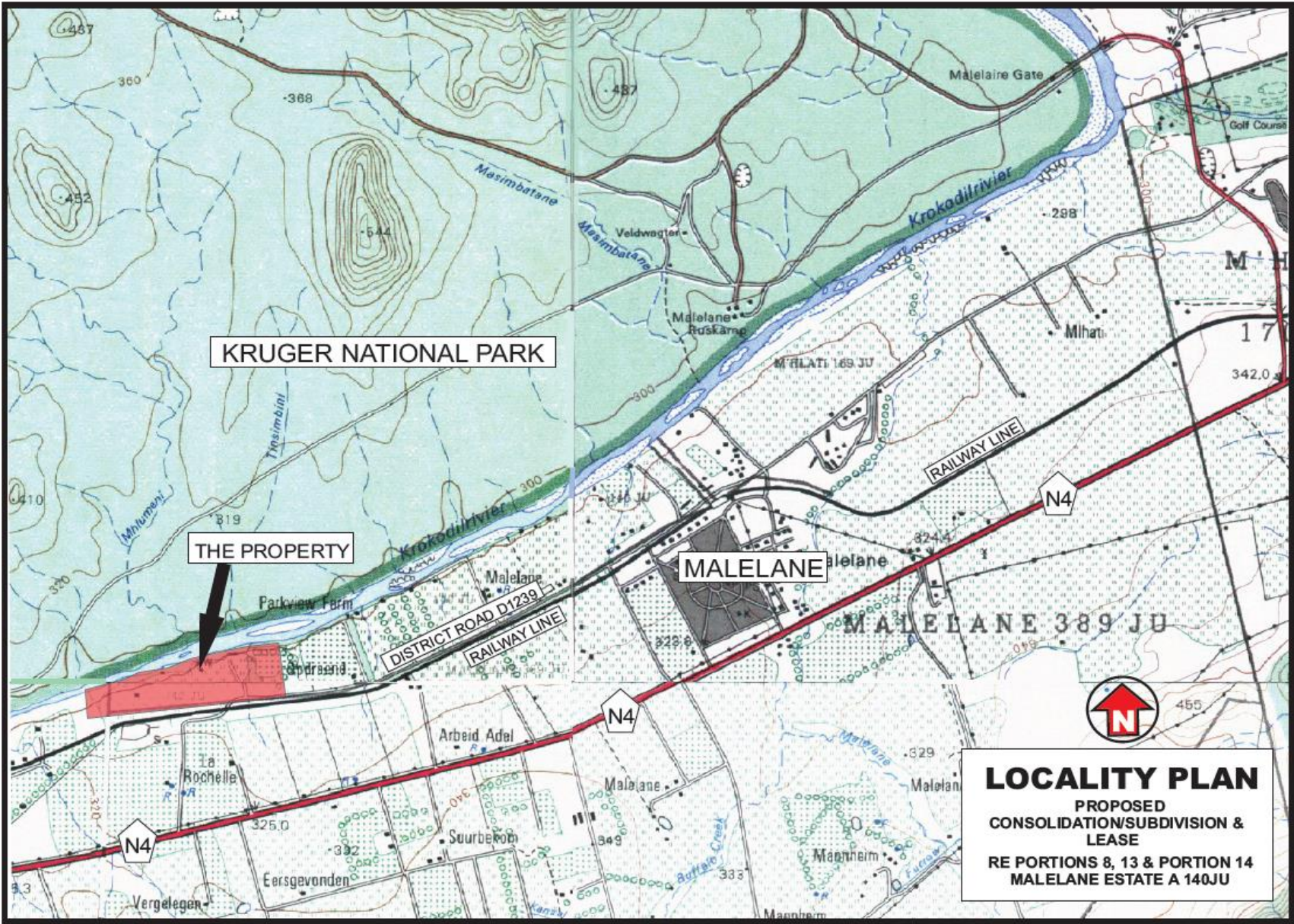
ABBREVIATIONS

ASAP	As Soon As Possible
Asl	Above sea level
CBAs	Critical Biodiversity Areas
cm	centimetre
DAFF	Department of Agriculture, Forestry and Fisheries
DARDLA	Department of Agriculture: Resource Management: Provincial
DARDLEA	Department of Agriculture, Rural Development, Land and Environmental Affairs
DWS	Department of Water and Sanitation
EAP	Environmental Assessment Practitioner
ECO	Environmental Control Officer
EIA	Environmental Impact Assessment
EIR	Environmental Impact Report
EMPr	Environmental Management Programme
ESAs	Ecological Support Areas
ESKOM	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
KMAE	Kruger Malelane Agri Estate
LFIS	Low Flow Irrigation System
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
PDI	Previously Disadvantaged Individual

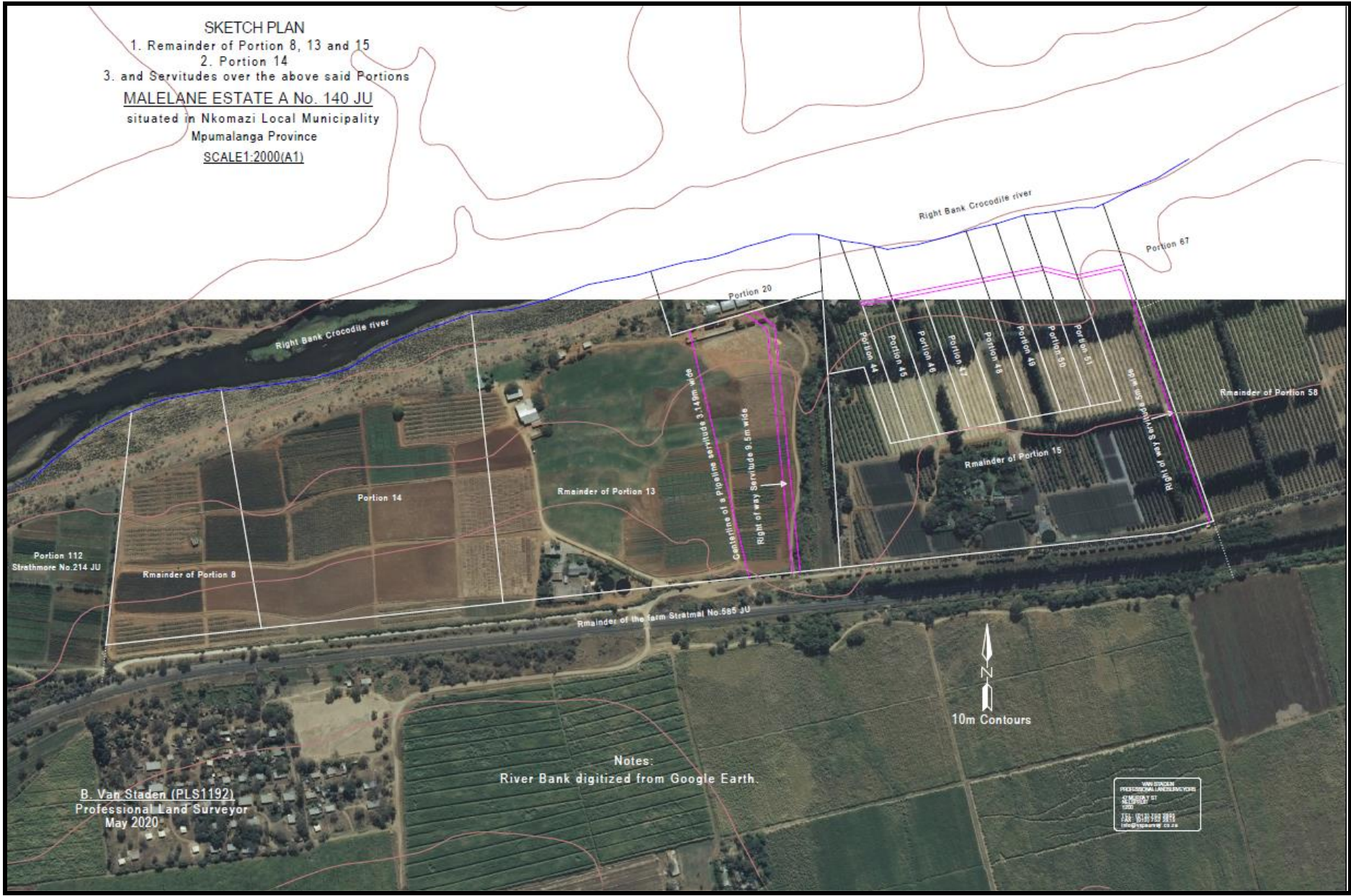
RES	Rhengu Environmental Services
SABS	South African Bureau of Standards
SAHRA	South African Heritage Resources Agency
sqm	square metre

APPENDIX 1:
SITE MAPS
SITE PHOTOGRAPHS

LOCALITY AND TOPOGRAPHICAL MAP: MALELANE ESTATES 140 JU



GOOGLE PROJECT MAP: MALELANE ESTATES 140 JU



SURVEYOR MAP SHOWING THE OLD LANDS: MALELANE ESTATES 140 JU



**VAN STADEN
LAND SURVEYORS**
47 MURRAY STREET
NELSPRUIT
1200
TEL: 013 753 2895
FAX: 013 752 2815
EMAIL: INFO@VSPSURVEY.CO.ZA

LEGEND

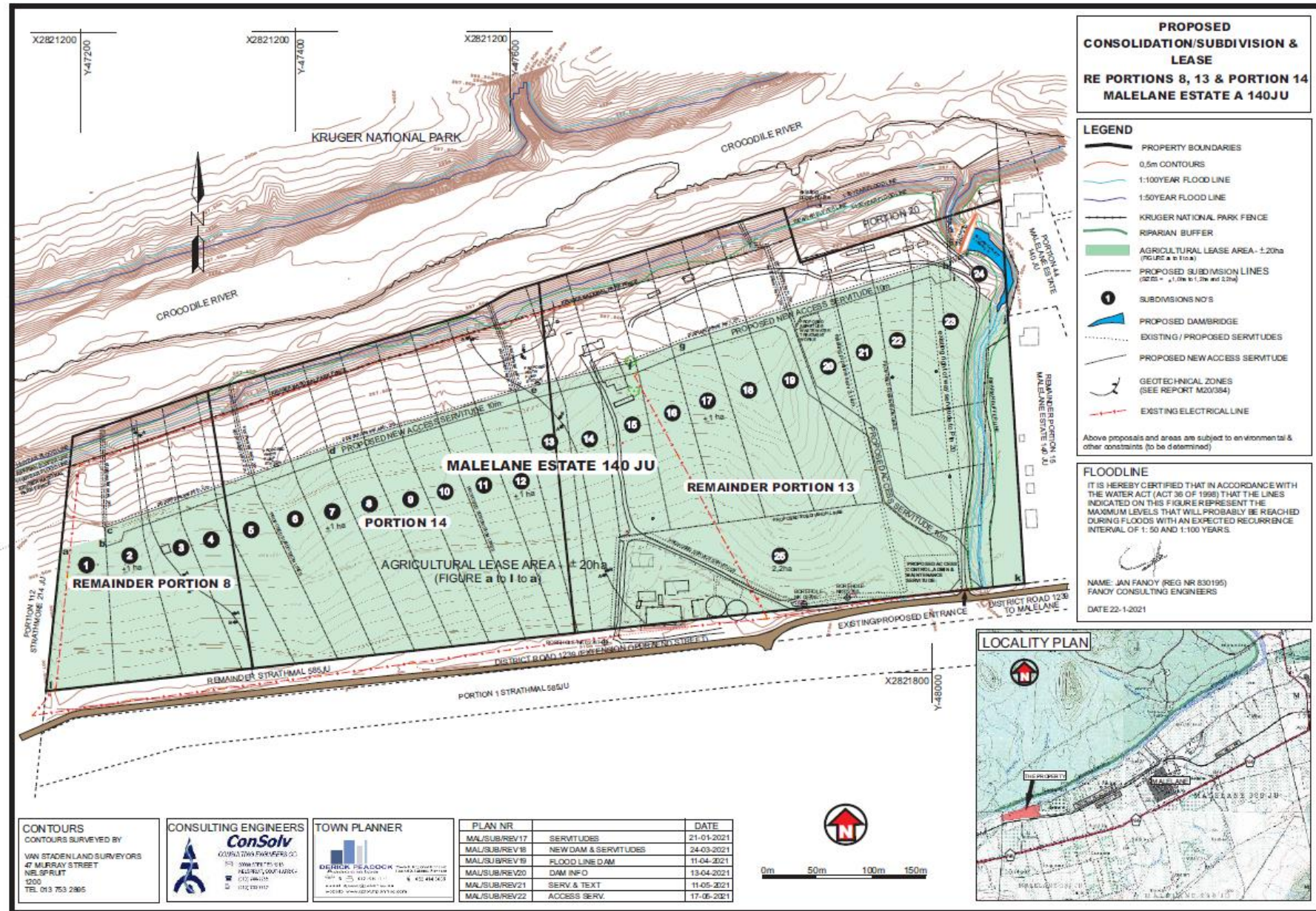
	BRIDGE
	ROAD
	WALL
	RETAINING WALL
	STORMWATER CANAL
	STORMWATER DRAIN
	FENCE
	WATER PUMP
	POOL
	POWERLINE
	ELECTRIC POLE
	WATER VALVE
	WATER MANHOLE
	GEOTECH POINT
	GATE
	SERVITUDE
	50 YEAR FLOOD LINE
	100 YEAR FLOOD LINE

Client: _____
Surveyed: R SHITHANGU
Date: MAY 2020
Drawn: R SHITHANGU
Date: MAY 2020

Project Title:
DETAIL AND CONTOUR SURVEY OF PORTION 8, 13 AND 14
MALELENE ESTATE 140JU
Title: _____
Scale: 1:1500(A0)
Project Number: _____
Drawing Number: _____
Sheet 1 of 1

BM1	-47848.895	2821742.874	309.727	Hole in Concrete
BM2	-48020.453	2821393.108	292.458	12mm Peg
BM3	-47972.817	2821745.423	308.753	Hole in Concrete

DETAILED LAYOUT MAP WITH PORTIONS, FLOODLINES: MALELANE ESTATES 140 JU



PROPOSED CONSOLIDATION/SUBDIVISION & LEASE RE PORTIONS 8, 13 & PORTION 14 MALELANE ESTATE A 140JU

LEGEND

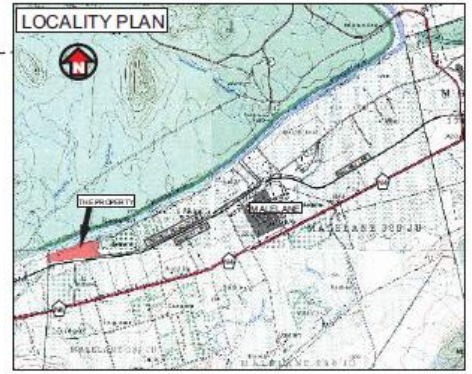
- PROPERTY BOUNDARIES
- 0.5m CONTOURS
- 1:100YEAR FLOOD LINE
- 1:50YEAR FLOOD LINE
- KRUGER NATIONAL PARK FENCE
- RIPARIAN BUFFER
- AGRICULTURAL LEASE AREA - 1.20ha (FIGURE a to I to a)
- PROPOSED SUBDIVISION LINES (20.5ha ±, 1.0ha to 1.0ha and 0.2ha)
- SUBDIVISIONS NO'S
- PROPOSED DAMBRIDGE
- EXISTING / PROPOSED SERMTUIDES
- PROPOSED NEW ACCESS SERMTUIDE
- GEOTECHNICAL ZONES (SEE REPORT M20/384)
- EXISTING ELECTRICAL LINE

Above proposals and areas are subject to an environmental & other constraints (to be determined)

FLOODLINE

IT IS HEREBY CERTIFIED THAT IN ACCORDANCE WITH THE WATER ACT (ACT 36 OF 1958) THAT THE LINES INDICATED ON THIS FIGURE REPRESENT THE MAXIMUM LEVELS THAT WILL PROBABLY BE REACHED DURING FLOODS WITH AN EXPECTED RECCURENCE INTERVAL OF 1:50 AND 1:100 YEARS.

NAME: JAN FANYO (REG NR 830195)
FANYO CONSULTING ENGINEERS
DATE: 22-1-2021



CONTOURS
CONTOURS SURVEYED BY
VAN STADEN LAND SURVEYORS
47 MURRAY STREET
NELSPRUIT
1200
TEL: 013 753 2865

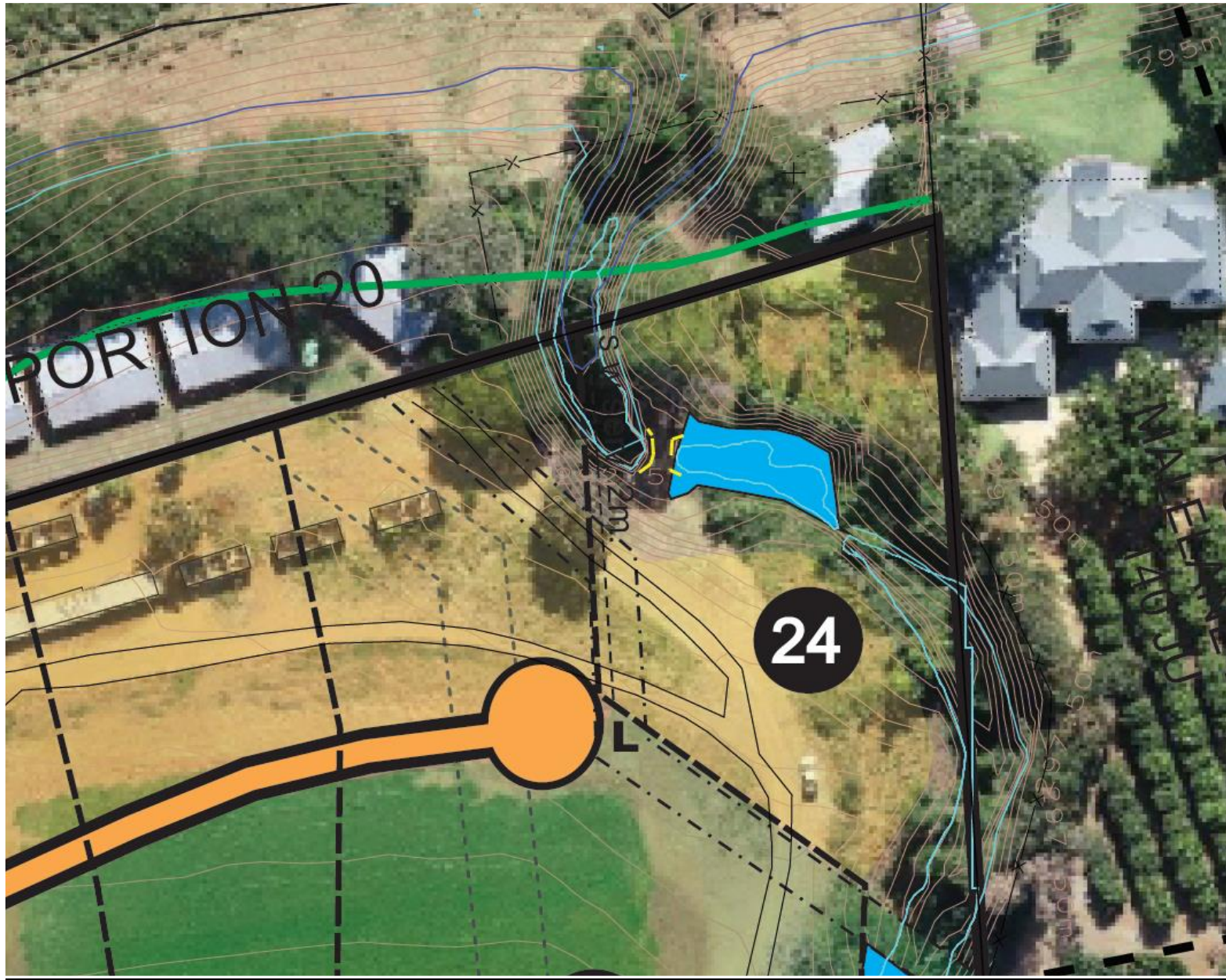
CONSULTING ENGINEERS
ConSolv
CORPORATE ENGINEERS CC
P.O. BOX 177175-110
ALLIED WAY WILBURG
015 0860100
012 129 1112

TOWN PLANNER
DEREK PRADDOCK
P.O. BOX 177175-110
ALLIED WAY WILBURG
015 0860100
012 129 1112

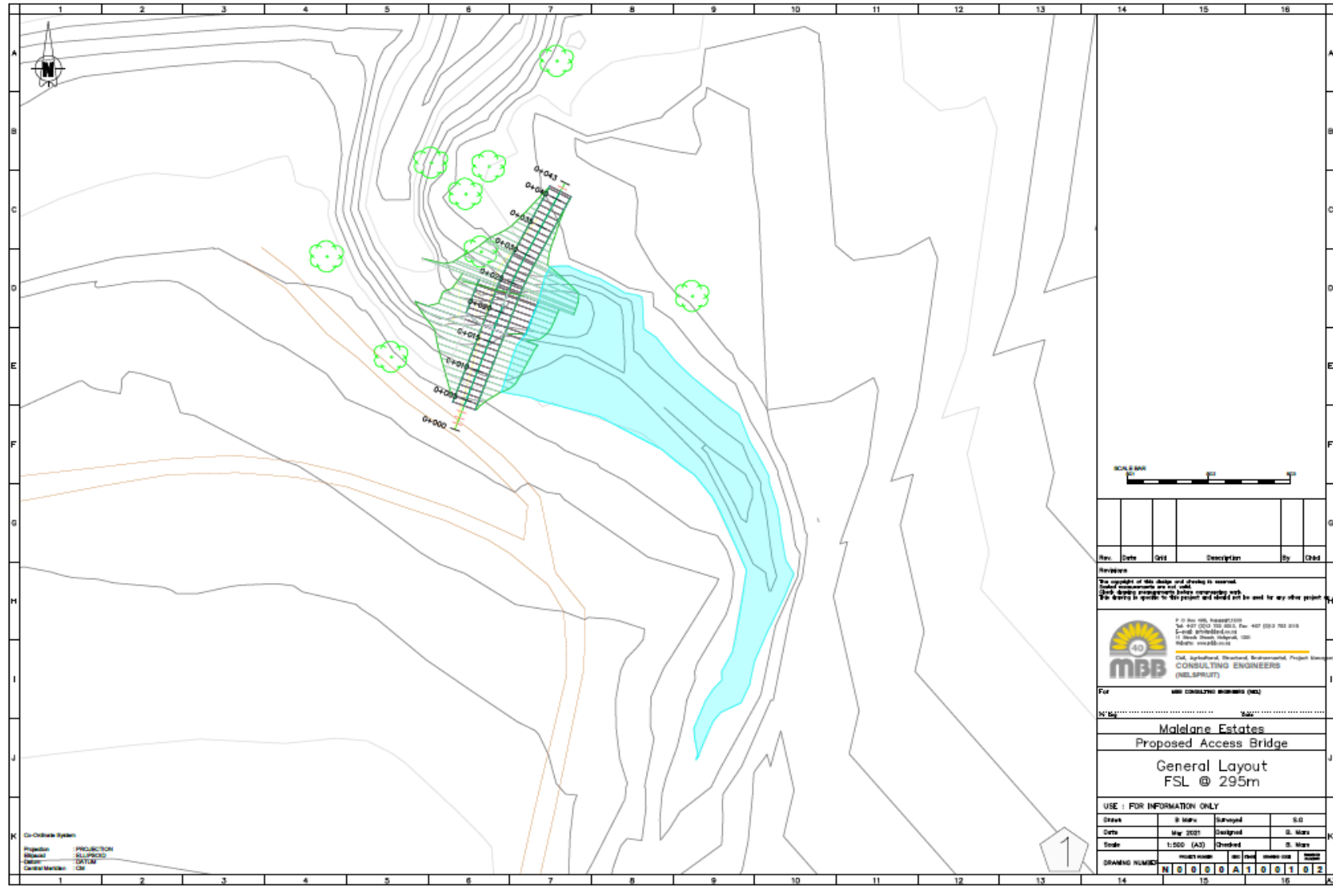
PLAN NR	SERMTUIDES	DATE
MAL/SUB/REV17	SERMTUIDES	21-01-2021
MAL/SUB/REV18	NEW DAM & SERMTUIDES	24-03-2021
MAL/SUB/REV19	FLOOD LINE DAM	11-04-2021
MAL/SUB/REV20	DAM INFO	13-04-2021
MAL/SUB/REV21	SERV & TEXT	11-05-2021
MAL/SUB/REV22	ACCESS SERV.	17-06-2021

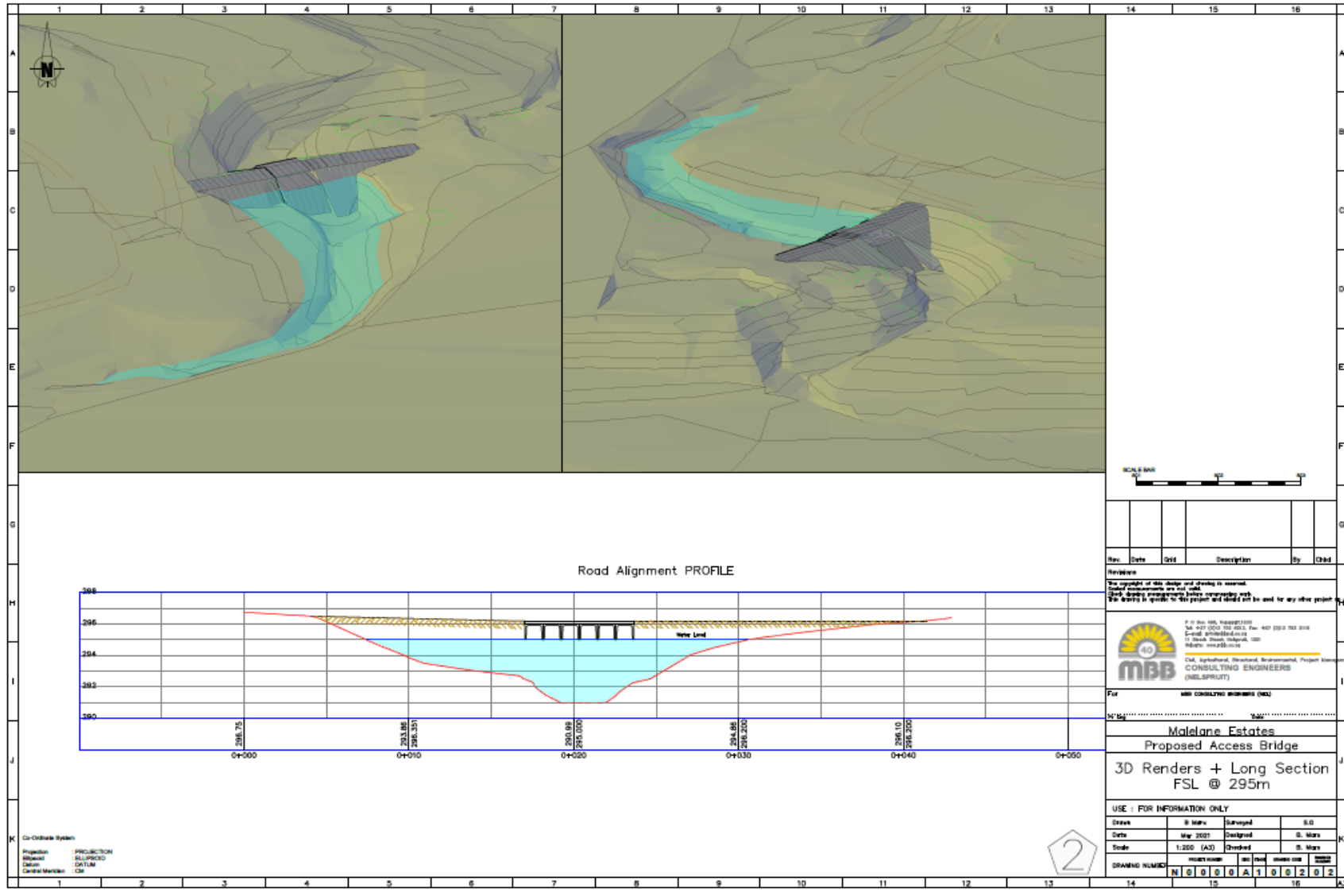


EXISTING BRIDGE ACCESS LAYOUT MAP ON EASTERN DRAINAGE LINE:
MALELANE ESTATES 140 JU



ENGINEER DIAGRAM OF THE UPGRADING OF THE EXISTING BRIDGE: MALELANE ESTATES 140 JU





Rev.	Date	Qtd	Description	By	Qtd

Revisions

The copyright of this design and drawing is reserved.
 Similar measurements are not valid.
 Check, design measurements taken corresponding with
 the drawing is specific to this project and should not be used for any other project.

MBB CONSULTING ENGINEERS (Pty) Ltd
 10
 CONSULTING ENGINEERS
 (NLS/SP/UT)

For: **MBB CONSULTING ENGINEERS (Pty) Ltd**

Project: **Malelane Estates**
Proposed Access Bridge

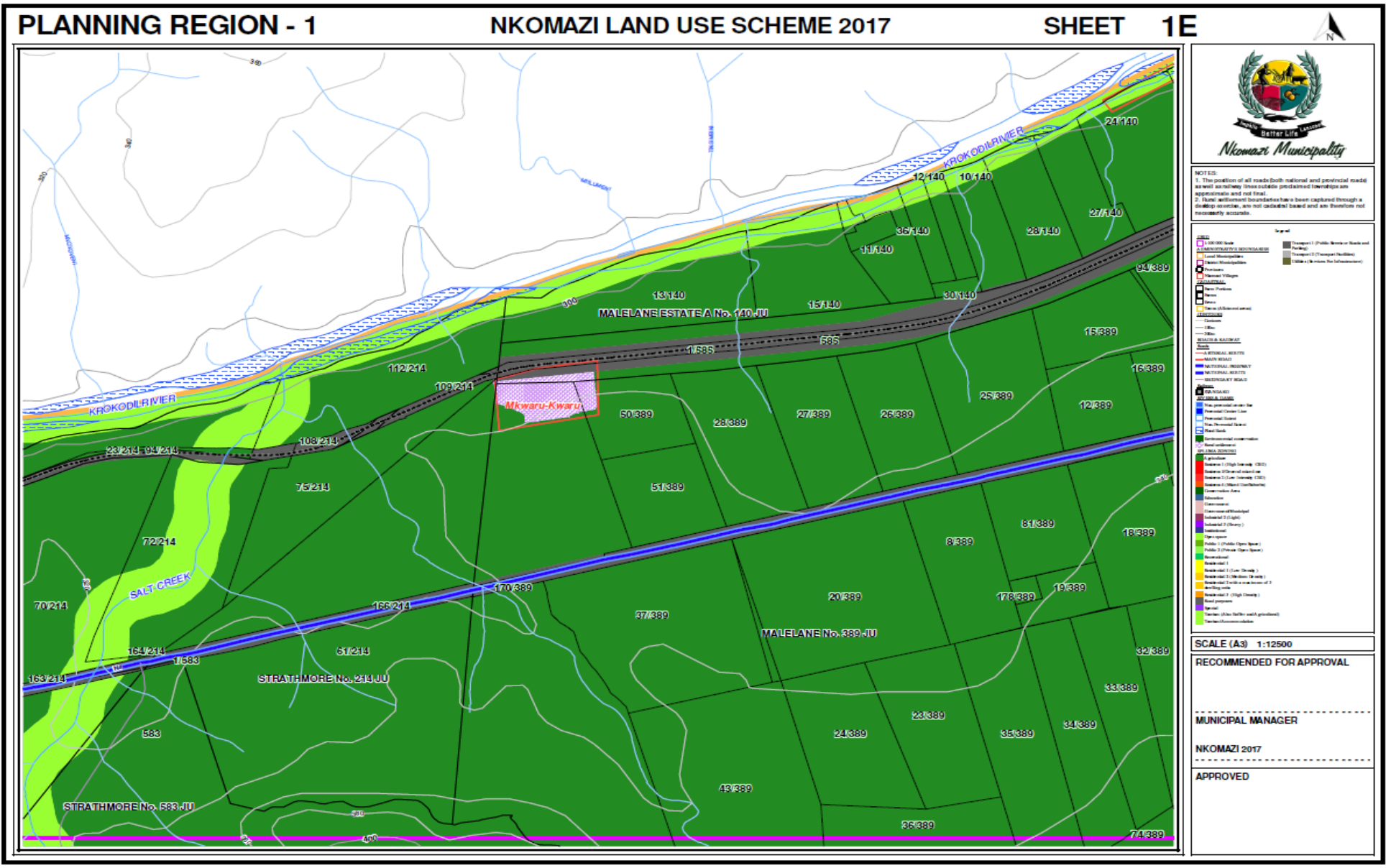
3D Renders + Long Section
FSL @ 295m

USE FOR INFORMATION ONLY

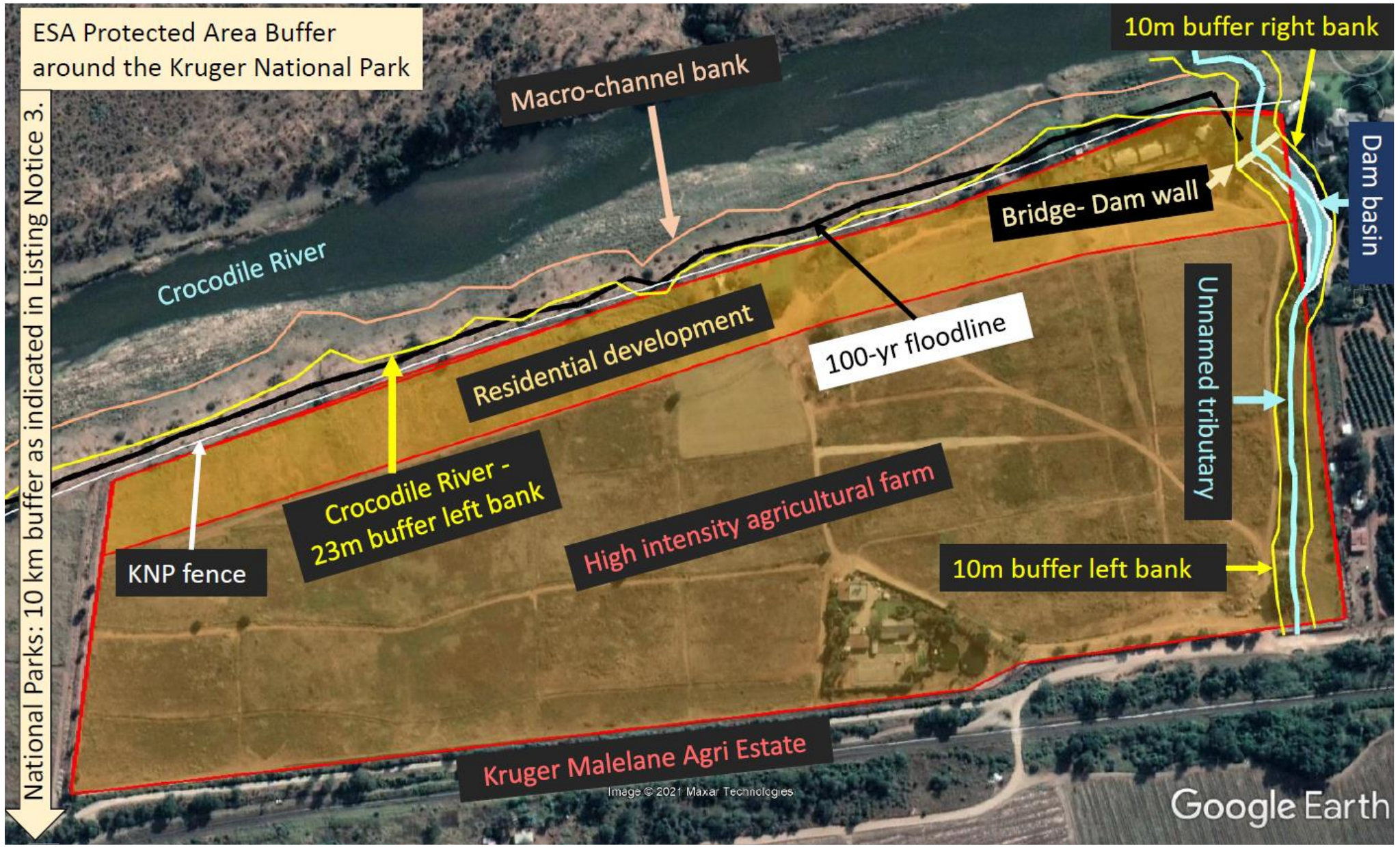
Drawn	S. Marx	Surveyed	S.G.
Date	May 2021	Designed	S. Marx
Scale	1:200 (AS)	Checked	S. Marx

DRAWING NUMBER: N 0 0 0 0 A 1 0 0 2 0 2

MUNICIPAL ZONATION PLAN FOR THE MALELANE AREA: MALELANE ESTATES 140 JU



FINAL DEVELOPMENT MAP WITH SENSITIVE AREAS: MALELANE ESTATES 140 JU



Kruger Malelane Agri Estate - unique lifestyle gated community inside a high intensity agricultural farm (28.4 ha) in the Greater Malelane Town Area, Mpumalanga Province.

High intensity agricultural farm – Agriculture lease area (20 ha); currently fallow lands; economical irrigation unit with 12.4 ha listed water.

Residential development - consist of 25 subdivisions; 8.4 ha.

KNP fence – Fence on southern boundary of the Kruger National Park.

100-yr flood line: 1:100 yr flood line of the Crocodile River.

Macro-channel bank: Used to establish the ecological buffer in the absence of a defined riparian zone.

Crocodile River - 23m buffer left bank: Riverine buffer.

Unnamed tributary - non-perennial drainage feature.

10m buffers on left and right bank of Unnamed tributary.

Bridge- Dam wall – Proposed dam small dam wall that will also serve as a river crossing; approximately 650m long.

Dam basin – of proposed dam.

Site Photographs: EIA: Malelane Estates 140 JU



Figure 1: Public Participation: Advertisement at the Project Site eastern entrance.

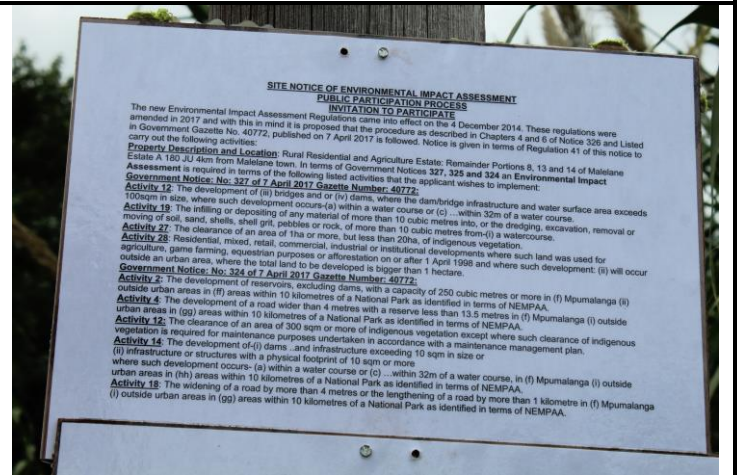


Figure 2: Public Participation: Close up of advertisement: Eastern Entrance.

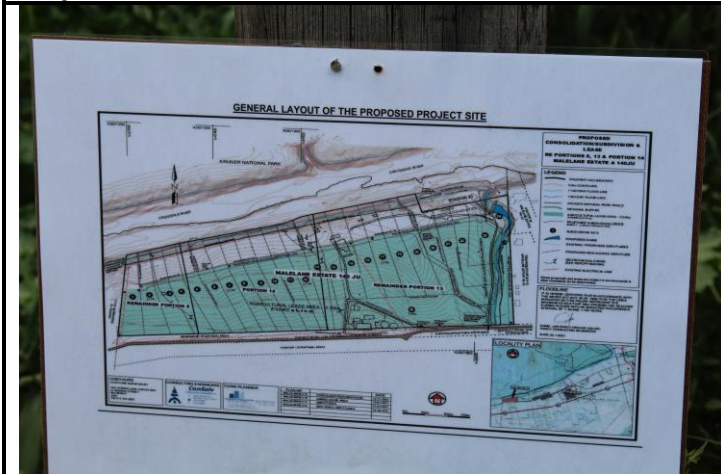


Figure 3: Public Participation: Public Participation: Close up of advertisement: Eastern Entrance.



Figure 4: Public Participation: Advertisement at western entrance to the Project Site.



Figure 5: Public Participation: Advertisement at western entrance to the Project Site along the Provincial Access Road.



Figure 6: Public Participation: Advertisement at western entrance to the Project Site. Close up view.

Site Photographs: EIA: Malelane Estates 140 JU



Figure 7: Public Participation: Advertisement at the SPAR Centre in Malelane Town.



Figure 8: Public Participation: Advertisement at the SPAR Centre in Malelane Town. Community Notice Board.



Figure 9: Public Participation: Advertisement at the SPAR Centre in Malelane Town. Community Notice Board.



Figure 10: Public Participation: Public meeting on site.



Figure 11: Public Participation: Public meeting on site.



Figure 12: Public Participation: Public meeting on site.

Site Photographs: EIA: Malelane Estates 140 JU



Figure 13: Provincial Access Road: Southern boundary of the project site.



Figure 14: Eastern Drainage Line on the Property: Polluted with litter, household waste and run-off waste.



Figure 15: Eastern Drainage Line on the Property: Polluted with litter, household waste and run-off waste.



Figure 16: Existing bridge crossing on the eastern drainage line.

APPENDIX 2:
PUBLIC PARTICIPATION PROCESS
ISSUES AND RESPONSES REPORT
INTERESTED AND AFFECTED PARTIES REGISTER
COPIES OF ADVERTISEMENTS, NEWSPAPER NOTICES AND MINUTES
COPIES OF E-MAIL CORRESPONDENCE
COPIES OF NOTIFICATIONS AND REPORT SUBMISSIONS

ISSUES AND RESPONSES REPORT:
DEVELOP AN AGRICULTURAL ESTATE ON REMAINDER PORTIONS 8, 13 AND 14 OF MALELANE ESTATE 140 JU:
MALELANE, MPUMALANGA

<p style="text-align: center;"><u>Interested and Affected Party:</u></p> <p>Note: Questions/queries posed by all parties during meetings, discussions and informal conversations are listed below and included in the report.</p>	<p style="text-align: center;"><u>Response</u></p>
<p>1.JB: JB raised several concerns and issues pertaining to the supply of water and the registration process with the local municipality. In summary the following:</p> <ul style="list-style-type: none"> • <u>Water Resources:</u> The water resources for the property (boreholes etc.) are interconnected to underground aquifers and surrounding impacts such as run-off from neighbouring properties. • <u>Yield and Contamination:</u> The developers must take note of this and ensure that the proposed development has sufficient clean, potable water to fulfil its obligations. Primarily one would want to know what the yield of the boreholes would be, how will the aquifers be recharged and he also believes E. coli contamination in one of the boreholes requires attention. • <u>Hydrological Survey:</u> Essentially JB believes that a full hydrological assessment is required to ensure answers to the above and to define the water balance for the development. This approach will provide answers to ensure adequate capacity is available for the development in the long term. • <u>Registration Process:</u> JB mentioned that the developer must register as a Water Services Provider (as per the Water Services Act) with the local municipality and reach an agreement to provide water to the various users. JB is prepared to assist JE with this registration process. 	<p>1. RK: Hydrogeological Studies have been completed by specialists and these documents will be included in the Appendices section of the impact assessment reports.</p> <ul style="list-style-type: none"> • <u>Water Balance:</u> The Hydrogeological Study confirmed that the two boreholes combined can provide a sustainable yield of 222.77kl/day. The requirements of the 25 erven are in the region of 57.5kl/day. • <u>Agricultural Water:</u> The property is listed with the Inkomati Usuthu Water Management Agency (IUCMA) for 12.4ha that will together with the grey water from the sewer plant be used for irrigation. • A Water Treatment Plant (to ensure clean, uncontaminated water) will be located at the existing reservoirs to ensure water quality is maintained as per SABS and Department of Water and Sanitation (DWS) required standards. This facility will be registered during the water use licence application process. • <u>Registration Process:</u> JE and JB will combine their efforts to complete the registration process with the local municipality. • JE and JB have met with applicable stakeholders and initiated this process. • <u>Focus Group Meeting:</u> A focus group meeting was held with members of the Irrigation Board to address any outstanding issues pertaining to access control, maintenance of infrastructure and administrative issues (now and in the future).

<p>2. NF: Administration Process: NF raised a concern pertaining to the supply and management of water to each property in 50 years from now once the lease agreement lapses. The Irrigation Board is concerned that this would become a very onerous administrative challenge at the time.</p> <ul style="list-style-type: none"> • Logistical Arrangements: Currently the Irrigation Board manages a pump house and abstraction point near the Crocodile River on Portion 20. Other affected infra-structure includes pipelines, staff housing and canals. • It must be noted that all these aspects must be allowed to continue functioning unhindered as a supplier of irrigation water. • The staff of the board require 24-hour access to the various facilities under its jurisdiction. 	<p>2.RK: See comment above on Focus Group Meeting.</p> <ul style="list-style-type: none"> • RK also recommended that the developer and the Irrigation Board agree to- and compile an Operational- and Maintenance Management Plan to ensure an amicable relationship for all parties going forward. • Rights to Access etc.: Comment noted. The Irrigation Board and its staff members will be allowed to function as per normal working- and maintenance requirements.
<p>3.LH:</p> <ul style="list-style-type: none"> • Density of Dwellings per Stand: LH enquired how many dwellings would be allowed per stand/erf? • Change in Land Use in Future: What will happened to Portion 20 in future if the developer is not successful in obtaining the property during this current tender process? • Security: LH is pleased to see that this development will improve the general security of the area and the neighbouring properties. 	<p>3.RK:</p> <ul style="list-style-type: none"> • One dwelling per stand/erf. • If the developer is unsuccessful in obtaining Portion 20 then it will be business as usual as per the Irrigation Boards functioning, needs and requirements. • Should another party purchase Portion 20 then any change in land use etc. will have to undergo the authorisation and application processes as per legislative requirements.
<p>Interested and Affected Party: Note: Questions/queries/comments submitted by Interested Parties on the contents of the Draft Basic Assessment Report.</p>	
<p>Comments were received from MTPA, IUCMA and DARDLEA. See below for responses under each letter/correspondence received.</p>	

List of Participants in Discussions and Queries listed above:

- Ms Nancy O'Farrell (NF) Irrigation Boards (Malelane and Crocodile).
- Mr. Johan Boshoff (JB) Irrigation Boards (Malelane and Crocodile).
- Mr. Renald Radley (RR) Malelane irrigation Board.
- Mr. Lex Hollmann (LH) Lex Hollman Trust and Jakkalsbessie Homeowners.
- Mr. Andre de Zwardt (AdZ) Applicant Representative
- Dr. Andrew Deacon (AD) Biodiversity Specialist.
- Mr. Johan Enslin (JE) IWULA Consultant. Project Team Member.
- Mr. Ralf Kalwa (RK) Rhengu Environmental Services.
-

COMMENTS FROM IUCMA AND RESPONSE

Suite 801, 8th Floor
The MAXSA Building
13 Streak Street
Mbombela

Private Bag X11214
Mbombela
1200

Tel 013 753 9000
Fax 013 753 2786



Enquiries: Mr. Sandile Dlamini
Mobile No.: 062 189 5050
Reference No. : 14/9/2/87/X24D/Develop
E-mail : dlaminis@iucma.co.za

24 August 2021

The Director
Rhengu Environmental Services (Pty) Ltd
P.O Box 1046
MALELANE
1320

Attention: Ralf Kalwa

Dear Sir,

RE: DRAFT BASIC ASSESSMENT REPORT FOR THE DEVELOPMENT OF 25 RESIDENTIAL STANDS ON REMAINDER PORTION 8, 13, 14 AND 20 OF MALELANE ESTATE 140 JU IN QUATERNARY CATCHMENT X24D: NKOMAZI LOCAL MUNICIPALITY.

Reference is made to the above-mentioned report received 10 August 2021 with the reporting deadline of 10 September 2021

The Inkomati-Usuthu Catchment Management Agency (IUCMA) assessed the report and has no objection towards the project. The following comments are made for noting and/or actioning:

1. **Provision of water** – It is indicated in the report that proposed residential area is equipped with three boreholes.

The Applicant must note that taking of water from the water resource is a section 21 water use activity and must be authorised by the relevant authority prior to commencement of activities.

2. **Stream crossing** – The report indicated that there will be an upgrading of an existing access bridge to Stand 24.

The Applicant must note that no activity must be located within a regulated area unless an authorisation and/or exemption is granted for such activity. A regulated area is the outer edge of the 1:100-year flood line or delineated riparian habitat or whichever is the greatest. In the absence of determined 1:100-year flood line or riparian zone, 100 meters from the edge of the watercourse must be considered.

The Applicant should be aware that locating any facility or engaging in any activity within the regulated area is a water use and must be authorised prior to such water use activities taking place.

3. From the report and identified activities, the possible water uses that will be triggered in terms of Section 21 of the NWA are as follows:
 - Section 21 (a) – for taking of water from a water resource for drilling activities.
 - Section 21 (c) & (i) – for the upgrade of the bridge which is located on a regulated area.
4. In terms of section 22(1) of the NWA "a person may only use water-
 - (a) without a licence-
 - (i) If that water use is permissible under Schedule 1;
 - (ii) If that water use is permissible as a continuation of an existing lawful use (section 32); or
 - (iii) If that water use is permissible in terms of general authorisation issued under section 39;
 - (b) if the water use is authorised by a licence under this Act; or
 - (c) if the responsible authority has dispensed with a licence requirement under subsection (3)".

Therefore, any other water use activities associated with this project that are not permissible as indicated above must be authorised prior to such water use activities taking place.

5. Any pollution incidents originating from the proposed activity must be reported to the Responsible Authority within 24 hours.
6. The Applicant is advised to engage with the IUCMA for the guidance on the requirements for water use authorization process. In addition, water use authorisation applications can be lodged on-line on the e-WULAAS platform accessible at www.dws.gov.za.

Should you have any queries, please do not hesitate to contact the official indicated above

Yours faithfully,



Adv. Bernard Shabangu
ACTING-CHIEF EXECUTIVE OFFICER

Response from IWULA Specialist:

From: rhengu@mweb.co.za rhengu@mweb.co.za

Sent: Friday, 03 September 2021 10:51

To: 'Sandile Dlamini' dlaminis@iucma.co.za

Cc: 'Johan Enslin' <iwulaspecialist@gmail.com>; rhengu@mweb.co.za; 'Derick Peacock' <derick@dptownplanning.com>; andrew@nethog.co.za; 'Andre De Zwart' <andre@ingweconstruction.co.za>; rhengu@mweb.co.za

Subject: RE: Residential stands, Malelane estate - Feedback letter

Thank you Sandile for your prompt response. I will internalise this letter in the Issues and Responses Section of the Final BAR. Mr. Johan Enslin from IWULA is handling the WULA process and all the issues you have addressed in your letter are receiving attention in the application.

Kind regards,

Ralf Kalwa
RES

From: Johan Enslin Johan@iwula.org

Sent: Monday, 13 September 2021 10:39

To: Sandile Dlamini dlaminis@iucma.co.za

Cc: Rhengu Environmental Services <rhengu@mweb.co.za>; Derick Peacock <derick@dptownplanning.com>; Andrew <andrew@nethog.co.za>; Andre De Zwart andre@ingweconstruction.co.za

Subject: Re: Residential stands, Malelane estate - Feedback letter

Hi Sandile

I hope you are well. In response to your letter please note the following:

Point 1: Your comment on provision of water and the use of 3 boreholes with subsequent authorisation requirements is noted.

Point 2: Your comment on the stream crossing and regulated area with subsequent authorisation requirements is noted.

Point 3: Your comments on the Section 21 water uses triggered with subsequent authorisation requirements were made based on the Draft Basic Assessment Report, and it is noted.

Point 4: This section on permissible water use is noted.

Point 5: This section on pollution incidents is noted.

Point 6: This section on engagement with the IUCMA is noted- a Site Inspection already took place and we will continue to engage with the IUCMA.

Kind Regards

Johan Enslin

Cell: 072 332 2442

Email: johan@iwula.org

IWULA Integrated Water Use License Application Management (Pty) Ltd

Company Registration Number: 2015/194136/07

VAT Registration Number: 4480290784

Website: www.iwula.org

COMMENTS FROM MTPA AND RESPONSE



Ref: LUA 21/2760
Unit: LUA /SS
Enquiries: K. Malele
E-mail: khumbelomalele@gmail.com
Tel/Fax: 013- 235 2395 **Ext.** 222

Mr. R. Kalwa
 Rhengu Environmental Services
 P O Box 1046
 Malelane
 1320

Fax: 086 685 8003
 E-mail: rhengu@mweb.co.za

Dear Mr. Kalwa

SUBJECT: HERewith MTPA'S COMMENTS REGARDING THE BAR FOR THE PROPOSED DEVELOPMENT OF AN AGRICULTURAL ESTATE OF 25 RESIDENTIAL STANDS ON REMAINDER PORTIONS 8, 13, 14 AND 20 OF MALELANE ESTATE 140 JU, SITUATED MALELANE, ENHLANZENI DISTRICT MUNICIPALITY, MPUMALANGA PROVINCE.

Your correspondence, of date 06/08/2021 has reference.

1. The proposed development entails the creation of an agricultural estate comprised of 25 residential stands and the cultivation of a macadamia orchard.
2. The sensitivity of the above farm on which the proposed activity is likely to occur was assessed according to the Mpumalanga Biodiversity Sector Plan (MBSP; MTPA, 2014). This sensitivity is assessed in terms of terrestrial and freshwater assessments. In the MBSP, sensitive areas are identified in terms of *Critical Biodiversity Areas (CBAs)* and *Ecological Support Areas (ESAs)*. *CBAs and ESAs* are deemed to be necessary to ensure protection of biodiversity, environmental sustainability, and human well-being, and are to remain unaltered.
3. According to the terrestrial assessment the proposed development area is mostly within *the 10km ESA Protected Area buffer* of the Kruger National Park, and in a *heavily modified area*.
4. According to the freshwater assessment, the proposed development area falls within the *heavily modified area* and is adjacent to a *National Freshwater Ecosystem Priority Area River* (Crocodile River).

5. The development layout of this development outlines all the high sensitive areas or areas of conservation value and a buffer surrounding these areas. The proposed positions for the buildings avoids these sensitive areas.
6. The MTPA has no objection to the proposed developments but would like to recommend the following.

Recommendations

- Cut-off drains diverting stormwater around the perimeter of the development should be maintained so as to ensure proper functionality.
- Outflow from cut-off drains and stormwater diversions should be attenuated sufficiently to prevent erosion of the receiving environment. These must be inspected and maintained regularly.

Kind Regards



.....
 MR. J.J EKSTEEN
 Manager Scientific Services
 DATE: 06 September 2021

Response to MTPA:

From: rhengu@mweb.co.za rhengu@mweb.co.za

Sent: Monday, 13 September 2021 13:51

To: 'Nokwazi Ngobeni' Nokwazi.Ngobeni@mtpa.co.za

Cc: 'Johan Eksteen' <Johan.Eksteen@mtpa.co.za>; 'Thabile Mnisi' <Thabile.Mnisi@mtpa.co.za>; 'Khumbelo Malele' <Khumbelo.Malele@mtpa.co.za>; 'Frans Krige' <Frans.Krige@mtpa.co.za>; 'Dibakwane Nokuthula' <nokuthula.dibakwane@gmail.com>; 'Komilla Knarasoo' <Komilla.Knarasoo@mtpa.co.za>; 'Phumla Nkosi' <Phumla.Nkosi@mtpa.co.za>; rhengu@mweb.co.za

Subject: RE: MTPA's comments regarding the bar for the development of an agricultural estate of 25 residential stands

Many thanks for your comments Nokwazi and Colleagues from MTPA

Stormwater control and erosion management have been addressed in the EMPr section and associated engineering reports. Your comments and suggestions are noted.

Kind regards,

Ralf Kalwa
 RES

PUBLIC PARTICIPATION AND ROLEPLAYERS REGISTER:
INTERESTED AND AFFECTED PARTIES: REMAINDER PORTIONS 8,13 AND 14 OF MALELANE ESTATE 140JU

Name; Company, Department	Postal Address	E Mail	Fax	Telephone or Cell Number
Deacon, Andrew Dr	House 4, Jakkalsbessie Farm, Opdraend Road, Malelane	andrewd@mpu.co.za	NA	082 325 5583
Enslin, Johan	Riverside Estate, Skeerpoort, 0232	iwulaspecialist@gmail.com	NA	072 332 2442
Hollmann, Lex: Chairman: Mtoma Home Owners Association and Lex Hollmann Trust	House 1, Jakkalsbessie Farm, Opdraend Road, Malelane	Lex@edlex.co.za	013 790 1658	083 254 0687
Marx, Barend	11 Streak Street, Nelspruit, P. O. Box 498, Nelspruit, 1200	barend@mbbnel.co.za	013 752 8213	083 354 5521 013 752 8213/6
Government or Official Departments/Business Interests	Postal Address	E Mail	Fax	Telephone or Cell Number
Boshoff, Johan: Malelane Irrigation Board	P. O. Box 16092 Nelspruit, 1200	<u>0829575915@vodamail.co.za</u> johanboshoff@gmail.com	086 515 7645	082 789 1422
Coetzee, Marisa Dr.: Kruger National Park.	Private Bag X 402, Skukuza, 1350	Marisa.Coetzee@sanparks.org	NA	082 739 3650
Dlamini, Sandile: IUCMA	13 Streak Street MAXMA Building, Nelspruit, 1200	dlaminis@iucma.co.za		062 189 5050
Du Plessis, Ben Dr.: Department of Veterinary Services: DALA: Mpumalanga Provincial Government.	Private Bag X 11309, Nelspruit, 1200	bjadp@vodamail.co.za	NA	082 575 1601
Khumalo, Nokukhanya: SAHRA.	P. O. Box 4637, Cape Town, 8001	nkhumalo@sahra.org.za	021 462 4509	021 462 4502
Malele, Khumbelo: MTPA	Private Bag X 11338,	khumbelomalele@gmail.com	NA	013 235 2395

	Nelspruit, 1200.			Ext. 222
Mashabela, Frans: DAFF: LUSM.	P. O. Box 8806, Nelspruit, 1200.	FransMas@nda.agric.za	013 754 0735	013 754 0730 072 130 1204
Maserka, Eric Dr. DARDLA		maserekamaate@gmail.com		082 871 4330 063 698 3140
Mashele, Jan: Nkomazi Municipality.	Private Bag X 101, Malelane, 1320	Jan.Mashele@nkomazi.gov.za	013 790 0886	013 790 1303 082 265 0528
O'Farrell, Nancy: Irrigation Boards and Water Management.	P. O. Box 382, Malelane, 1320	nancy@rmputter.co.za	NA	063 734 5226
Radley, Renald: Malelane Irrigation Board.	P. O. Box 35, Malelane, 1320	renald@radleylg.co.za	NA	082 388 3643
Rasiuba, Thabo: IUCMA	13 Streak Street MAXMA Building, Nelspruit, 1200	rasiubat@iucma.co.za	013 753 2786	013 753 9030
Smith. Albert: Section Ranger: Malelane: Kruger National Park.	Private Bag X 402, Skukuza, 1350	Albert.smith@sanparks.org	NA	084 700 1489
Shabangu, Sampie: IUCMA.	13 Streak Street MAXMA Building, Nelspruit, 1200	shabangus@iucma.co.za	NA	013 753 9000 062 907 9061
Mtotywa, Zinzile: DAFF.	Private Bag X 11243, Nelspruit, 1200.	ZinzileM@nda.agric.za	086 628 7137	013 754 0761 071 883 2768
Van der Merwe, Wehncke: Kruger Bufferzone Coordinator	NA	wehncke@kruger2canyons.org	NA	084 796 0834

**MINUTES OF THE MEETING/DISCUSSIONS
HELD WITH INTERESTED AND AFFECTED PARTIES (I&AP's):
DEVELOP AN AGRICULTURAL ESTATE ON REMAINDER PORTIONS 8, 13 AND 14 OF
MALELANE ESTATE 140 JU:
MALELANE, MPUMALANGA
24 MAY 2021
10H00**

1. Participants:

- Ms Nancy O'Farrell (NF) Irrigation Boards (Malelane and Crocodile).
- Mr. Johan Boshoff (JB) Irrigation Boards (Malelane and Crocodile).
- Mr. Renald Radley (RR) Malelane irrigation Board.
- Mr. Lex Hollmann (LH) Lex Hollman Trust and Jakkalsbessie Homeowners.
- Mr. Andre de Zwardt (AdZ) Applicant Representative
- Dr. Andrew Deacon (AD) Biodiversity Specialist.
- Mr. Johan Enslin (JE) IWULA Consultant. Project Team Member.
- Mr. Ralf Kalwa (RK) Rhengu Environmental Services.

2. Apologies:

None.

3. Welcome and Background:

RK thanked the participants for the opportunity to meet. RK introduced the various members of the meeting to each other. RK briefly explained the role of Interested and Affected Parties in an Environmental Impact Assessment (EIA) Process and encouraged everyone to participate in an open and transparent manner. Participants should feel free to voice their comments and provide input at any stage of the process. RK also gave an overview of the EIA process and the procedure of collecting information, the opportunity for I&APs to comment and the procedure for submitting the reports.

This meeting is but one of a set of meetings which will be held during the Public Participation Phase. Comments and concerns raised today will be included in the participation process and by attending this meeting the participants have registered their interest in the project. These minutes will be included in the Environmental Assessment documentation.

- To comply with **Environmental Legislation** an **Application** will be submitted to the Department of Rural Development, Land and Environmental Affairs (DARDLEA) in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended and the Environmental Impact Assessment (EIA) Regulations of 2014.
- Several activities which require approval by DARDLEA are listed in these regulations.
- The purpose of this assessment process is to investigate the impact of implementing such activities (i.e., developing an agricultural estate with 25 erven) on the farm.
- Erf Nr. 25 is represented by the existing farmhouse and will serve the purposes of accommodating the farm manager.
- The zonation of the property will not be amended and the existing land use/agricultural activity will remain in place, i.e., production of agricultural crops i.e., macadamia orchards.
- **Two land use alternatives** are thus proposed, i.e., residential on the sections overlooking the Kruger National Park and an agricultural activity towards the southern section of the property. One dwelling will be allowed per erf property. Erf sizes vary between 1ha and 2ha each.

Having said this, Rhengu Environmental Services (RES) were appointed to undertake the assessment process. As part of this assessment process a **Public Participation Process (PPP)** must be initiated to involve all potential interested and affected parties.

Several Specialist Studies have been commissioned to investigate and evaluate various aspects pertaining to the project site: Biodiversity Study (Aquatic and Terrestrial); Geotechnical and Hydrological Studies; Heritage Study; View Shed Analysis; Flood line delineation; Buffer Zone delineation; Services Reports and a Traffic Impact Study. Together with the Engineering Reports, these studies will allow the Project Team an opportunity to take an informed decision on the various impacts associated with the proposed development.

Finally, RK reiterated that in parallel to the EIA process the applicant must submit a Water Use Licence Application (WULA) to the Department of Water and Sanitation (IUCMA, i.e., Catchment Management Agency). This process will be managed by Johan Enslin. JE informed the meeting as follows:

- The WULA process will run concurrently with the EIA process. IUCMA have been on site and JE will continue liaising with the department during the WULA process. This Public Participation Process (PPP) will support the WULA process.
- JE recognises the need to register as a Water Services Provider and or to obtain a Letter of Consent from the local municipality.
- The following issues were raised by participants during the meeting:

Issue	Response
<p>1.JB: JB raised several concerns and issues pertaining to the supply of water and the registration process with the local municipality. In summary the following:</p> <ul style="list-style-type: none"> • Water Resources: The water resources for the property (boreholes etc.) are interconnected to underground aquifers and surrounding impacts such as run-off from neighbouring properties. • Yield and Contamination: The developers must take note of this and ensure that the proposed development has sufficient clean, potable water to fulfil its obligations. Primarily one would want to know what the yield of the boreholes would be, how will the aquifers be recharged and he also believes E. coli contamination in one of the boreholes requires attention. • Hydrological Survey: Essentially JB believes that a full hydrological assessment is required to ensure answers to the above and to define the water balance for the development. This approach will provide answers to ensure adequate capacity is available for the development in the long term. • Registration Process: JB mentioned that the developer must register as a Water Services Provider (as per the Water Services Act) with the local municipality and reach an agreement to provide water to the various users. JB is prepared to assist JE with this registration process. 	<p>1. RK: Hydrogeological Studies have been completed by specialists and these documents will be included in the Appendices section of the impact assessment reports.</p> <ul style="list-style-type: none"> • Water Balance: The Hydrogeological Study confirmed that the two boreholes combined can provide a sustainable yield of 222.77kl/day. The requirements of the 25 erven are in the region of 57.5kl/day. • Agricultural Water: The property is listed with the Inkomati Usuthu Water Management Agency (IUCMA) for 12.4ha that will together with the grey water from the sewer plant be used for irrigation. • A Water Treatment Plant (to ensure clean, uncontaminated water) will be located at the existing reservoirs to ensure water quality is maintained as per SABS and Department of Water and Sanitation (DWS) required standards. • Registration Process: JE and JB will combine their efforts to complete the registration process with the local municipality. • Focus Group Meeting: A focus group meeting will be held with members of the Irrigation Board to address any outstanding issues pertaining to access control, maintenance of infrastructure and administrative issues (now and in the future). Agenda items can be sent to Derick Peacock at dpasso@telkomsa.net.
<p>2. NF:</p> <ul style="list-style-type: none"> • Administration Process: NF raised a concern pertaining to the supply and management of water to each property in 50 years from now once the lease agreement lapses. The Irrigation Board is concerned that this would become a very onerous administrative challenge at the time. • Logistical Arrangements: Currently the Irrigation Board manages a pump house and abstraction point near the Crocodile River on Portion 20. Other affected infra-structure includes pipelines, staff housing and canals. • It must be noted that all these aspects must be allowed to continue functioning unhindered as a supplier of irrigation water. • The staff of the board require 24-hour access to the various facilities under its jurisdiction. 	<p>2.RK: See comment above on Focus Group Meeting.</p> <ul style="list-style-type: none"> • RK also recommended that the developer and the Irrigation Board agree to- and compile an Operational- and Maintenance Management Plan to ensure an amicable relationship for all parties going forward. • Rights to Access etc.: Comment noted. The Irrigation Board and its staff members will be allowed to function as per normal working- and maintenance requirements.

3.LH:

- **Density of Dwellings per Stand**: LH enquired how many dwellings would be allowed per stand/erf?
- **Change in Land Use in Future**: What will happen to Portion 20 in future if the developer is not successful in obtaining the property during this current tender process?
- **Security**: LH is pleased to see that this development will improve the general security of the area and the neighbouring properties.

3.RK:

- One dwelling per stand/erf.
- If the developer is unsuccessful in obtaining Portion 20 then it will be business as usual as per the Irrigation Boards functioning, needs and requirements.
- Should another party purchase Portion 20 then any change in land use etc. will have to undergo the authorisation and application processes as per legislative requirements.

General Comments:

The meeting and site visit adjourned at 11h20.

**MINUTES OF THE VIRTUAL FOCUS GROUP MEETING/DISCUSSIONS
HELD WITH SANPARKS: MR. WEHNCKE VAN DER MERWE:
DEVELOP AN AGRICULTURAL ESTATE ON REMAINDER PORTIONS 8, 13 AND 14 OF
MALELANE ESTATE 140 JU:
MALELANE, MPUMALANGA
25 MAY 2021
16H15**

1.Participants:

- Mr. Wehncke van der Merwe (WvdM) SANParks (KNP) Bufferzone Coordinator.
- Mr. Andre de Zwardt (AdZ) Applicant Representative.
- Mr. Derick Peacock (DP) Town Planner.
- Dr. Andrew Deacon (AD) Biodiversity Specialist.
- Mr. Ralf Kalwa (RK) Rhengu Environmental Services.

2.Apologies:

Dr. Marisa Coetzee (KNP).

3.Welcome and Background:

- **Background Information:** DP welcomed all to this meeting and provided a brief background to the proposed development as follows:
- The proposed development is inside the Urban Edge of Malelane and the development team (DT) is following the SPLUMA Process.
- The DT has learnt from existing examples along the Crocodile River (Jakkalsbessie and Mjejane) and will follow similar mitigation measures to ensure that the proposed development fits in with surrounding land uses.
- The property will be managed for agriculture (zonation will not change) with 24 residential stands facing the Kruger National Park. Stand 25 is the existing farmhouse and will be occupied by the Farm Manager.
- Each stand/erf will be between 1ha-2ha in size with a development footprint of approximately 3000sqm.
- Each stand will accommodate one dwelling.
- The design, shape and look of the buildings will be earthy in nature and colour and located amongst many trees and rehabilitated vegetation (more than 300 indigenous trees commensurate with the surrounding Malelane Mountain Bushveld have been planted to date).
- Architectural guidelines will channel all design options to fit in with the above and a height restriction of 7m will be regarded as a maximum for the development.
- **Historical Background:** RK provided some historical- and *status quo* information as follows:
- The Farm was owned by the Goeveia Family for more than 50 years and was used a vegetable farm.
- Once the family passed on the 4 children did not want to pursue the farming enterprise and the farm was rented out to the Snyman Family in Malelane. The property was used to produce lawns for commercial purposes and served as a distribution node for agricultural fertilizers.
- The removal of lawns from the farm has denuded the property of valuable topsoil over the past 10 years. Erosion and run-off damage into the Crocodile River has compounded the environmental impacts on the property.
- For all essential purposes no natural vegetation is found on the farm and the land has been transformed in all its facets.
- Several **Specialist Studies** have been completed to date as follows:
- Geohydrology; Biodiversity; Flood lines; Buffer areas; Fishway; Heritage; Services (stormwater plan); Visual Impact (7m height restriction); Earthy colours (architectural guidelines); Engineering Reports and Traffic Impact.

- **SANParks:** WvdM was pleased to see that several concerns had been addressed to date and added that he would submit a list of conditions which SANParks would like to see included in the assessment process.
- **RK:** Requested that the document be submitted ASAP so that it could receive the required attention and **where applicable** the conditions will be included in the Environmental Management Programme of the EIA.

General Comments:

The meeting adjourned at 17h20.

COPIES OF ADVERTISEMENTS, NEWSPAPER- AND SITE NOTICES

COPY OF NEWSPAPER ADVERTISEMENT: LOWVELDER 8 APRIL 2021

PROPERTY TO LET

0505 Accommodation
/ Rooms to let
0510 Farm & Plots
0511 Domestic Accommodation
0515 Flats / Units
0518 Farm Cottages
0519 Factories / Industries / Workshops
0520 Garden Flats / Cottages
0524 Holiday Accommodation
0525 Houses
0526 House Sitters
0530 Industrial Premises
0535 Offices / Shops / Business Premises
0536 Prime Properties
0540 Retirement Accommodation
/ Villages
0545 Storage / Parking
0549 Timeshare To Let
0550 Town houses / Duplexes / Simplexes / Cluster Homes
0555 Wanted to Rent
0560 Miscellaneous

0515 FLATS / UNITS

SECURE ESTATE PLASTON JATINGA
2 Bed, 1 bath, o/plan lounge/dining/kitchen. Fenced. Braai area, carport. Rent including water, refuse removal and garden services. Prepaid electricity. Available 1 May. R6,500 pm + dep & contract fee
081-045-7669
ML0398/48
WEST ACRES
3 Woostelle beskikbaar.
Helen
082-372-5472
ML0397/48

0525 HOUSES

PLASTON JATINGA
3 Bed, 2 bath, o/plan kitchen & dining. Double carport + 1 LUG. R8,000 pm.
Pet friendly. Huge garden. Rent including water, refuse removal, garden services. Prepaid elec. Full deposit & contract fee R1,200 CPA, T&C apply. Available immed.
Wilhelm:
081-045-7669
ML0398/47
5KM OP DIE R40 BARBERTONPAD
Ruim 3 siph huis. Krag uitgesluit. Baie goeie sekuriteit. Jammer, geen kinders/troeteldiere. R8,700 pm.
084-206-6539
ML0398/27

0530 INDUSTRIAL PREMISES

TE HUUR, INDUSTRIËLE EENHEDE TE 16 KYKOEDIESTRAAT, NELSPRUIT,
127 vkrm op straatfront, 3 fase krag R14,000 BTW uitgesluit. Krag en water voorafbetaal. Kontak eienaars
083-457-7842
of
082-494-6515
ML0398/32
CENTRAL PARK DOWN SIZING?
Factories, Office and Storage from R48
Call 082-449-9102
ML0397/75

FIELD SPARES
New & second-hand engines & gearboxes. Excellent prices.
013-753-4000
info@fieldautosparses.co.za
53 Anderson Street, Nelspruit

0535 OFFICES / SHOPS / BUSINESS PREMISES

FERREIRA STRAAT KANTOORRUIMTE TE HUUR 120 VKM EN 48 VKM
013-753-2252
082-784-5990
ML0397/33
OFFICE TO LET MOSTERT STREET NELSPRUIT
250 Sgm x R120 per sqm per month. Ample parking. House converted into offices with business rights. Use of generator included.
Schalk 082-462-9549
ML0397/58

MOTORING

0702 Bakkies & 4 x 4s
0705 Boats & Caravans
0706 Bargains
0708 Combi's / Minibusses
0710 Commercial Vehicles
0715 Farm Equipment
0716 Insurance
0718 4 Wheelers
0720 Motorcycles
0721 Motor Services
0725 New Car Sales
0730 Rental & Leasing
0735 Spares / Accessories
0736 Special Motors
0737 Sound & Security
0738 Trailer
0740 Used Cars
0742 Vehicle Finance
0745 Vehicle Maintenance / Services
0746 Vehicle Storage
0747 Vehicle under R30 000
0750 Wanted
0755 Miscellaneous

0735 SPARES & ACCESSORIES

CANOPIES & BAKKIES
0735 Spares & Accessories
WE BUY & SELL
Contact:
072-628-1486
083-325-0620
ML0398/07

0738 TRAILERS

LOWVELDER TRAILERS
RENTALS SALES PARTS TYRES
Trailer rentals, sales, spares and tyres.
Sole Lovveld agent of
sleepwa
082-786-9516
083-263-2495
SONPARK CENTRE NELSPRUIT

0740 USED CARS

CASH FOR USED CARS / BAKKIES
Any place Any condition
JAPIE 082-966-8126
ML0398/10

GT AUTO
We Buy and Sell Cars/Bakkies
Top prices paid
Louv: 082-338-9866

Vehicle Scams
It is the consumer's responsibility to stay safe when transacting with advertisers. Scammers are everywhere and may pose as vehicle buyers or sellers.
Combat scammers by confirming the market value of your vehicle and negotiate only with those who transact with reasonable amounts.
Demand to view vehicles for sale prior to paying any deposits or delivery or admin fees.
As a general rule, payments should only be made once all the necessary paperwork has been done. Please stay safe!

SUBMITTED
Comments should be made in writing and be addressed to the municipality concerned and a copy to the applicant, to reach the said addresses within thirty (30) days of this publication.
Municipality Name where comments must be submitted: MBOMBELA LOCAL MUNICIPALITY
District: EHLANZENI
Municipality's address: CIVIC CENTRE, 1 NEL STREET, NELSPRUIT, 1201
Applicant's address: STAND 18197, MSOGWABA
Advertiser Name: CHRISTINA THOLAKELE MADONSOLA
Her/His address: STAND 018197, MSOGWABA
Advertiser Email: bawinlamd32@gmail.com
TA010372

NOTICE
Mpumalanga Liquor LICENSING ACT (ACT No. 5 OF 2008)
INVITATION FOR PUBLIC COMMENTS IN RESPECT OF THE TRANSFER OF A LIQUOR LICENCE IN TERMS OF SECTION 43 OF THE MPUMALANGA LIQUOR LICENSING ACT, 2008
A. PERSONAL DETAILS
I, JABULANI WILLIAM MAMBEA with ID No. 60020 5607 084, a male, hereby invite written public comments concerning my application to the Mpumalanga Liquor Authority for the transfer of liquor licence number: MPU-023983 trading under the name of EMASOFENI TARVEN, I make this application on behalf of myself.
B. LICENCE TYPE
(a) the retail sale of liquor for consumption on the premises where the liquor is sold;
C. BUSINESS PREMISES
The premises to be transferred, being an address within the Republic of South Africa and within the borders of the Mpumalanga Province.
Postal address: STAND NO. 5332, PHOLA TRUST, situated within the Mombela Local Municipality.
D. ADDRESSES TO WHICH COMMENTS MUST BE SUBMITTED
Comments should be made in writing and be addressed to the municipality concerned and a copy to the applicant, to reach the said address within thirty (30) days of this publication.
E. APPLICANT'S ADDRESS: S VAN NEKERK ST, SONHEUWEL, NELSPRUIT, 1200
APPLICANT'S ADDRESS: STAND NO. 28, ALEXANDRIA TRUST
TA010281

NOTICE
OF A WATER USE LICENCE APPLICATION IN TERMS OF SECTION 40 OF THE NATIONAL WATER ACT (ACT 36 OF 1998) (NWA) FOR THE STORMING OF WATER ON REMAINING EXTENT OF THE FARM KLIKPKRAAL 170 JT
Notice is hereby given that York Trens (Pty) Ltd is applying for a Water Use Licence Applications (WULA) in terms of Section 40 of the NWA (Act 36 of 1998) for the storing of water in an off-channel storage dam on Remaining Extent of the Farm KLIKPKRAAL 170 JT. All interested and Affected Parties (I&APs) are invited to register and submit their comments to the contact address below within 30 days of the release of this notice. Additional information can be obtained upon request via the same address.
Contact: Insite Environmental Consulting.
E-Mail: insite@insoilconsult.co.za, Tel: 082-338-1382 / 074- 103-3306.
TA010355

NOTICE
OF ENVIRONMENTAL IMPACT ASSESSMENT PUBLIC PARTICIPATION PROCESS INVITATION TO PARTICIPATE
The new Environmental Impact Assessment Regulations came into effect on the 4 December 2014. These regulations were amended in 2017 and with this in mind it is proposed that the process as described in Chapters 4 and 6 of Notice 326 and Listed in Government Gazette No. 40772, published on 7 April 2017 is followed. Notice is given in terms of Regulation 16(1) of the Regulations to carry out the following activities:
Property Description and Location: Rural Residential and Agriculture Estate: Remainder Portions 8, 13 and 14 of Maleslane Estate A 180 JU 4km from Maleslane town. In terms of Government Notices 327, 325 and 324 an Environmental Impact Assessment is required in terms of the following listed activities that the applicant wishes to implement.
Government Notice: No: 327 of 7 April 2017 Gazette Number: 40772.
Activity: 12: The development of (ii) bridges and or (iv) dams, where the dam/bridge infrastructure and water surface area exceeds 100sqm in size,

NOTICE
OF SALE IN EXECUTION
In the High Court of South Africa, Gauteng Division, Pretoria.
Case No. 2393/05
In the matter between: NONYANA FW Plaintiff and MOJAPPELO & CO INC Defendant
KINDLY TAKE NOTICE THAT in terms of judgment granted on the 24th of January 2017 in the High Court of South Africa, Gauteng Division, Pretoria, a sale in execution of the under mentioned goods will be held on FRIDAY, 7 MAY 2021 at 09h00 at THE SHERIFF'S OFFICES, 99 JACARANDA STREET, WEST ACRES, MBOMBELA to the highest bidder:
1 x Reception desk
1 x Nashua Coping machine
1 x Computer
1 x Chair
1 x Hisense Bar fridge

where such development occurs-
(a) within a water course or (c) within 32m of a water course.
Activity 19: The infilling or depositing of any material of more than 10 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, silt, shell, grit, pebbles or rock, of more than 10 cubic metres from(i) a watercourse.
Activity 27: The clearance of an area of the or more, but less than 20ha, of indigenous vegetation.
Activity 28: Residential, mixed, retail, commercial, industrial or institutional developments where such land was used for agriculture, game farming, equestrian purposes or afforestation on or after 1 April 1998 and where such development: (ii) will occur outside an urban area, where the total land to be developed is bigger than 1 hectare.
Government Notice: No: 324 of 7 April 2017 Gazette Number: 40772.
Activity 2: The development of reservoirs, excluding dams, with a capacity of 250 cubic metres or more in (f) Mpumalanga (i) outside urban areas in (f) areas within 10 kilometres of a National Park as identified in terms of NEMPPA.
Activity 4: The development of a road wider than 4 metres with a reserve less than 13,5 metres in (f) Mpumalanga (i) outside urban areas in (gg) areas within 10 kilometres of a National Park as identified in terms of NEMPPA.
Activity 12: The clearance of an area of 300 sqm or more of indigenous vegetation except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan.
Activity 14: The development of (i) dams - and infrastructure exceeding 10 sqm in size or (ii) infrastructure or structures with a physical footprint of 10 sqm or more where such development occurs- (a) within a water course or (c) within 32m of a water course, in (f) Mpumalanga (i) outside urban areas in (fh) areas within 10 kilometres of a National Park as identified in terms of NEMPPA.
Activity 18: The widening of a road by more than 4 metres or the lengthening of a road by more than 1 kilometre in (f) Mpumalanga (i) outside urban areas in (gg) areas within 10 kilometres of a National Park as identified in terms of NEMPPA.
Project Specifics include:
+ Establishment 25 sub-divisions (the- 2,2ha each).
Create a lease over the southern sections of each sub-division that will continue to be used for agriculture.
The northern section of each sub-division will accommodate one private residence overlooking the Crocodile River.
+ The development of services infrastructure (electricity, potable water and sewers) to each sub-division.
The purpose of this assessment process is to investigate the impact of implementing such activities at Remainder Portions 8, 13 and 14 of Maleslane Estate A 180 JU 4km from Maleslane town. In terms of Government Notices 327, 325 and 324 an Environmental Impact Assessment is required in terms of the following listed activities that the applicant wishes to implement.
Government Notice: No: 327 of 7 April 2017 Gazette Number: 40772.
Activity: 12: The development of (ii) bridges and or (iv) dams, where the dam/bridge infrastructure and water surface area exceeds 100sqm in size,

0916 TITLE DEEDS
KRUGER AND PARTNERS INC.
NOTICE
LOST or DESTROYED DEED FORM JJJ
Notice is hereby given that under the provisions of regulation 68 of the Deeds Regulations Act, 1937, of the intention to apply for the issue of a certified copy of NOTARIAL DEED OF CESSION OF RIGHT TO EXCLUSIVE USE AREA SK60807 Properties 120 CC, Registration Number 2005/158/23/07, in respect of 1. An exclusive use area described as P18 measuring 12 (TWELVE) square metres being as shown in the scheme known as BOUGAINVILLE PLACE in respect of the land and building or buildings situated at ERF 434 SONHEUWEL TOWNSHIP City of Mbombela as shown and more fully described on Sectional Plan Number SS1147/07 which has been lost or destroyed.
All interested persons having objection to the issue of such copy are hereby required to lodge the same in writing with the Registrar of Deeds, Mpumalanga at Nelspruit within two weeks from the date of the publication of this notice.
Dated at NELSPRUIT on 17 MARCH 2021.
APPLICANT
KRUGER AND PARTNERS INC
5 VAN RENSBURG STREET, NELSPRUIT
Itel@empromp.co.za
013-745-5300
TA010357

0915 SALES IN EXECUTION
DITSL
OF SALE IN EXECUTION
In the High Court of South Africa, Gauteng Division, Pretoria.
Case No. 2393/05
In the matter between: NONYANA FW Plaintiff and MOJAPPELO & CO INC Defendant
KINDLY TAKE NOTICE THAT in terms of judgment granted on the 24th of January 2017 in the High Court of South Africa, Gauteng Division, Pretoria, a sale in execution of the under mentioned goods will be held on FRIDAY, 7 MAY 2021 at 09h00 at THE SHERIFF'S OFFICES, 99 JACARANDA STREET, WEST ACRES, MBOMBELA to the highest bidder:
1 x Reception desk
1 x Nashua Coping machine
1 x Computer
1 x Chair
1 x Hisense Bar fridge

0915 SALES IN EXECUTION
DITSL
OF SALE IN EXECUTION
In the High Court of South Africa, Gauteng Division, Pretoria.
Case No. 2393/05
In the matter between: NONYANA FW Plaintiff and MOJAPPELO & CO INC Defendant
KINDLY TAKE NOTICE THAT in terms of judgment granted on the 24th of January 2017 in the High Court of South Africa, Gauteng Division, Pretoria, a sale in execution of the under mentioned goods will be held on FRIDAY, 7 MAY 2021 at 09h00 at THE SHERIFF'S OFFICES, 99 JACARANDA STREET, WEST ACRES, MBOMBELA to the highest bidder:
1 x Reception desk
1 x Nashua Coping machine
1 x Computer
1 x Chair
1 x Hisense Bar fridge

1 x Desk
6 x Visitors chairs
1 x Canon printer
1 x Desk
8 x 4 Drawer Steel Cabinets
3 x Chairs
DU TOIT-SMUTS ATTORNEYS
(With the right of appearance in accordance with Section 4(2) of the Right of Appearance in COURTS ACT 62 OF 1995)
LAW CHAMBERS
VAN NIEKERK STREET
PO BOX 4030
NELSPRUIT
TEL: 013-745-4649
Ref: Mr RhaederVds/NLS2 09/JON/1068

0916 TITLE DEEDS
KRUGER AND PARTNERS INC.
NOTICE
LOST or DESTROYED DEED FORM JJJ
Notice is hereby given that under the provisions of regulation 68 of the Deeds Regulations Act, 1937, of the intention to apply for the issue of a certified copy of NOTARIAL DEED OF CESSION OF RIGHT TO EXCLUSIVE USE AREA SK60807 Properties 120 CC, Registration Number 2005/158/23/07, in respect of 1. An exclusive use area described as P18 measuring 12 (TWELVE) square metres being as shown in the scheme known as BOUGAINVILLE PLACE in respect of the land and building or buildings situated at ERF 434 SONHEUWEL TOWNSHIP City of Mbombela as shown and more fully described on Sectional Plan Number SS1147/07 which has been lost or destroyed.
All interested persons having objection to the issue of such copy are hereby required to lodge the same in writing with the Registrar of Deeds, Mpumalanga at Nelspruit within two weeks from the date of the publication of this notice.
Dated at NELSPRUIT on 17 MARCH 2021.
APPLICANT
KRUGER AND PARTNERS INC
5 VAN RENSBURG STREET, NELSPRUIT
Itel@empromp.co.za
013-745-5300
TA010357

0915 SALES IN EXECUTION
DITSL
OF SALE IN EXECUTION
In the High Court of South Africa, Gauteng Division, Pretoria.
Case No. 2393/05
In the matter between: NONYANA FW Plaintiff and MOJAPPELO & CO INC Defendant
KINDLY TAKE NOTICE THAT in terms of judgment granted on the 24th of January 2017 in the High Court of South Africa, Gauteng Division, Pretoria, a sale in execution of the under mentioned goods will be held on FRIDAY, 7 MAY 2021 at 09h00 at THE SHERIFF'S OFFICES, 99 JACARANDA STREET, WEST ACRES, MBOMBELA to the highest bidder:
1 x Reception desk
1 x Nashua Coping machine
1 x Computer
1 x Chair
1 x Hisense Bar fridge

Lowvelder
Your trusted source
In the community For the community

Biaton Paving Bricks
Building Products
Maxi Bricks
Diamond Maxi Bricks
Stock Bricks
COLLECT OR WE CAN DELIVER
Christel 066 487 2858
Tanya 082 450 9442
Tel. 013 758 5001
Biaton Brickworks: Rocky's Drift

LEGALS
0905 Auctioneers
0910 Public & Legal Notices
0915 Sales in Execution
0916 Lost Title Deeds
0920 Tenders
0925 Estates
0930 Liquidations
0935 Town Planning
0940 General

0910 PUBLIC / LEGAL NOTICES

NOTICE
INVITATION FOR PUBLIC COMMENTS IN APPLYING FOR A LIQUOR LICENCE IN TERMS OF SECTION 35(2)(a) OF THE MPUMALANGA LIQUOR LICENSING ACT, 2008
PERSONAL DETAILS
I, CHRISTINA THOLAKELE MADONSOLA, ID: 620222 0802 086, an adult female, hereby invite written public comments concerning my application for a liquor licence to the Mpumalanga Liquor Authority to trade under the name of CALIFORNIA TAVERN. I make this application on behalf of myself.
LICENCE TYPE
The retail sale of liquor for consumption on the premises where the liquor is sold.
BUSINESS PREMISES
Physical address: STAND 018197, MSOGWABA, being an address in the Republic of South Africa and situated within the Boundaries of Mpumalanga Province.
Postal address: PO BOX 6531, NELSPRUIT, 1200
Call: 076-506-3011
ADDRESSES TO WHICH COMMENTS MUST BE

COPY OF SITE NOTICE:
SITE NOTICE OF ENVIRONMENTAL IMPACT ASSESSMENT
PUBLIC PARTICIPATION PROCESS
INVITATION TO PARTICIPATE

The new Environmental Impact Assessment Regulations came into effect on the 4 December 2014. These regulations were amended in 2017 and with this in mind it is proposed that the procedure as described in Chapters 4 and 6 of Notice 326 and Listed in Government Gazette No. 40772, published on 7 April 2017 is followed. Notice is given in terms of Regulation 41 of this notice to carry out the following activities:

Property Description and Location: Rural Residential and Agriculture Estate: Remainder Portions 8, 13 and 14 of Malelane Estate 140 JU 4km from Malelane town. In terms of Government Notices **327, 325 and 324** an **Environmental Impact Assessment** is required in terms of the following listed activities that the applicant wishes to implement:

Government Notice: No: 327 of 7 April 2017 Gazette Number: 40772:

Activity 12: The development of (iii) bridges and or (iv) dams, where the dam/bridge infrastructure and water surface area exceeds 100sqm in size, where such development occurs-(a) within a water course or (c) ...within 32m of a water course.

Activity 19: The infilling or depositing of any material of more than 10 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock, of more than 10 cubic metres from-(i) a watercourse.

Activity 27: The clearance of an area of 1ha or more, but less than 20ha, of indigenous vegetation.

Activity 28: Residential, mixed, retail, commercial, industrial or institutional developments where such land was used for agriculture, game farming, equestrian purposes or afforestation on or after 1 April 1998 and where such development: (ii) will occur outside an urban area, where the total land to be developed is bigger than 1 hectare.

Government Notice: No: 324 of 7 April 2017 Gazette Number: 40772:

Activity 2: The development of reservoirs, excluding dams, with a capacity of 250 cubic metres or more in (f) Mpumalanga (ii) outside urban areas in (ff) areas within 10 kilometres of a National Park as identified in terms of NEMPAA.

Activity 4: The development of a road wider than 4 metres with a reserve less than 13.5 metres in (f) Mpumalanga (i) outside urban areas in (gg) areas within 10 kilometres of a National Park as identified in terms of NEMPAA.

Activity 12: The clearance of an area of 300 sqm or more of indigenous vegetation except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan.

Activity 14: The development of-(i) dams ..and infrastructure exceeding 10 sqm in size or

(ii) infrastructure or structures with a physical footprint of 10 sqm or more

where such development occurs- (a) within a water course or (c) ...within 32m of a water course, in (f) Mpumalanga (i) outside urban areas in (hh) areas within 10 kilometres of a National Park as identified in terms of NEMPAA.

Activity 18: The widening of a road by more than 4 metres or the lengthening of a road by more than 1 kilometre in (f) Mpumalanga (i) outside urban areas in (gg) areas within 10 kilometres of a National Park as identified in terms of NEMPAA.

Project Specifics include:

- Establish 25 subdivisions (1ha-2.2ha each). Create a lease over the southern sections of each sub-division that will continue to be used for agriculture.
- The northern section of each sub-division will accommodate one private residence overlooking the Crocodile River.
- The development of services infrastructure (electricity, potable water and sewerage) to each sub-division.

The purpose of this assessment process is to investigate the impact of implementing such activities at Remainder Portions 8, 13 and 14 of Malelane Estate A 180 JU.

Applicant Representative: Mr. Andre de Zwardt
Cell: 082 820 4228

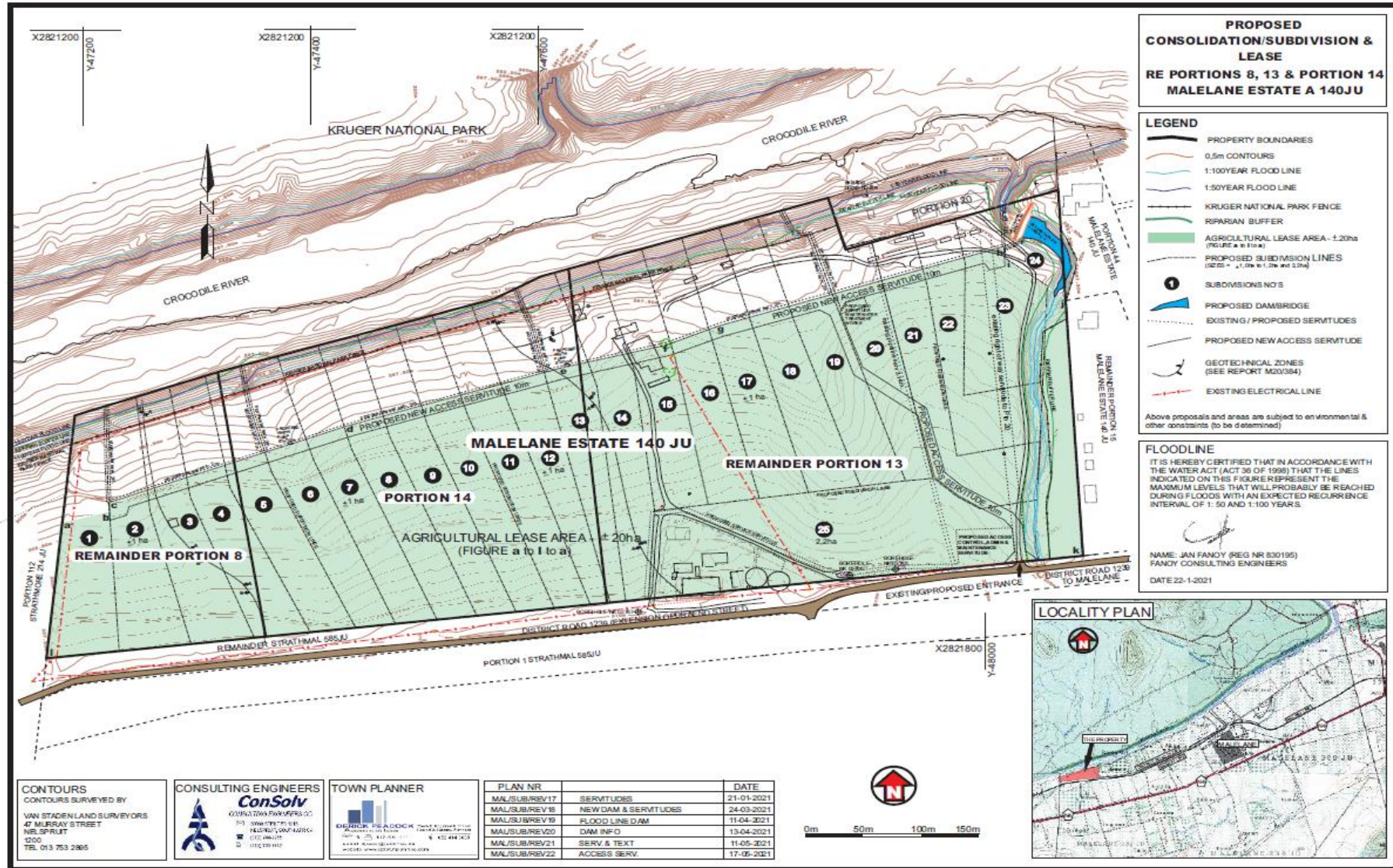
Consultant and Contact Person:
Rhengu Environmental Services

Contact Person: Ralf Kalwa
P. O. Box 1046
Malelane, 1320
Cell: 082414 7088
E Mail: rhengu@mweb.co.za

In order to ensure that you are identified/registered as an interested and/or affected party please submit your name, contact information (e-mail; telephone; fax number) and interest in the matter in writing to the contact person on or before **3 May 2021**.

Date of Notice: 8 April 2021.

GENERAL LAYOUT OF THE PROPOSED PROJECT SITE



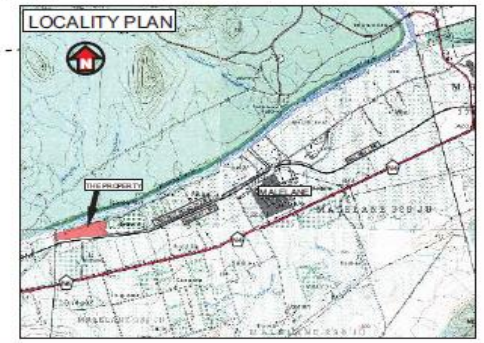
PROPOSED CONSOLIDATION/SUBDIVISION & LEASE RE PORTIONS 8, 13 & PORTION 14 MALELANE ESTATE A 140JU

- LEGEND**
- PROPERTY BOUNDARIES
 - 0.5m CONTOURS
 - 1:100YEAR FLOOD LINE
 - 1:50YEAR FLOOD LINE
 - KRUGER NATIONAL PARK FENCE
 - RIPARIAN BUFFER
 - AGRICULTURAL LEASE AREA - ± 20ha (FIGURE a to I to a)
 - PROPOSED SUBDIVISION LINES (FIGURE a to I to a)
 - SUBDIVISIONS NO'S
 - PROPOSED DAMBRIDGE
 - EXISTING / PROPOSED SERVITUDES
 - PROPOSED NEW ACCESS SERVITUDE
 - GEOTECHNICAL ZONES (SEE REPORT M20/384)
 - EXISTING ELECTRICAL LINE

Above proposals and areas are subject to environmental & other constraints (to be determined)

FLOODLINE
 IT IS HEREBY CERTIFIED THAT IN ACCORDANCE WITH THE WATER ACT (ACT 36 OF 1998) THAT THE LINES INDICATED ON THIS FIGURE REPRESENT THE MAXIMUM LEVELS THAT WILL PROBABLY BE REACHED DURING FLOODS WITH AN EXPECTED RECURRENCE INTERVAL OF 1: 50 AND 1:100 YEARS.

NAME: JAN FANCY (REG NR 530195)
 FANCY CONSULTING ENGINEERS
 DATE: 22-1-2021

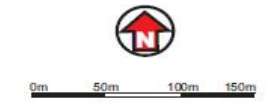


CONTOURS
 CONTOURS SURVEYED BY
 VAN STADEN LAND SURVEYORS
 47 MURRAY STREET
 NELSPRUIT
 1200
 TEL: 013 753 2805

CONSULTING ENGINEERS
ConSolv
 CONSULTING ENGINEERS CC
 103 WINDMILLER DRIVE
 HALLS GAP, 1456
 011 808 1111
 011 808 1112

TOWN PLANNER
DEBBIER DE LA DOKK
 TOWN PLANNING & ARCHITECTURE
 201 WINDMILLER DRIVE
 HALLS GAP, 1456
 011 808 1111
 011 808 1112

PLAN NR	DATE
MAL/SUB/REV17	21-01-2021
MAL/SUB/REV18	24-03-2021
MAL/SUB/REV19	11-04-2021
MAL/SUB/REV20	13-04-2021
MAL/SUB/REV21	11-05-2021
MAL/SUB/REV22	17-05-2021



COPIES OF E MAILS, NOTIFICATIONS AND RECEIPT OF DOCUMENTS

From: rhengu@mweb.co.za rhengu@mweb.co.za

Sent: Thursday, 01 April 2021 07:56

To: 'EdLiz Harris' <lizedharris@gmail.com>; 'Andre De Zwart' <andre@ingweconstruction.co.za>; 'Wendy Thornley' <wendy@thornleysav.co.za>; rhengu@mweb.co.za

Cc: 'Bob Thornley' <bob@thornleysav.co.za>; 'Dave Carr' <carrdave@mweb.co.za>; 'Jackey Deacon' <dot@mpu.co.za>; 'Francois Esselen' <fesselen@lantic.net>; 'Sue de Zwart' <sue@talkingturf.co.za>; 'willem joubert' <willemj@me.com>; 'Alicia Bennewith' <bennewitha@icloud.com>; 'Anne Hollmann' <Ginalex@edlex.co.za>; andrew@mpu.co.za; 'Kierryn Harris' <kierrynharris@gmail.com>; 'Ansel Harris' <anselkierryn@gmail.com>; 'Francois Mete' <fmete@wanadoo.fr>; 'Lex Hollmann' <Lex@edlex.co.za>; 'Andrew' <andrew@nethog.co.za>

Subject: EIA MALELANE ESTATES

Dear Interested and Affected Party and Government Official

1. Please find attached a notification for the Environmental Impact Assessment on the Farms: Remainder Portions 8,13 and 14 of Malelane Estate A180JU in your area. This notification will be advertised in the Lowvelder newspaper on **8 April 2021.**
2. Please take note that the date for the Public Meeting on-site will be announced once the registration period (after 3 May 2021) has lapsed.
3. Feel free to contact me to discuss any issues of concern and or to verify any information.

Kind regards,
Ralf Kalwa
Rhengu Environmental Services
Cell: 082 414 7088

From: rhengu@mweb.co.za <rhengu@mweb.co.za>

Sent: Friday, 02 April 2021 08:00

To: iwulaspecialist@gmail.com; 'Barend Marx' <barend@mbbnel.co.za>; 'Frans Krige' <franskrige@telkomsa.net>; 'Frans Krige' <Frans.Krige@mtpa.co.za>; FransMas@nda.agric.za; jan.mashele@nkomazi.gov.za; 'Sampie Shabangu' <shabangus@iucma.co.za>; 'ZinzileM' <ZinzileM@daff.gov.za>; 'Marisa Coetzee' <Marisa.Coetzee@sanparks.org>; 'Tracy Petersen' <tracy.petersen@sanparks.org>; 'Albert Smith' <albert.smith@sanparks.org>; 'Darryl Pepworth' <pepworth@mweb.co.za>; 'Nancy' <nancy@rmputter.co.za>; Nancy.putter@lantic.net

Cc: rhengu@mweb.co.za

Subject: EIA MALELANE ESTATES

Dear Interested and Affected Party and Government Official

1. Please find attached a notification for the Environmental Impact Assessment on the Farms: Remainder Portions 8,13 and 14 of Malelane Estate A180JU in your area. This notification will be advertised in the Lowvelder newspaper on **8 April 2021.**
2. Please take note that the date for the Public Meeting on-site will be announced once the registration period (after 3 May 2021) has lapsed.
3. Feel free to contact me to discuss any issues of concern and or to verify any information.

Kind regards,
 Ralf Kalwa
 Rhengu Environmental Services
 Cell: 082 414 7088

From: rhengu@mweb.co.za <rhengu@mweb.co.za>
Sent: Monday, 12 April 2021 12:47
To: 'Lex Hollmann' <Lex@edlex.co.za>
Cc: lizedharris@gmail.com; 'Anne Hollmann' <Ginalex@edlex.co.za>;
 rhengu@mweb.co.za
Subject: RE: EIA MALELANE ESTATES

Thanks Lex.
 As the Chairman of the HOA I will register you for both entities (Trust and HOA).
 I will also keep sending notifications to all neighbours.
 Regards.

Ralf
 RES

From: Lex Hollmann <Lex@edlex.co.za>
Sent: Monday, 12 April 2021 12:28
To: rhengu@mweb.co.za
Cc: lizedharris@gmail.com; Anne Hollmann <Ginalex@edlex.co.za>
Subject: RE: EIA MALELANE ESTATES

Hi Ralf
 Do I need to do anything else to register as an interested party?
 I would represent the "Lex Hollmann Trust" which is the owner of JB1, JB2 and JB12.
 Should we be registering as a Home-Owners association as well for Jakkalsbessie?

Lex Hollmann
 +27(83)254-0687 - Mobile
 +27(13)790-0235 - Office
 +27(13)790-1658 – FAX

From: rhengu@mweb.co.za <rhengu@mweb.co.za>
Sent: Wednesday, 12 May 2021 07:49
To: 'EdLiz Harris' <lizedharris@gmail.com>; 'Andre De Zwart' <andre@ingweconstruction.co.za>; 'Wendy Thornley' <wendy@thornleysav.co.za>; 'Derick Peacock' <derick@dptownplanning.com>; iwulaspecialist@gmail.com; 'Lex Hollmann' <Lex@edlex.co.za>; 'Barend Marx' <barend@mbbnel.co.za>; 'Darryl Pepworth' <pepworth@mweb.co.za>; 'Marisa Coetzee' <Marisa.Coetzee@sanparks.org>; bjadp@vodamail.co.za; 'Navashni Govender' <navashni.govender@sanparks.org>; nkhumalo@sahra.org.za; 'Khumbelo Malele' <khumbelomalele@gmail.com>; 'Khumbelo Malele' <Khumbelo.Malele@mtpa.co.za>; FransMas@nda.agric.za; jan.mashele@nkomazi.gov.za; 'Nancy' <nancy@rmputter.co.za>; 'Thabo Rasiuba' <rasiubat@iucma.co.za>; 'Albert Smith' <albert.smith@sanparks.org>; 'Sampie Shabangu' <shabangus@iucma.co.za>; 'ZinzileM' <ZinzileM@daff.gov.za>; rhengu@mweb.co.za
Cc: 'Bob Thornley' <bob@thornleysav.co.za>; 'Dave Carr' <carrdave@mweb.co.za>; 'Jackey Deacon' <dot@mpu.co.za>; 'Francois Esselen' <fesselen@lantic.net>; 'Sue de Zwart' <sue@talkingturf.co.za>; 'willem joubert' <willemj@me.com>; 'Alicia Bennewith' <bennewitha@icloud.com>; 'Anne Hollmann' <Ginalex@edlex.co.za>; andrew@mpu.co.za; 'Kierryn Harris' <kierrynharris@gmail.com>; 'Ansel Harris'

<anselkierryn@gmail.com>; 'Francois Mete' <fmete@wanadoo.fr>; 'Lex Hollmann' <Lex@edlex.co.za>; 'Andrew' <andrew@nethog.co.za>
Subject: EIA MALELANE ESTATES

Dear Interested and Affected Party and Government Official

1. Please find attached a notification for the Environmental Impact Assessment on the Farms: Remainder Portions 8,13 and 14 of Malelane Estate A180JU in your area.
2. Please take note that the Public Meeting will be held on site on **24 May 2021 at 10h00**. Please RSVP on the **attached comment/registration form** to me by close of business on **21 May 2021** to confirm your attendance.
3. As per Covid 19 regulations and restrictions participants must register to ensure we maintain numbers within the framework of legislation.
4. Feel free to contact me to discuss any issues of concern and or to verify any information.

Kind regards,

Ralf Kalwa
 Rhengu Environmental Services
 Cell: 082 414 7088

From: Nancy <nancy@rmputter.co.za>
Sent: Wednesday, 12 May 2021 09:59
To: rhengu@mweb.co.za
Subject: RE: EIA MALELANE ESTATES

Ralf

See attached registration form for both Malelane and Crocodile River irrigation board.
 Regards

Nancy O'Farrell
Irrigation Boards & Water Management
 Tel : 013 79 00 591
 Tel : +27 63 734 5226
 28 Air Street, Malelane, 1320
 P O Box 382 Malelane, 1320

From: Wehncke van der Merwe <wehncke@kruger2canyons.org>
Sent: Wednesday, 19 May 2021 09:15
To: rhengu@mweb.co.za
Cc: Marisa Coetzee <Marisa.Coetzee@sanparks.org>
Subject: RE: EIA MALELANE ESTATES

Hi Ralf

Hope you are well.

Can you please register SANParks as I&AP with myself (Wehncke van der Merwe) and Marisa as contact persons?

I doubt that we will be able to make the scheduled site meeting due to other obligations. We have received the town planning related zonation amendment application as well from Derick. Can we perhaps have a virtual meeting with you both? I am available next week Tuesday (24th) and Thursday(26th) and have asked Derick but still waiting on a response. Would you perhaps be available on any of those dates? Please provide a preferred time as well?

Kind regards

Wehncke van der Merwe
Kruger Bufferzone Coordinator

Original Appointment-

From: Wehncke van der Merwe

Sent: 20 May 2021 09:50 PM **To:** 'Derick Peacock'; rhengu@mweb.co.za; Marisa Coetzee

Subject: Malelane Estates development discussion

When: 25 May 2021 04:15 PM-05:00 PM (UTC+02:00) Harare, Pretoria.

Where: Microsoft Teams Meeting

Good day Derick, Ralf and Marisa

Thanks for the feedback on your availability for a discussion on the Malelane Estates development.

Please find the link to the meeting below:

From: Wehncke van der Merwe wehncke@kruger2canyons.org

Sent: Tuesday, 25 May 2021 18:19

To: 'Derick Peacock' <derick@dptownplanning.com>; rhengu@mweb.co.za; Marisa Coetzee Marisa.Coetzee@sanparks.org

Subject: RE: Malelane Estates development discussion

Hi Derick and Ralf

Thank you for a productive meeting.

Please find attached the Draft SANParks Conditions document as discussed. Please have a look. Lets meet again as soon as you have had a chance and we can chat about the suggested conditions and inclusion of it into your processes going forward. Please note that this is still in draft format so inputs are also welcome.

Kind regards

Wehncke van der Merwe

Kruger Bufferzone Coordinator

SANParks Protected Area Programme

Kruger 2 Canyons Biosphere

K2C office, Zandspruit Bush & Aero Estate, Hoedspruit

Cell: 084 796 0834

From: rhengu@mweb.co.za rhengu@mweb.co.za

Sent: Saturday, 29 May 2021 10:09

To: 'Johan Enslin' <iwulaspecialist@gmail.com>; 'Andrew' <andrew@nethog.co.za>; 'Nancy' <nancy@rmputter.co.za>; johanboshoff@gmail.com; 'Lex Hollmann' <Lex@edlex.co.za>; 'Andre De Zwart' <andre@ingweconstruction.co.za>; reнал@radleylg.co.za

Cc: rhengu@mweb.co.za; 'Barend Marx' <barend@mbbnel.co.za>; 'Wehncke vd Merwe' <bufferzone@kruger2canyons.org>; 'Wehncke vd Merwe' <bufferzone@kruger2canyons.org>; 'Derick Peacock' <derick@dptownplanning.com>

Subject: MINUTES OF PPP MEETING MALELANE ESTATES PORTIONS 8,13,14

Dear Interested and Affected Parties

Please find attached a copy of the minutes of our Public Meeting on 24 May 2021. Please submit comments and or changes/amendments to this office by return mail before or on 2 June 2021. The minutes will be included in the Impact Assessment Reports.

Kind regards,

Ralf Kalwa

Rhengu Environmental Services

Cell: 082 414 7088

Malelane

From: rhengu@mweb.co.za rhengu@mweb.co.za

Sent: Saturday, 29 May 2021 11:20

To: 'Johan Enslin' <iwulaspecialist@gmail.com>; 'Andrew' <andrew@nethog.co.za>; 'Nancy' <nancy@rmputter.co.za>; johanboshoff@gmail.com; 'Lex Hollmann' <Lex@edlex.co.za>; 'Andre De Zwart' <andre@ingweconstruction.co.za>; renald@radleylg.co.za; 'Marisa Coetzee' <Marisa.Coetzee@sanparks.org>; rhengu@mweb.co.za

Cc: 'Barend Marx' <barend@mbbnel.co.za>; 'Wehncke vd Merwe' <bufferzone@kruger2canyons.org>; 'Wehncke vd Merwe' <bufferzone@kruger2canyons.org>; 'Derick Peacock' <derick@dptownplanning.com>

Subject: MINUTES OF PPP MEETINGS MALELANE ESTATES PORTIONS 8,13,14

Dear Interested and Affected Parties

Please find attached a copy of the minutes of our Focus Group Meeting on 25 May 2021 with SANParks.

Please submit comments and or changes/amendments to this office by return mail before or on 2 June 2021. The minutes will be included in the Impact Assessment Reports.

I omitted Andre de Zwardt from the Public Meeting Minutes and have attached the amended minutes. Apologies Andre!

Kind regards,

Ralf Kalwa
Rhengu Environmental Services
Cell: 082414 7088
Malelane

From: rhengu@mweb.co.za rhengu@mweb.co.za

Sent: Friday, 06 August 2021 12:41

To: 'Andrew' <andrew@nethog.co.za>; 'Johan Enslin' <iwulaspecialist@gmail.com>; 'Lex Hollmann' <Lex@edlex.co.za>; 'Barend Marx' <barend@mbbnel.co.za>; johanboshoff@gmail.com; 'Marisa Coetzee' <Marisa.Coetzee@sanparks.org>; bjadp@vodamail.co.za; nkhumalo@sahra.org.za; 'Khumbelo Malele' <Khumbelo.Malele@mpa.co.za>; FransMas@nda.agric.za; jan.mashele@nkomazi.gov.za; 'Nancy' <nancy@rmputter.co.za>; renald@radleylg.co.za; rasiubat@iucma.co.za; 'Albert Smith' <albert.smith@sanparks.org>; 'Sampie Shabangu' <shabangus@iucma.co.za>; 'ZinzileM' <ZinzileM@daff.gov.za>; 'Wehncke van der Merwe' <wehncke@kruger2canyons.org>

Cc: 'Andre' <andre@ingweconstruction.co.za>; 'Derick Peacock' <derick@dptownplanning.com>; rhengu@mweb.co.za

Subject: ENVIRONMENTAL IMPACT ASSESSMENT KRUGER MALELANE AGRICULTURE ESTATE

Dear Interested and Affected Party and Government Officials

1. We have completed the **Draft BAR Report** for the Kruger Malelane Agri Estate (Malelane Estates).

Hard Copies have been posted or delivered to the following venues and or persons:

ORGANISATION	PERSON
DARDLEA	Ms. Robyn Luyt
IUCMA: Nelspruit	Mr. Thabo Rasiuba Mr. Sandile Dlamini Ms. Thandi Dzhangi
SAHRA: Cape Town Office	Ms. Nokukhanya Khumalo
MTPA	Ms. Khumbelo Malele
DAFF	Mr. Zinzile Mtotywa
DAFF: LUSM	Mr. Frans Mashabela
DARDLA	Mr. Louw Bierman
SANPARKS: KNP	Dr. Marisa Coetzee
Nkomazi Municipality	Mr. Jan Mashele
Applicant	Mr. Andre De Zwardt (Applicant Representative)
Irrigation Boards: Malelane Office	Ms. Nancy O'Farrell
Rhengu Environmental Services	Mr. Ralf Kalwa

2. The Final Report consists of **three sections**:

- The Report Section and,
- The Appendices Section: **Volumes 1 and 2**.

3. The Appendices Section is **too large** and cannot be sent via e mail. I have however attached the Report Section on the e mail version of this notification for your convenience. Interested and Affected Parties can access the Public Copy at the Malelane Public Library.

4. A digital copy is however available on the following link:
<https://www.dropbox.com/sh/unlr8vzoq0o3unv/AACURWtq5b-DCruCuXYOjb0ta?dl=0>

5. Should you have any additional comments, suggestions, questions and or issues for clarification please submit these to this office in writing by close of business on or before **10 September 2021**.

Many thanks for your assistance and guidance during this project to date.

Kind regards,

Ralf Kalwa
Environmental Assessment Practitioner
Rhengu Environmental Services
Cell: 082 414 7088

From: rhengu@mweb.co.za rhengu@mweb.co.za

Sent: Friday, 06 August 2021 12:45

To: maserekamaate@gmail.com

Cc: rhengu@mweb.co.za

Subject: ENVIRONMENTAL IMPACT ASSESSMENT KRUGER MALELANE AGRICULTURAL ESTATE

Dear Dr. Maserka

For your attention please. I delivered Hard Copies to your office today.

Regards,

Ralf Kalwa

RES

From: rhengu@mweb.co.za rhengu@mweb.co.za
Sent: Friday, 06 August 2021 16:38
To: 'Nokukhanya Khumalo' <nkhumalo@sahra.org.za>
Cc: 'Christine Rowe' <christinevwr@gmail.com>; rhengu@mweb.co.za; 'Derick Peacock' <derick@dptownplanning.com>; 'Andre' <andre@ingweconstruction.co.za>
Subject: ENVIRONMENTAL IMPACT ASSESSMENT KRUGER MALELANE AGRICULTURAL ESTATE

Afternoon Nokukhanya

The Case File was created yesterday. Check your records: ID 16917.

Regards,
Ralf Kalwa
RES

From: Nokukhanya Khumalo <nkhumalo@sahra.org.za>
Sent: Friday, 06 August 2021 16:20
To: rhengu@mweb.co.za**Subject:** RE: ENVIRONMENTAL IMPACT ASSESSMENT KRUGER MALELANE AGRICULTURAL ESTATE

Good Afternoon

Thank you for informing SAHRA about the development application. In order for SAHRA to provide comments on the development a case will have to be created on SAHRIS and the relevant documents uploaded onto the case. If a case exists on SAHRIS for this project, please ensure that the appendices are also uploaded to the case along with the draft BAR.

Kind Regards,
Nokukhanya Khumalo

APPENDIX 3: DOCUMENTATION WITH DARDLEA



agriculture, rural development,
land & environmental affairs
MPUMALANGA PROVINCE
REPUBLIC OF SOUTH AFRICA

Block 4, Aqua Street, Riverside Park, Mbombela, 1200
Mpumalanga Province
Private Bag X 266, Mbombela 1200
Tel: +27 (13) 759 4000

EHLANZENI DISTRICT

Litiko Letekulima, Kutfutukiswa
Kwetindzawo Tasemakhaya, Temhlaba
Netesimondzawo

Departement van Landbou,
Landelike Ontwikkeling,
Grond en Ongeewing Sake

umNyango weZelimo
UkuThuthukiswa kweNdawo zemaKhaya,
INarha neeNdaba zeBhoduluko

Enquiries : X. Nkosi
Telephone : (013) 759 4000
Reference : 1/3/1/16/1E-346

Mr. Ralf Kalwa
Rhengu Environmental Services
P.O. Box 1046
Malelane
1320

Email : rhengu@mweb.co.za

Dear Sir,

APPLICATION FOR ENVIRONMENTAL AUTHORISATION: THE DEVELOPMENT OF 25 RESIDENTIAL STANDS ON THE REMAINDER PORTIONS 8 , 13 AND 14 OF THE FARM MALELANE ESTATE 140 JU, NKOMAZI LOCAL MUNICIPALITY

The Department confirms having received the application form for Environmental Authorisation and draft BAR for the abovementioned project on 19 August 2021.

The application has been assigned the reference number **1/3/1/16/1E-346**. Kindly quote this reference number in any future correspondence in respect of the application. The responsible officer is **Xolani Nkosi** and all correspondence must be directed to: Environmental Impact Management, Ehlanzeni District Office, marked for the attention of the responsible officer. Please note that you must, within 90 days from 19 August 2021, submit to this office a Final Basic Assessment Report – inclusive of specialist reports and an EMPr - which has already been subjected to a public participation process, and was provided to interested and affected parties for a period of 30 days for comments, and which reflects the incorporation of any comments received, including any comments from this office. In this regard you are referred to the requirements of Regulation 40(3).

Please take note in terms of the provisions of regulation 45, the application will lapse, and this office will deem the application to have lapsed, if the applicant fails to submit the Final Basic Assessment Report within the timeframe specified above.

Please draw the applicant's attention to the fact that the activity may not commence prior to an environmental authorisation being granted by the Department.

Sincerely,

R. LUYT

ACTING DIRECTOR: ENVIRONMENTAL IMPACT MANAGEMENT

DATE: 25/08/2021





Block 4, Aqua Street, Riverside Park, Mbombela, 1200
Mpumalanga Province
Private Bag X 266, Mbombela 1200
Tel: +27 (13) 759 4000

EHLANZENI DISTRICT

Litiko Letekulima, Kufufukiswa
Kwefindzawo Tasemakhaya, Tembiaba
Netesimondzawo

Departement van Landbou,
Landelike Ontwikkeling,
Grond en Ongewing Sake

umhlyango weZelimo
UkuThuthukiswa kweNdawo zemaKhaya,
INatha neeNdaba zeBhoduluko

Enquiries : X. Nkosi
Telephone : (013) 759 4000
Reference : 1/3/1/16/1E-342
NEAS : MPP/EIA/0000929/2021

Mr. Ralf Kalwa
Rhengu Environmental Services
P.O Box 1046
Malelane
1320

Email : rhenqu@mweb.co.za

Dear Sir,

DRAFT BASIC ASSESSMENT REPORT: THE DEVELOPMENT OF RESIDENTIAL STANDS ON THE REMAINDER PORTIONS 8, 13 AND 14 OF THE FARM MALELANE ESTATE 140 JU, NKOMAZI LOCAL MUNICIPALITY

The draft basic assessment report which was submitted by you in respect of the abovementioned application and received by the department on 19 August 2021 refers. The Department has considered the content of the report and has the following comments:

1. Please note: Column 2 of the activity table in paragraph 5 of the application form must provide the activity wording as it appears in the Listing Notice. Column 3 must provide your description as it relates the activity applied for.
2. Please explain why activity 27 of LN1 is applied for. In the activity table you indicate on the one hand that more than 1ha of indigenous vegetation will be cleared, but in the next column you state that *less* than 1ha of indigenous vegetation will be removed.
3. An explanation for **each** activity applied for must be included in the final BAR, with a description of the extent to which authorisation is required for each one. Maximum thresholds must be supplied (eg. LN3 Activity 12 how much indigenous vegetation will be removed).
4. All relevant sections of Mpumalanga Tourism and Parks Agency must be registered as I&APs and must be provided with the opportunity to review and comment on all reports,
5. Kruger National Park must be registered as an I&AP and must be provided with the opportunity to review and comment on all reports,
6. The draft BAR confirms that there are no site alternatives, however there is no indication in the report that there may be other feasible alternatives with respect to design, layout, density, bridge design etc.
7. Please provide co-ordinates of all watercourse crossings.
8. The detailed layout map dated 22-01-2021 must be presented in A3 for better identification of features in the layout. You are reminded of the requirements of Appendix 3: 3(1)(c) - An environmental impact assessment report must contain the information that is necessary for the competent authority to consider and come to a decision on the application, and must include – *a plan which locates the proposed activity or activities applied for as well as associated structures and infrastructure at an appropriate scale*



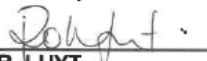
1/3/1/16/1E-346

9. The final basic assessment report must provide proof of compliance with Regulation 40(3).
10. The final basic assessment report must include an issues and response report, as well as copies of and responses to comments received from all I&APs, including these comments.

Please take note that in terms of the provisions of regulation 45, the application will lapse, and this office will deem the application to have lapsed, if the applicant fails to submit a final basic assessment report within the timeframe specified in Regulation 19(1).

Please draw the applicant's attention to the fact that the activity may not commence prior to an environmental authorisation being granted by the Department.

Sincerely,



R. LUYT

ACTING DIRECTOR: ENVIRONMENTAL IMPACT MANAGEMENT

DATE: 14/09/2021

Response to DARDLEA:

The response below is in order of the comments listed above:

1. Comments noted. The two pages in the application form have been amended as recommended and submitted to DARDLEA for their records.
2. Comment noted. Activity 27 does not apply and has been removed from the application.
3. Comment noted. The extent of each activity has been listed on pages 16 and 17 of the Final BAR.
4. Following discussions with Mr. Johan Eksteen (Manager Scientific Services: MTPA) I wish to report as follows: Mr. Eksteen appoints a responsible officer from MTPA to evaluate and assess the EIA documentation. In this case Ms. Khumbelo Malele was appointed. It is the duty of the responsible official to then refer the document to applicable officials in other departments and to collate the final comments letter. In this way aquatic- and rare fauna and flora specialists are consulted where applicable. He is confident that the comments letter includes the input from all applicable staff at MTPA where and when applicable.
5. Dr. Marisa Coetzee and Mr. Wehnke van der Merwe from SANParks received hard copies of the reports and were engaged through focus group meetings and email exchanges. The KNP is registered as an I&AP.
6. **Layout, Design, Density Alternatives:**
 - **Layout (Optimising Agriculture):** To ensure that the zonation of the property remains agriculture only some 6ha will be set aside for the development of the residential stands. This limits the options for layout and therefore the buildings will be restricted to impacted zones of the farm that were previously under storerooms and other infrastructure.
 - Also, the soils in the development zone are not considered optimal for crop production.

- **Design Features:** The assessment team took guidance from the SANParks requirements for buildings within the 10km buffer zone around a National Park. The implementation of these guidelines promote the earthy, natural look to shape and colour of the buildings with low impact lighting whilst remaining below the 7.5m height restriction as recommended by the Visual Impact Assessment Study.
 - **Density of Residential Stands:** To ensure that the economic equation of the project is optimised both in terms of financial sense and job creation, the assessment team limited the density to 24 stands. This allows for high market gains whilst still providing each owner with an unobstructed view of the Crocodile River. Less stands would have an impact upon the economic feasibility of the project whilst minimising the job opportunities that could be generated.
7. Existing Crossings are at:
- S 25°30'04.4" and E 031°28'40.1"
 - S 25°29'55.4" and E 031°28'39.5" (this one will be upgraded during the development process).
8. Comment noted. An A3 copy will be submitted to DARDLEA.
9. Comment noted.
10. Comment noted.

APPENDIX 4:
SUPPORTIVE DOCUMENTATION
4.1. TITLE DEEDS
4.2. LAND CLAIM DOCUMENT
4.3. WATER RIGHTS
4.4. SPECIALIST STUDIES:
4.4.1. AGRICULTURAL POTENTIAL OF THE PROJECT SITE
4.4.2. TERRESTRIAL ECOLOGY, BIODIVERSITY AND RIPARIAN
ECOLOGY
4.4.3. FISHWAY/LADDER STUDY
4.4.4. HERITAGE SPECIALIST REPORT
4.4.5. VIEW SHED ANALYSIS

4.1. TITLE DEED



DEED OF TRANSFER

in favour of


BLUEGRASS TRADING 1028 CC

over

REMAINING EXTENT OF PORTION 8 OF THE FARM MALELANE ESTATE A 140
and REMAINING EXTENT OF PORTION 13 (A PORTION OF PORTION 8) OF THE
FARM MALELANE ESTATE A 140 and PORTION 14 (A PORTION OF PORTION 8)
OF THE FARM MALELANE ESTATE A 140

DEEDS
STAMP DUTY R
FOOT
FEES R 3397-00

Prepared by me


 CONVEYANCER
 CHRISTIAAN JOHANNES
 ENGELBRECHT
 LPCM10070

T 000010198 / 2020


DEED OF TRANSFER

BE IT HEREBY MADE KNOWN THAT

HORACE WILLIAM DONCASTER (39187) P

appeared before me, the Registrar of Deeds Mpumalanga at Nelspruit, the said appearer, being duly authorised thereto by a power of attorney granted to her by

The Trustees in the Estate of the late MARIA DE GOUVEIA TRUST
Registration Number MC16854/2010

signed at Pretoria on 28 February 2020 

SA

And the appearer declared that:

Whereas the Transferor had truly and legally sold the undermentioned properties on 5 December 2019 by Private Treaty

Now therefore the Appearer on behalf of the Transferor, did by these presents, cede and transfer to and on behalf of

BLUEGRASS TRADING 1028 CC
Registration Number 2007/014308/23

its successors in title or assigns, in full and free property

1. **REMAINING EXTENT OF PORTION 8 OF THE FARM MALELANE ESTATE A 140, REGISTRATION DIVISION J.U., PROVINCE OF MPUMALANGA**

MEASURING 6,6983 (SIX COMMA SIX NINE EIGHT THREE) HECTARES

FIRST REGISTERED BY CERTIFICATE OF REGISTERED TITLE T5948/1946 WITH DIAGRAM ANNEXED THERETO AND HELD BY DEED OF TRANSFER T

for the sum of R4 000 000,00 (Four Million Rand) and that Transfer Duty was paid on the amount of R4 230 000,00 (Four Million Two Hundred and Thirty Thousand Rand) consisting of the purchase price and commission in the amount of R230 000,00 (Two Hundred and Thirty Thousand Rand)

SUBJECT to the following conditions:

CERTAIN Remaining Extent of the aforesaid farm, measuring 177 morgen 527 square roods (of which a portion is hereby transferred) is subject to the following conditions:-

- (a) That the Republic shall at all times have the right in such manner and under such conditions as it may think fit, to construct and form dams and reservoirs upon the land, and to erect make and construct telegraph and telephone lines, roads railways, water-furrows, pipelines, canals and drains, upon and conduct the same through and over the land in the interest of the public or of the owner lessee or occupier of or holder of a Mining Title, or any land adjoining or in the neighbourhood of the land hereby transferred, and to take materials therefrom for the foregoing purposes on payment (save as may otherwise provided by law) to the owner such sums of money as compensation for damage or damages actually sustained as may be mutually agreed to between the Republic and the owner, or failing such agreement as may be determined by Arbitration Ordinance 1904 (Transvaal) provided that the Arbitrators may set off against the loss or damage caused to the owner, the benefit, instant or prospective, which he shall or may derive in consequence of the construction of any of the said works.

SO



- (b) That the owner shall be entitled to take from any public stream on the land such water as he may reasonably require for domestic purposes, and for watering his own stock running on the land, but he shall not be entitled to take for any other purposes than those aforementioned any water in such stream without permission of the Minister of Mines or his authorised representative being first had obtained. The Republic hereby specially reserves the right and power in addition to those already reserved herein (under clause a) to enter upon the land at any time, and to authorise other to do so, for the purpose of making use of the water of the land by building of reservoirs, dams intakes, outlets, flumes and the like, or by pumping or otherwise removing the same from the said land subject to compensation as set forth in clause (a) hereof.
- (c) The said property is further subject and entitled to an Order of the Water Court with regard to the division of the water out of Malelane Creek, as will appear from the said Order, a Grosse whereof is annexed to the aforesaid Crown Grant No. 78/1920.

AND FURTHER SUBJECT to all such conditions as are mentioned or referred to in the aforesaid deed/s.

2. REMAINING EXTENT OF PORTION 13 (A PORTION OF PORTION 8) OF THE FARM MALELANE ESTATE A 140 REGISTRATION DIVISION J.U., PROVINCE OF MPUMALANGA

MEASURING 13,6164 (THIRTEEN COMMA SIX ONE SIX FOUR) HECTARES

FIRST TRANSFERRED BY DEED OF TRANSFER T5951/1946 WITH DIAGRAM ANNEXED THERETO AND HELD BY DEED OF TRANSFER T 10198/2020

for the sum of R6 100 000,00 (Six Million One Hundred Thousand Rand) and that Transfer Duty was paid on the amount of R6 450 750,00 (Six Million Four Hundred and Fifty Thousand Seven Hundred and Fifty Thousand Rand) consisting of the purchase price and commission in the amount of R350 750 000,00 (Three Hundred and Fifty Thousand Seven Hundred and Fifty Thousand Rand)

SUBJECT to the following conditions:

- A. CERTAIN Remaining Extent of the aforesaid farm, measuring 177 morgen 527 square rods (of which a portion is hereby transferred) is subject to the following conditions:-
- (a) That the Republic shall at all times have the right in such manner and under such conditions as it may think fit, to construct and form dams and reservoirs upon the land, and to erect make and construct telegraph and telephone lines, roads railways, water-furrows, pipelines, canals and drains, upon and conduct the same

Ja

 Page 3 of 6

through and over the land in the interest of the public or of the owner lessee or occupier of or holder of a Mining Title, or any land adjoining or in the neighbourhood of the land hereby transferred, and to take materials therefrom for the foregoing purposes on payment (save as may otherwise provided by law) to the owner such sums of money as compensation for damage or damages actually sustained as may be mutually agreed to between the Republic and the owner, or failing such agreement as may be determined by Arbitration Ordinance 1904 (Transvaal) provided that the Arbitrators may set off against the loss or damage caused to the owner, the benefit, instant or prospective, which he shall or may derive in consequence of the construction of any of the said works.

- (b) That the owner shall be entitled to take from any public stream on the land such water as he may reasonably require for domestic purposes, and for watering his own stock running on the land, but he shall not be entitled to take for any other purposes than those aforementioned any water in such stream without permission of the Minister of Mines or his authorised representative being first had obtained. The Republic hereby specially reserves the right and power in addition to those already reserved herein (under clause a) to enter upon the land at any time, and to authorise other to do so, for the purpose of making use of the water of the land by building of reservoirs, dams intakes, outlets, flumes and the like, or by pumping or otherwise removing the same from the said land subject to compensation as set forth in clause (a) hereof.
- (c) The said property is further subject and entitled to an Order of the Water Court with regard to the division of the water out of Malelane Creek, as will appear from the said Order, a Grosse whereof is annexed to the aforesaid Crown Grant No. 78/1920.

B. The following conditions imposed and enforceable by ALLEN FRANCIS DOWDLE shall be registered against the aforesaid property:-

- (a) Allen Francis Dowdle reserves the right to place telegraph poles, wires and cabled for transmission of electric current for power, lighting and other purposes across the property sold and to be entitled to free access thereon for purposes of repair and renewal.
- (b) The said Allen Francis Dowdle reserves the right to cut and make canals for water transmissions, and to lay pipes and conduits for the same purpose across the property sold, and to enter on the property for purposes of repair and renewal thereof, and to make dams on the property sold for water distribution purposes.

JA

 Page 4 of 6

- (c) The said Allen Francis Dowdle reserves the right to make roads giving rights of way over the property sold for purposes of public convenience.
 - (d) That all cowbryes, pigsties or any structure or kraals shall only be constructed on the property sold in such a position as shall not affect the health and comfort of adjoining farm owner or owners.
- C. ALL rights to trade over the property hereby transferred are reserved to ALLEN FRANCIS DOWDLE or his successors in title or Assigns.

AND FURTHER SUBJECT to all such conditions as are mentioned or referred to in the aforesaid deed/s.

**3. PORTION 14 (A PORTION OF PORTION 8) OF THE FARM MALELANE ESTATE A 140
REGISTRATION DIVISION J.U.
PROVINCE OF MPUMALANGA**

MEASURING 8,1163 (EIGHT COMMA ONE ONE SIX THREE) HECTARES

FIRST TRANSFERRED BY DEED OF TRANSFER T5953/1946 WITH DIAGRAM ANNEXED THERETO AND HELD BY DEED OF TRANSFER T

for the sum of R5 000 000,00 (Five Million Rand) and that Transfer Duty was paid on the amount of R5 287 500,00 (Five Million Two Hundred and Eighty Seven Thousand Five Hundred Rand) consisting of the purchase price and commission in the amount of R287 500,00 (Two Hundred and Eighty Seven Thousand Five Hundred Rand)

SUBJECT to the following conditions:

- A. CERTAIN Remaining Extent of the aforesaid farm, measuring 177 morgen 527 square roods (of which a portion is hereby transferred) is subject to the conditions lettered A(a) to (c) more fully set out under paragraph 2 hereof, and to the conditions lettered B(a) and (d) and C more fully set out under paragraph two hereof.

AND FURTHER SUBJECT to all such conditions as are mentioned or referred to in the aforesaid deed/s.

WHEREFORE the appearer, renouncing all the right and title the said

The Trustees in the Estate of the Late MARIA DE GOUVEIA TRUST

heretofore had to the premises, did, in consequence also acknowledge them to be entirely dispossessed of, and disentitled to, the same; and that, by virtue of these presents, the said

BLUEGRASS TRADING 1028 CC

 Page 5 of 6

S

its successors in title or assigns, now is and henceforth shall be entitled thereto, conformably to local customs; the State, however, reserving its rights, and finally acknowledging that the purchase price is the amount of R15 000 000,00 (Fifteen Million Rand).


IN WITNESS WHEREOF I, the said Registrar, together with the appearer, have subscribed to these presents, and have caused the seal of office to be affixed thereto.

THUS DONE AND EXECUTED at the Office of the Registrar of Deeds Mpumalanga at Nelspruit on

18 NOV 2020


Signature of appearer *q.q.*

In my presence


Registrar of Deeds Mpumalanga

5



CONVEYANCER'S CERTIFICATE

I, the undersigned,

CHRISTIAAN JOHANNES ENGELBRECHT

Conveyancer and Notary, practicing as such in NELSPRUIT, Province of MPUMLALANGA, under the name and style of Esselens Engelbrechts Inc,

Hereby certify that

1. I have inspected the Deed of Transfer **T10190/2020**.
2. According to the information before me, the said deed is registered in favour of:

BLUEGRASS TRADING 1028 CC

Registration number 2007/014308/23

And held the following properties:

A. Remaining Extent of Portion 8 of the farm MALELANE ESTATE A. No 140

Registration Division J.U., (formerly NO 276) Province Mpumalanga

In extent 6,6983 (Six Comma Six Nine Eight Three) Hectares

B. Remaining Extent of Portion 13 (a Portion of portion 8)

of the farm MALELANE ESTATE A no 140

Registration Division J.U (formerly No 276), Province Mpumalanga,

In extent as such 13,6164 (Thirteen Comma Six One Six Four) Hectares

C. Portion 14 (a portion of portion 8)

of the farm MALELANE ESTATE A no 140

Registration Division J.U (formerly No 276) Province Mpumalanga,

In extent 8,1163 (Eight Comma One One Six Three) Hectares.



3. The said deed is made subject to the following conditions:

**A. Remaining Extent of Portion 8 of the farm
MALELANE ESTATE A. No 140**

CERTAIN Remaining Extent of the aforesaid farm, measuring 177 morgen 527 square roods (of which a portion is hereby transferred) is subject to the following conditions:-

(a) *That the Republic shall at all times have the right in such manner and under such conditions as it may think fit, to construct and form dams and reservoirs upon the land, and to erect make and construct telegraph and telephone lines, roads railways, water-furrows, pipelines, canals and drains, upon and conduct the same through and over the land in the interest of the public or of the owner lessee or occupier of or holder of a Mining Title, or any land adjoining or in the neighbourhood of the land hereby transferred, and to take materials therefrom for the foregoing purposes on payment (save as may otherwise provided by law) to the owner such sums of money as compensation for damage or damages actually sustained as may be mutually agreed to between the Republic and the owner, or failing such agreement as may be determined by Arbitration Ordinance 1904 (Transvaal) provided that the Arbitrators may set off against the loss or damage caused to the owner, the benefit, instant or prospective, which he shall or may derive in consequence of the construction of any of the said works.*

(b) *That the owner shall be entitled to take from any public stream on the land such water as he may reasonably require for domestic purposes, and for watering his own stock running on the land, but he shall not be entitled to take for any other purposes than those aforementioned any water in such stream without permission of the Minister of Mines or his authorised representative being first had obtained. The Republic hereby specially reserves the right and power in addition to those already reserved herein (under clause a) to enter upon the land at any time, and to authorise other to do so, for the purpose of making use of the water of the land by building of reservoirs, dams intakes, outlets, flumes and the like, or by pumping or otherwise removing the same from the said land subject to compensation as set forth in clause (a) hereof.*

(c) The said property is further subject and entitled to an Order of the Water Court with regard to the division of the water out of Malelane Creek, as will appear from the said Order, a Grosse whereof is annexed to the aforesaid Crown Grant No. 78/1920.

**B. Remaining Extent of Portion 13 (a Portion of portion 8) of the farm
MALELANE ESTATE**

A. CERTAIN Remaining Extent of the aforesaid farm, measuring 177 morgen 527 square roods (of which a portion is hereby transferred) is subject to the following conditions:-

(a) That the Republic shall at all times have the right in such manner and under such conditions as it may think fit, to construct and form dams and reservoirs upon the land, and to erect make and construct telegraph and telephone lines, roads railways, water-furrows, pipelines, canals and drains, upon and conduct the same through and over the land in the interest of the public or of the owner lessee or occupier of or holder of a Mining Title, or any land adjoining or in the neighbourhood of the land hereby transferred, and to take materials therefrom for the foregoing purposes on payment (save as may otherwise provided by law) to the owner such sums of money as compensation for damage or damages actually sustained as may be mutually agreed to between the Republic and the owner, or failing such agreement as may be determined by Arbitration Ordinance 1904 (Transvaal) provided that the Arbitrators may set off against the loss or damage caused to the owner, the benefit, instant or prospective, which he shall or may derive in consequence of the construction of any of the said works.

(b) That the owner shall be entitled to take from any public stream on the land such water as he may reasonably require for domestic purposes, and for watering his own stock running on the land, but he shall not be entitled to take for any other purposes than those aforementioned any water in such stream without permission of the Minister of Mines or his authorised representative being first had obtained. The Republic hereby specially reserves the right and power in addition to those already reserved herein (under clause a) to enter upon the land at any time, and to authorise other to do so, for the purpose of making use of the water of the land by building of reservoirs, dams intakes, outlets, flumes and the like, or by pumping or otherwise removing the same from the said land subject to compensation as set forth in clause (a) hereof.



(c) *The said property is further subject and entitled to an Order of the Water Court with regard to the division of the water out of Malelane Creek, as will appear from the said Order, a Grosse whereof is annexed to the aforesaid Crown Grant No. 78/1920.*

B. *The following conditions imposed and enforceable by ALLEN FRANCIS DOWDLE shall be registered against the aforesaid property:-*

- a. *Allen Francis Dowdle reserves the right to place telegraph poles, wires and cabled for transmission of electric current for power, lighting and other purposes across the property sold and to be entitled to free access thereon for purposes of repair and renewal.*
- b. *The said Allen Francis Dowdle reserves the right to cut and make canals for water transmissions, and to lay pipes and conduits for the same purpose across the property sold, and to enter on the property for purposes of repair and renewal thereof, and to make dams on the property sold for water distribution purposes.*
- c. *The said Allen Francis Dowdle reserves the right to make roads giving rights of way over the property sold for purposes of public convenience.*
- d. *That all cowbryes, pigsties or any structure or kraals shall only be constructed on the property sold in such a position as shall not affect the health and comfort of adjoining farm owner or owners.*

C. *ALL rights to trade over the property hereby transferred are reserved to ALLEN FRANCIS DOWDLE or his successors in title or Assigns.*

C. Portion 14 of the farm MALELANE ESTATE A. No 140

A. *CERTAIN Remaining Extent of the aforesaid farm, measuring 177 morgen 527 square roods (of which a portion is hereby transferred) is subject to the following conditions: -*

- a) *That all rights to minerals, mineral products, mineral oils, metal and precious stones on or under land are reserved to the State.*
- b) *That the Republic shall at all times have the right of resuming the whole or any portion of the land if required for public or mining purposes, on payment to the owner of such sums of money as compensation as may be mutually agreed upon*

5

by the Republic and the owner, or failing such agreement, as may be determined by arbitration in manner provided by the Arbitration Ordinance, 1904 (Transvaal).

B. The following conditions imposed and enforceable by ALLEN FRANCIS DOWDLE shall be registered against the aforesaid property:-

a) Allen Francis Dowdle reserves the right to place telegraph poles, wires and cables for transmission of electric current for power, lighting and other purposes across the property sold and to be entitled to free access thereon for purposes of repair and renewal.

d) That all cowbryes, pigstics or any structure or kraals shall only be constructed on the property sold in such a position as shall not effect the health and comfort of adjoining farm owner or owners

C. ALL rights to trade over the property hereby transferred are reserved to ALLEN FRANCIS DOWDLE or his successors in title or assigns:

4. ENDORSEMENTS

There are no endorsement(s) for noting against the said deed.

5. NOT IN TITLE DEED

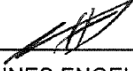
Portion 20 of the Farm Malelane Estate 140A JU Registration Division JU; Province Mpumalanga In extent 1.0100 hectares, and held by Deed Of Transfer T22664/1985 is entitled to

- a right of way servitude, as depicted on surveyor diagram S.G. A 2147/1953, and marked a b c d e f mainly over Portion 14 of the farm Malelane Estate 140A, (previously remainder of portion 15), Registration Division JU, Province Mpumalanga.
- A pipeline servitude depicted on surveyor diagram S.G. A 2147/1953 and marked EF mainly over Portion 14 of the farm Malelane Estate 140A (previously remainder of portion 15), Registration Division JU, Province Mpumalanga.

6. COMMENTS

In the light of the above information, I hereby certify that there are no restrictive conditions of title to be complied or dealt with before the proposed subdivision can be commenced with.

SIGNED at MALELANE on 09 December 2020



CHRISTIAAN JOHANNES ENGELBRECHT

Eselens Engelbrechts Ing/Inc

Web: www.mindmatters.co.za

chris@mindmatters.co.za

4.2. LAND CLAIM DOCUMENTS



OFFICE OF THE REGIONAL LAND CLAIMS COMMISSION: MPUMALANGA PROVINCE
30 SAMORA MACHELL DRIVE, RESTITUTION HOUSE, NELSPRUIT
PRIVATE BAG X 11330 NELSPRUIT, 1200
TEL : 013 756 6000 FAX : 013 752 3859

ENQUIRY: Dudu Makhubela
CONTACT: 013 752 4054
YOUR REF:

MALELANE ESTATE 140 JU-SEYMORE DU TOIT -SMUTS AND PARTNERS

E-mail: mvdwesthuizen@dtsmp.co.za

ATT: Mari van der Westhuizen

RE: YOUR ENQUIRY: LAND RESTITUTION CLAIMS AGAINST THE FOLLOWING PROPERTY IN TERMS OF THE RESTITUTION OF LAND RIGHTS ACT NO.22 OF 1994

DETAILS OF PROPERTY DESCRIPTION


Property Description	Comments
Province of Mpumalanga Magisterial District: Nkomazi <ul style="list-style-type: none"> • Property: Portion 8,13,& 14 of the farm Malelane Estates 140 JU 	According to our Database, there is currently no registered Land Claim which was lodged against the mentioned property.

1. We refer to your letter received on the 01/09/2017 regarding an enquiry to a Restitution claim against the above property.
2. We advise that there is no claim lodged against the property.
3. **TAKE NOTICE that** land claims are lodged with the office of the Commission in accordance with the historical and or present property descriptions of the dispossessed properties and therefore may not match the current property description as described in your correspondence in respect of the above-mentioned properties.

However, if the historical description of any of the above property has changed since 1913, or you are aware of any other local or official name by which it was then described or currently known, kindly supply us with such information to enable us to search further.

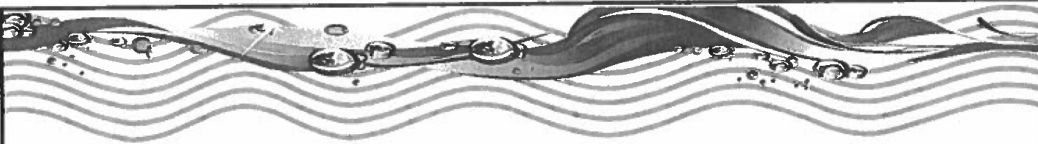

4. **TAKE NOTICE FURTHER THAT** while the Regional Land Claims Commission: Mpumalanga has taken reasonable care to ensure the accuracy of the above-mentioned information, the Commission cannot be held accountable if, through the process of further on- going investigation, additional information may be found that contradicts paragraph 2 above.

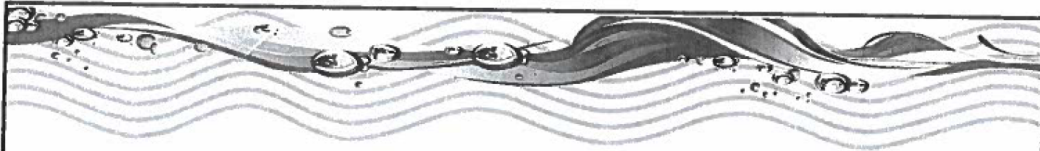
Yours Faithfully

PP 
.....

MR. E.S. NKOSI
CHIEF DIRECTOR
OFFICE OF REGIONAL LAND CLAIMS COMMISSION
DATE: 01/09/2017.

4.3. WATER RIGHTS

										
Suite 801, 8 th Floor The MAXSA Building 13 Streak Street Mbombela	Private Bag X11214 Mbombela 1200	Tel 013 753 9000 Fax 013 753 2786								
										
<p style="text-align: right;">Enquiries: Verification Office Reference: 140JU/8 E-mail: verification@iucma.co.za</p>										
<p>Agronet CC</p>										
<p>FORMER INKOMATI WATER MANAGEMENT AREA, WITHIN THE INKOMATI-USUTHU WATER MANAGEMENT AREA</p>										
<p>CROCODILE RIVER MAJOR IRRIGATION BOARD - ONDER</p>										
<p>MALELANE ESTATE A 140, JU, PORTION 8, SIZE 0.0000 ha: DECLARATION OF WATER USE AS AN EXISTING LAWFUL WATER USE IN TERMS OF SECTION 33(2) OF THE NATIONAL WATER ACT, 1998 (ACT 36 OF 1998)</p>										
<p>Under Section 33(2) of the National Water Act, 1998 (Act 36 of 1998) ["the Act"], the following volume(s) are declared as existing lawful water use(s) on the above mentioned property:</p>										
<table border="1"> <thead> <tr> <th><i>Type of water use</i></th> <th><i>Volume (m³/annum)</i></th> </tr> </thead> <tbody> <tr> <td>Taking of water for irrigation purposes</td> <td>76,700.0000</td> </tr> <tr> <td>Taking of water for non-irrigation purposes</td> <td></td> </tr> <tr> <td>Storing of water</td> <td></td> </tr> </tbody> </table>		<i>Type of water use</i>	<i>Volume (m³/annum)</i>	Taking of water for irrigation purposes	76,700.0000	Taking of water for non-irrigation purposes		Storing of water		
<i>Type of water use</i>	<i>Volume (m³/annum)</i>									
Taking of water for irrigation purposes	76,700.0000									
Taking of water for non-irrigation purposes										
Storing of water										
<p>This use may be continued with under Section 34(1) subject to any existing conditions or obligations attached to the use until a licence replaces it.</p>										
<p>In terms of Section 148(1)(e) of the Act you may appeal against this declaration to the Water Tribunal within 30 (thirty) days from the date of this letter. The Water Tribunal can be contacted as follows:</p>										
<p>The Registrar of the Water Tribunal, Mr Robert Mabe Water Tribunal Private Bag X316 Pretoria 0001</p>										
<p>Tel: 012 336 7034 E-Mail: maber@dws.gov.za</p>										
<hr/> <p style="text-align: center;">M TP Nyakane-Maluka (Chairperson) Mr MS Mthambu (Deputy Chairperson) Dr JB Molwantwa Dr PE Molokwane Ms SD Wiggins Mr PA Shabangu Mr PJ Venter Mr JM Mathebula Dr TK Gyedu-Ababio (Ex-Officio)</p>										



A copy of the appeal must be submitted to this office

The Inkomati-Usuthu Catchment Management Agency (IUCMA) will amend your registration certificate or the registration certificate of the applicable Water Management Institution to reflect the above details. If an appeal is lodged, the certificate may be amended again depending on the outcome of the appeal.

Yours faithfully

Dr THOMAS GYEDU-ABABIO

CHIEF EXECUTIVE OFFICER

DATE: 8/1/2016

Suite 801, 8th Floor
The MAXSA Building
13 Streak Street
Mbombela

Private Bag X11214
Mbombela
1200

Tel 013 753 9000
Fax 013 753 2786



Enquiries: Verification Office
Reference: 140JU/13
E-mail: verification@iucma.co.za

Agronet CC

FORMER INKOMATI WATER MANAGEMENT AREA, WITHIN THE INKOMATI-USUTHU WATER MANAGEMENT AREA

CROCODILE RIVER MAJOR IRRIGATION BOARD - ONDER

MALELANE ESTATE A 140, JU, PORTION 13, SIZE 0.0000 ha: DECLARATION OF WATER USE AS AN EXISTING LAWFUL WATER USE IN TERMS OF SECTION 33(2) OF THE NATIONAL WATER ACT, 1998 (ACT 36 OF 1998)

Under Section 33(2) of the National Water Act, 1998 (Act 36 of 1998) ["the Act"], the following volume(s) are declared as existing lawful water use(s) on the above mentioned property:

<i>Type of water use</i>	<i>Volume (m³/annum)</i>
Taking of water for irrigation purposes	123,500.0000
Taking of water for non-irrigation purposes	
Storing of water	

This use may be continued with under Section 34(1) subject to any existing conditions or obligations attached to the use until a licence replaces it.

In terms of Section 148(1)(e) of the Act you may appeal against this declaration to the Water Tribunal within 30 (thirty) days from the date of this letter. The Water Tribunal can be contacted as follows:

The Registrar of the Water Tribunal, Mr Robert Mabe
Water Tribunal
Private Bag X316
Pretoria
0001

Tel: 012 336 7034
E-Mail: maber@dws.gov.za

A copy of the appeal must be submitted to this office

The Inkomati-Usuthu Catchment Management Agency (IUCMA) will amend your registration certificate or the registration certificate of the applicable Water Management Institution to reflect the above details. If an appeal is lodged, the certificate may be amended again depending on the outcome of the appeal.

Yours faithfully



Dr THOMAS GYEDU-ABABIO

CHIEF EXECUTIVE OFFICER

DATE: 8/1/2016

Suite 801, 8th Floor
The MAXSA Building
13 Streak Street
Mbombela

Private Bag X11214
Mbombela
1200

Tel 013 753 9000
Fax 013 753 2786



Enquiries: Verification Office
Reference: 140JU/14
E-mail: verification@iucma.co.za

Agronet CC

FORMER INKOMATI WATER MANAGEMENT AREA, WITHIN THE INKOMATI-USUTHU WATER MANAGEMENT AREA

CROCODILE RIVER MAJOR IRRIGATION BOARD - ONDER

MALELANE ESTATE A 140, JU, PORTION 14, SIZE 0.0000 ha: DECLARATION OF WATER USE AS AN EXISTING LAWFUL WATER USE IN TERMS OF SECTION 33(2) OF THE NATIONAL WATER ACT, 1998 (ACT 36 OF 1998)

Under Section 33(2) of the National Water Act, 1998 (Act 36 of 1998) ["the Act"], the following volume(s) are declared as existing lawful water use(s) on the above mentioned property:

<i>Type of water use</i>	<i>Volume (m³/annum)</i>
Taking of water for irrigation purposes	91,000.0000
Taking of water for non-irrigation purposes	
Storing of water	

This use may be continued with under Section 34(1) subject to any existing conditions or obligations attached to the use until a licence replaces it.

In terms of Section 148(1)(e) of the Act you may appeal against this declaration to the Water Tribunal within 30 (thirty) days from the date of this letter. The Water Tribunal can be contacted as follows:

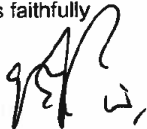
The Registrar of the Water Tribunal, Mr Robert Mabe
Water Tribunal
Private Bag X316
Pretoria
0001

Tel: 012 336 7034
E-Mail: maber@dws.gov.za

A copy of the appeal must be submitted to this office

The Inkomati-Usuthu Catchment Management Agency (UCMA) will amend your registration certificate or the registration certificate of the applicable Water Management Institution to reflect the above details. If an appeal is lodged, the certificate may be amended again depending on the outcome of the appeal.

Yours faithfully



Dr THOMAS GYEDU-ABABIO

CHIEF EXECUTIVE OFFICER

DATE: 8/1/2016

APPENDIX 4.4
SPECIALIST STUDIES

APPENDIX 4.4.1.
AGRICULTURAL POTENTIAL OF THE PROJECT SITE

Agricultural potential study of Ptn 13 of
Malelane 140JU and part of Farm 585

DRAFT 1

INDEX (Pty) LTD
Compiled by Dr A Gouws

TEL (012) 346 5307, FAX: (012) 460 4045, INDEX@IAFRICA.COM

November 9, 2017

TABLE OF CONTENTS

1	BACKGROUND	3
2	THE PROPERTIES	3
3	PROPOSED DEVELOPMENT	4
4	PRESENT LAND USE	5
5	NATURAL RESOURCES	6
5.1	CLIMATE.....	6
5.1.1	RAINFALL	6
5.1.2	TEMPERATURE.....	6
5.1.3	WIND	7
5.1.4	GROWING SEASON	8
5.2	TOPOGRAPHY AND GEOMORPHOLOGY.....	9
5.3	OBSERVATION POINTS	10
5.4	SOIL	11
5.5	WATER	13
5.6	VEGETATION.....	13
6	FARMING POTENTIAL	14
6.1	LAND USE CAPABILITY	14
6.2	ANALYSIS OF LAND FOR DIFFERENT LAND USES	17
7	FARMING INFRASTRUCTURE	18
7.1	ON-FARM.....	18
7.2	REGIONAL	18
8	SURROUNDING LAND USES.....	19
9	IMPACT ASSESSMENT	20
9.1	IMPACT ON AGRICULTURAL PRODUCTION	20
9.2	IMPACT ON AGRICULTURAL RESOURCE UTILISATION	20
9.3	AGRO-ECOSYSTEM IMPACT OF THE PROPOSED CHANGE IN LAND USE	20
10	CONCLUSION	20
11	SOURCES OF INFORMATION.....	21
12	ADDENDA	21
12.1	PHOTOGRAPHS.....	21
12.2	WATER RIGHTS	27
12.3	POLICY CONSIDERATIONS.....	29

AGRICULTURAL STUDY

DECLARATION

The observations, conclusions and recommendations made in this report are based on the best available data and on best scientific and professional knowledge of the directors of INDEX (Pty) Ltd. The report is based on GIS programming and utilises satellite tracking to map survey points. Survey points are normally accurate to within 2 to 5 metres; which must be considered in the use of the information.

The directors of INDEX (Pty) Ltd exercises due care and diligence in rendering services and preparing documents. However, the company accepts no liability, and the client, by receiving this document, indemnifies INDEX (Pty) Ltd and its directors and employees, by the use of the information contained in this document, against any action, claim, demand, loss, liability, cost, damage and expense arising from or in connection with services rendered.

The property and copyright of this report shall remain vested in INDEX (Pty) Ltd. The client that commissioned the report may use the information as it may think fit; but only for the land for which it was commissioned.

General declaration:

- INDEX acted as the independent specialist in this application;
- Perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
- There were no circumstances that may compromise INDEX's objectivity in performing such work;
- INDEX have expertise in conducting the specialist report relevant to this application and its regulations and any guidelines that have relevance to the proposed activity;
- Have no, and will not engage in conflicting interests in the undertaking of the activity.

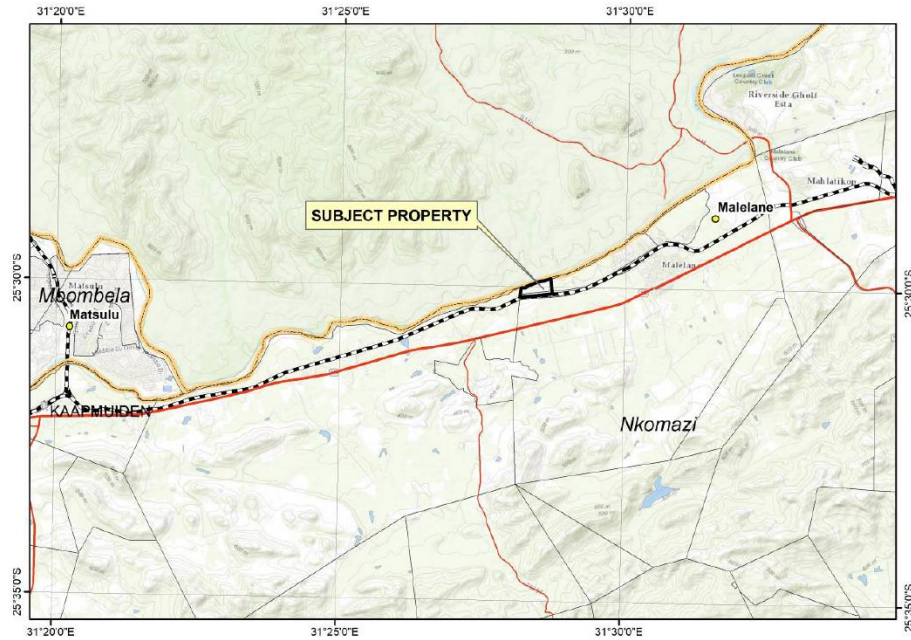


S. Spurr list
for INDEX(PTY) LTD
November 2017

1 BACKGROUND

Index was appointment by Deric Peacock Associates, Town and Regional Planners to do an agricultural potential study for Portion 13 of Malelane 140JU and part of Farm 585. The properties are located west of Malelane town and on the banks of the Crocodile River in Mpumalanga. North of the property is the Kruger National Park. Refer to the figure below:

Figure 1. Locality map



2 THE PROPERTIES

The properties that is the subject of this report is 33 hectares in size and comprise the following:

- 1) Portion 13 of Farm Malelane 140;
- 2) A part of Farm 585.

Figure 2. Subdivisions of the subject properties



3 PROPOSED DEVELOPMENT

The concept development plan for the property is a lifestyle village comprising of housing units and a medical services for the occupiers.



4 PRESENT LAND USE

The properties is used for seed production of crops and for instant lawn.

Figure 3. Present land use



Table 1. Land uses on the property

LAND USE	AREA (ha)
Cultivated	18.5
Housing	2.2
Industry (Packing shed)	0.3
Instant Lawn	5.9
Vacant	6.2
Total	33.1



Photo 1. Aerial view of the western section



Photo 2. Aerial view of the eastern section

5 NATURAL RESOURCES

5.1 CLIMATE

5.1.1 Rainfall

The average annual rainfall is 624mm to 716mm, depending on the source of information.

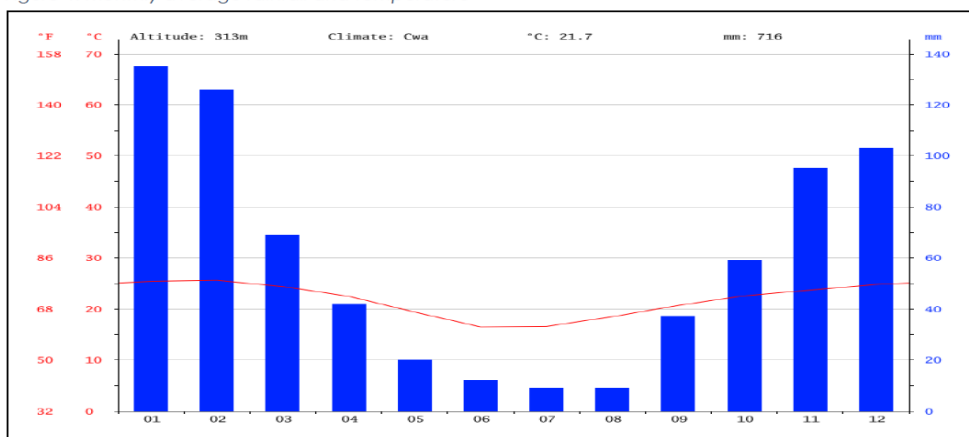
Table 2. Rainfall for rainfall stations in the region

Station Name	Station name	Distance from site (km)	Mean annual rainfall (mm/y)	Altitude (m)
Malelane	0556898_W	2.5	645	323
Malelane	0557029_W	4	671	320
Mhlati	0557058_S	8	592	309
Kaalrug	0520037_S	14.5	881	366
Riverside	0557115_W	15.5	573	289

The rainfall is in a typical summer rainfall pattern that commences in October/November and lasts till end March. Though the monthly average is fairly high in spring and autumn, these are also the periods of exceptionally high variation in quantity and intensity.

Hail is rare and normally occurs in spring and summer.

Figure 4. Monthly average rainfall and temperature



5.1.2 Temperature

The area is free of frost.

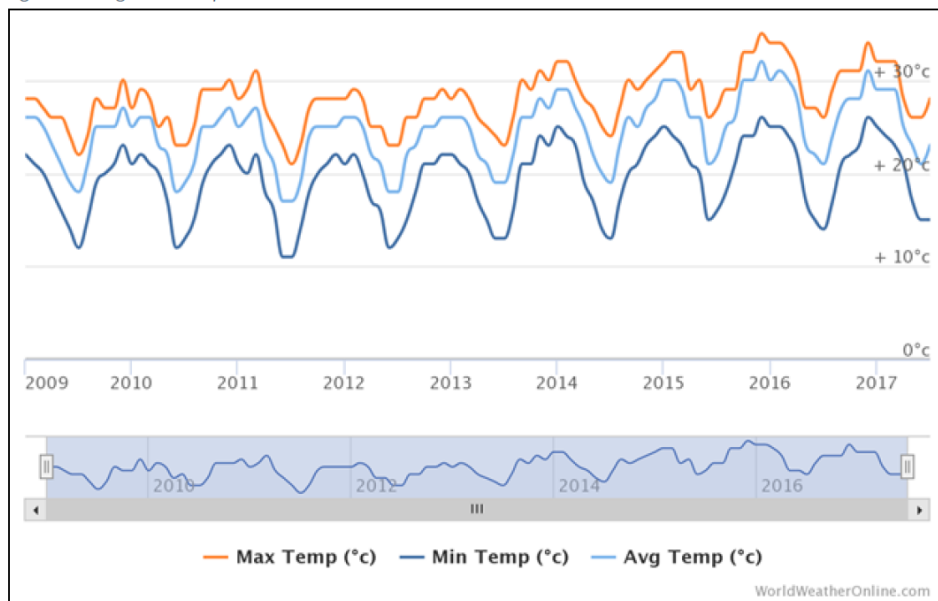
- Average temp
 - The monthly maximum temperature reaches a peak of 33°C in January and then steadily falls to 12,°C in July.
 - The summers are hot and maximum temperatures above 35°C are common.
- Minimum temperature
 - The average monthly minimum temperature is 8°C in June and July, while the absolute minimum can reach 2°C.

- The area is frost free.

Table 3. Average monthly temperatures

	January	February	March	April	May	June	July	August	September	October	November	December
Avg. Temperature (°C)	25.4	25.6	24.4	22.5	19.4	16.5	16.6	18.5	20.7	22.6	23.7	24.8
Min. Temperature (°C)	20	20.2	18.8	16.3	11.9	8.4	8.3	10.5	13.8	16.4	18	19.3
Max. Temperature (°C)	30.8	31	30.1	28.8	27	24.6	25	26.5	27.7	28.8	29.5	30.3
Avg. Temperature (°F)	77.7	78.1	75.9	72.5	66.9	61.7	61.9	65.3	69.3	72.7	74.7	76.6
Min. Temperature (°F)	68.0	68.4	65.8	61.3	53.4	47.1	46.9	50.9	56.8	61.5	64.4	66.7
Max. Temperature (°F)	87.4	87.8	86.2	83.8	80.6	78.3	77.0	79.7	81.9	83.8	85.1	86.5
Precipitation / Rainfall (mm)	135	128	69	42	20	12	9	9	37	59	95	103

Figure 5. Long term temperature statistics



5.1.3 Wind

- Wind with moderately high speeds occurs from late winter to early summer.
- The main wind direction is south and south-south-east

Figure 6. Average wind statistics for Malelane



Total area: 1395 km²

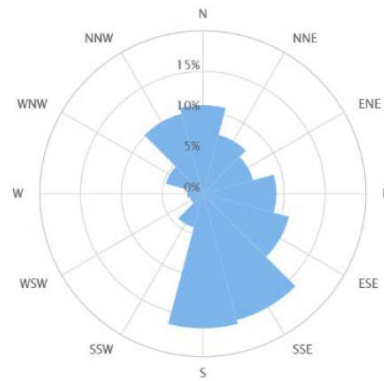
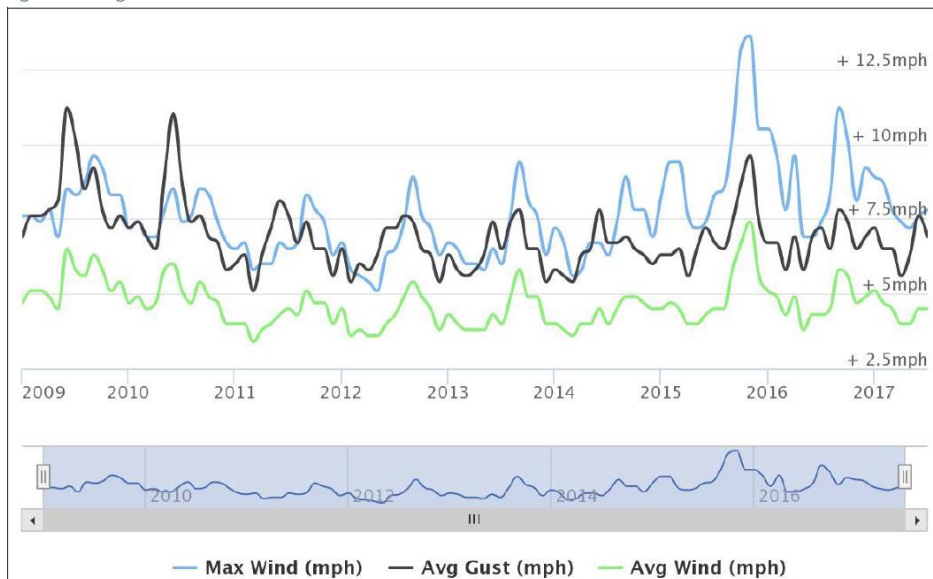


Figure 7. Long term wind statistics

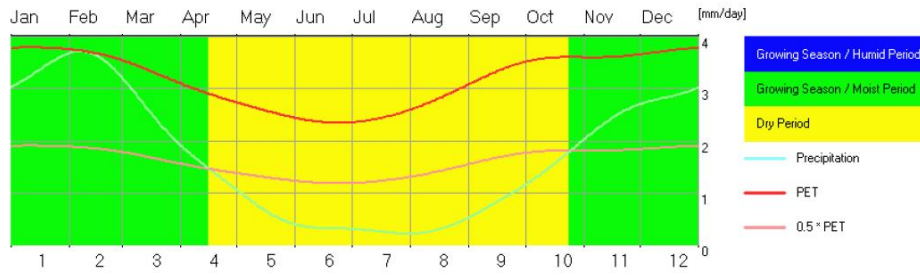


5.1.4 Growing season

When the rainfall is plotted against the temperature at a ratio of 1:2 the resulting graph indicates the growing season. See the climatogram below.

The growing season commences in late October when precipitation exceeds 50% of transpiration. This lasts until the middle of April. The dry season with a rain deficit lasts for almost 7 months of the year. The winter period is dry with little or no vegetative growth. This confirms that, for animal grazing on the property, it will be necessary to produce feed for the winter months.

Figure 8. Climatogram



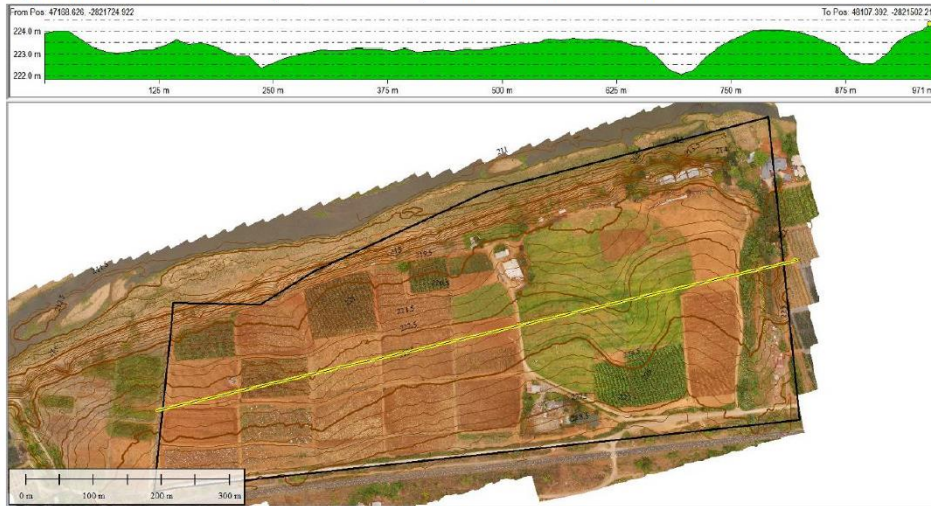
5.2 TOPOGRAPHY AND GEOMORPHOLOGY

The property is characterised by even sloped convex ridges and concave valleys that slopes in a northerly direction towards the Crocodile River.

Figure 9. Profile of the landscape from South west to north east on Farm 1337



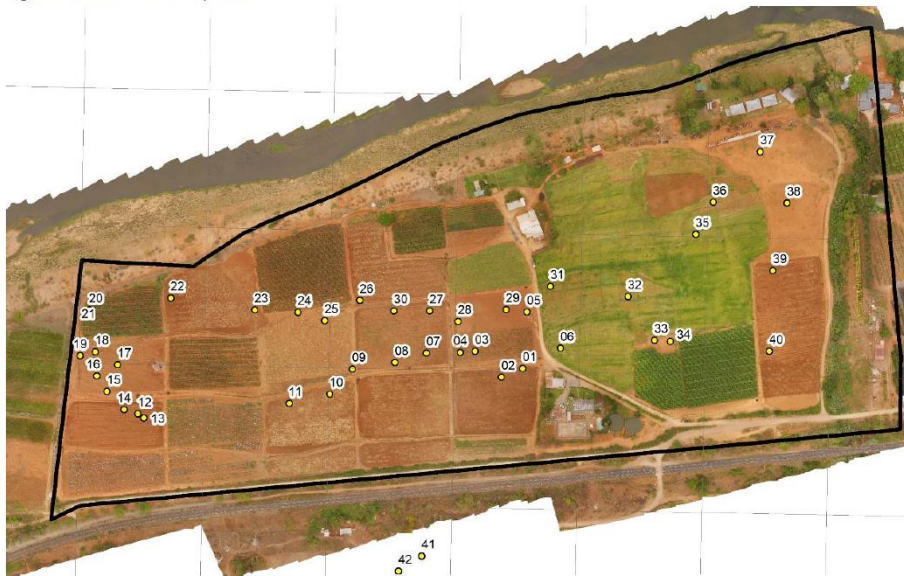
Figure 10. Profile of the landscape from the Vineyard to the south eastern border



5.3 OBSERVATION POINTS

Forty two observations were made and photographed. The figure below indicates the positions.

Figure 11. Observation points



5.4 SOIL

The property is located on alluvium close to the river and residual towards the south. The topography consists of mid-slopes that slopes towards the north. The higher lying morphological units consist of red well-drained Hutton soils with loose stone in places. Forty survey points were investigated by soil augur or probe or by visual inspections.

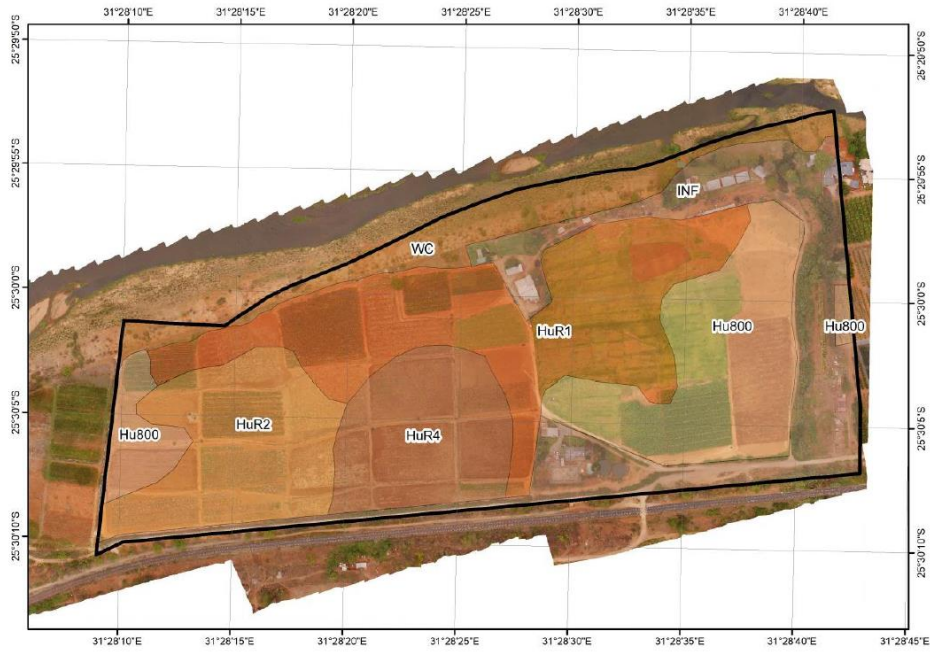
The notations on the soil map indicates the amount of rock in the profile; R0 is free of rock while more than 70% of the matrix is rock in the case of R4. Refer to the description of the map units later in the report.

The observation points indicating the amount of stones in the profile, are as follows:

Figure 12. Soil observations








Figure 13. Soil map



The main soil types are as follows:

Table 4. Soil description

Map unit	Description	Photo	Area (ha)
Hu800	The unit consists of reddish brown topsoil that overlies red apedal subsoil. The soil is between 800 to 1000 mm deep with a coarse-grained sandy clay loam texture (18 - 30% clay). It soil is free of mottles with few stones. Dominant soil families: Hutton and Shortlands.		6.47
R1	The unit consists of reddish brown topsoil that overlies red apedal subsoil. The soil is between 800 to 1000 mm deep with coarse-grained sandy clay loam texture (18 - 30% clay). It soil is free of mottles. Approximately 10-20% of the matrix consists of loose stones and rock. Dominant soil families: Hutton and Shortlands.		8.40

Map unit	Description	Photo	Area (ha)
R2	The unit consists of reddish brown topsoil that overlies red apedal subsoil. The soil is between 800 to 1000 mm deep with coarse-grained sandy clay loam texture (18 - 30% clay). It soil is free of mottles. Approximately 20 - 40% of the matrix consists of loose stones and rock. Dominant soil families: Hutton and Shortlands.		4.52
R4	The unit consists of reddish brown topsoil that overlies red apedal subsoil. The soil is 800 to 1000 mm deep with coarse-grained sandy clay loam texture (18 - 30% clay). It soil is free of mottles. More than 50% of the matrix consists of loose stones and rock. Dominant soil families: Hutton and Shortlands		3.76
WC	Watercourse		2.91
Inf	Buildings, sheds, gardens, etc.		7.10
TOTAL			33.16

5.5 WATER

Groundwater

- There is a borehole on the property that supplies domestic and irrigation water.

Surface water

- Total river frontage to the Crocodile River is 812 metres and is an additional source of the irrigation water.

Irrigation rights

- Water rights available 295 500m³/annum (see addenda for details).

5.6 VEGETATION

There is no natural vegetation or grazing on the property.

6 FARMING POTENTIAL

6.1 LAND USE CAPABILITY

There are various legislation that applies in determining farming potential, notably Act 43 of 1983 and the recent Draft Framework Bill of 2016. According to these, the following are highlighted:

Directorate Land use and Soil Management

Criteria for high potential agricultural land in South Africa was compiled by the ARC in August 2005 for the Directorate Land Use and Soil Management.

Agricultural land is considered as high potential if it can be cultivated in terms of Part 1 of the regulations of Conservation of Agricultural Resources Act 43 of 1983; if it meets the following criteria:

- If it is under permanent irrigation, or
- can be classified into one of the soil forms listed below, and
- the effective soil depth is equal to or greater than the minimum as stated below, and
- the average topsoil clay content falls within the limits as stated below.

Table 5. Soil classification of high potential agricultural land

Qualifying soil forms	Minimum effective soil depth	Topsoil clay content
Avalon, Clovelly, Griffin, Hutton, Inanda, Magwa, Oakleaf, Pinedene, Shortlands and Tukulu	600mm	All

Although large portions of land has an abundance of stones throughout the profile, it is under irrigation, and therefore, would qualify as high potential land.

Land use capability (Land Framework Bill)

Guidelines from the *Preservation and Development of Agricultural Land Framework Bill, 2016* is used in this study to determine the capability of soils and, hence, their agricultural potential.

1. Among a host of other objectives, the Bill aims at preserving high potential land and provide guidelines regarding and use and subdivision of agricultural land.
2. The classic eight-class land capability system was adopted to determine the agricultural potential or capability of land (Klingebiel & Montgomery, 1961). Land capability classes are interpretive groupings of land units with similar potential and continuing limitations or hazards. Land capability is a more general term than land suitability and more conservation oriented. It involves consideration of (i) the risks of land damage from erosion and other causes and (ii) the difficulties in land use owing to physical land characteristics, including climate.

Capability classification classes are determined by the following guidelines:

- land capability Class i land means land –
 - (a) that has a very high potential for intensive crop production;
 - (b) with few permanent limitations that restrict its use;
 - (c) which may be used safely and profitably for cultivated crops;
 - (d) of which the soils –
 - i. are nearly level and deep;

- ii. hold water well;
 - iii. are generally well drained;
 - iv. are easily worked;
 - v. are fairly well supplied with plant nutrients or are highly responsive to inputs of fertilizer; and
 - vi. when used for crop production, needs ordinary management practices to maintain productivity;
- (e) and which has a local climate favourable for growing many of the common field crops;
- land capability Class ii land means land –
 - a) with some permanent limitations that reduce the degree or intensity of crop production but is nevertheless of high potential;
 - b) which requires moderate conservation practices;
 - c) which may be used for cultivated crops, but with less latitude in the choice of crops or management practices than land capability class ii and;
 - d) with few limitations; and
 - e) the production and conservation practices that are easy to apply;
- land capability Class iii land means land –
 - a) with severe permanent limitations that restricts the choice of alternative uses and the intensity of crop production;
 - b) which is of moderate potential;
 - c) which requires special conservation practices;
 - d) which may be used for cultivated crops, but has more restrictions than land capability class II land;
 - e) when used for cultivated crops, the conservation practices of which are usually more difficult to apply and to maintain; and
 - f) of which the number of practical alternatives for average farmers is less than that for soils in land capability class iii;
- land capability Class iv land means land –
 - a) with very severe permanent limitations that restrict the choice of alternative uses and the potential for crop production;
 - b) which requires very careful management;
 - c) which may be used for cultivated crops, but more careful management is required than for land capability class III land and conservation practices are more difficult to apply and maintain;
 - d) with restrictions to land use which are greater than those in land capability class iii land; and
 - e) on which the choice of plants is more limited;
- land capability Class v land means land –
 - a) that is unsuitable for the cultivation of annual crops;
 - b) with a slight erosion hazard under natural veld, established pastures, forestry or special crops that provides adequate cover;
 - c) which may be tilled for the establishment of pastures, forestry and special crops; and
 - d) which has one or more of the following limitations which are impractical to remove:
 - i. wetness or frequently flooded;
 - ii. stoniness or rockiness; or
 - iii. climatic limitations;
- land capability Class vi land means land – which has
 - (a) permanent limitations that make it generally unsuited to cultivation and limit its use largely to natural grazing, browsing, afforestation or game farming; and
 - (b) which has continuing limitations that cannot be corrected, including –
 - i. steep slope;

- ii. severe erosion hazard;
 - iii. effects of past erosion;
 - iv. stoniness;
 - v. shallow rooting zone;
 - vi. excessive wetness or flooding;
 - vii. low water-holding capacity;
 - viii. salinity;
 - ix. sodicity; or
 - x. unfavourable climate;
- land capability Class vii land means land with –
 - (a) very severe permanent limitations that make it unsuited to cultivation and that restrict its use largely to natural grazing, browsing, afforestation or game farming; and
 - (b) restrictions that are more severe than those for land capability class vii and because of one or more continuing limitations that cannot be corrected, such as –
 - i. very steep slopes;
 - ii. erosion;
 - iii. shallow soil;
 - iv. stones;
 - v. wet soil;
 - vi. salinity;
 - vii. sodicity; or
 - viii. unfavourable climate.
 - land capability Class viii land means land with limitations that
 - a) preclude its use for commercial agricultural production;
 - b) restrict its use to recreation, wildlife, extensive game farming, water supply or aesthetic purposes; and
 - c) cannot be corrected as a result of, amongst others, the effects of one or more of the following:
 - i. erosion or erosion hazard;
 - ii. severe climate;
 - iii. wet soil;
 - iv. stones;
 - i. low water-holding capacity.

ASSESSMENT OF THE SITE

There is an abundance of rock on the surface and throughout the profile. Hutton and Shortlands soils were identified. Generally, the soil is deeper than 700mm.

In our opinion the arable portion on the subject property falls in LAND CAPABILITY CLASSES i to v.

Table 6. General potential classification according to Agricultural Land Framework Bill

Soil unit	Frame Bill class	Description	Area (ha)
Hu800	Class i	Soil that is free of any impediment for cultivation. It is considered as high potential arable land	6.47
HuR1	Class ii	Soil that has moderate amounts of rock and stone, which would require some management input for optimal production. It will also restrict the choice of alternative uses and the intensity of crop production. It is considered as high potential arable land.	8.4

Soil unit	Frame Bill class	Description	Area (ha)
HuR2	Class iv	Soil with moderate to large amounts of rock and stones that limits it's use. It will require some management input for optimal production. It is considered as medium potential arable land.	4.52
HuR4	Class v	Soil that large amounts of rock and stones that limits it's arable use. It will require much management input for optimal production. It is considered as low potential arable land.	3.76
INF	Class viii	Infrastructure and roads that is not suitable for cultivation.	7.1
WC	Class viii	River	2.91
TOTAL			33.16

Figure 14. Land capacity - Agricultural land Framework Bill



Within each capability class are agricultural activities that the land is suitable for. For example, available water for irrigation would create farming opportunities on Land Capability classes iv and poorer, while Class i capability is only suitable for grazing if the climate is not favourable.

In the case of the subject properties 14.9 ha is high potential land. The balance is either too rocky or under infrastructure and falls into Class iv and poorer. Availability of irrigation water could change the agricultural potential from poor to high.

6.2 ANALYSIS OF LAND FOR DIFFERENT LAND USES

Land use patterns more often than not, follow the situation experienced on the farm rather than land use potential. Shallow and moderate potential land that are not economically viable for cash crop production are sometimes cultivated and planted to maize or other crops because

of the contribution it can make in the total fodder flow where cattle and crop production takes place in a mixed farming unit. In addition, where irrigation water is available, it changes marginal land to high potential. This also the case on the subject farm where the abundance of stone and rock is not considered as high potential land but can be gainfully uses in horticulture.

The potential of a specific crop can also change with market price fluctuations. With the present free market pricing for agricultural produce, enterprise choice has become even more difficult (and risky) for the farmer. Furthermore, the financial ability of the farmer changes over time and even seasonally; influencing the land use as normal land uses may be altered or seasonally abandoned until financial conditions changes or return to normal.

This report, will therefore assume some recommendations that will form the basis for further analysis.

The following analysis is done for various enterprises from a natural resource perspective, in other words, purely based the climate, soil properties and water availability, and will apply to the portions that are already under cultivation.

Table 7. Enterprise evaluation

Enterprise	Discussion
Crops/horticulture	Although the soil is rocky and most only medium potential land, it is suitable for orchards. It is now under seed production of maize and sunflowers, with the balance under instant lawn, for which it is suited. However, due to the stony areas, it will require special management.
Beef Cattle	The land is too small for livestock

7 FARMING INFRASTRUCTURE

7.1 ON-FARM

- Fencing

The total farm is fenced.

- Water supply

There are sufficient water rights registered to irrigate the entire property.

- Farm buildings

There is a homestead on the southern part of the site and a packing shed on the central northern portion.

- Electricity

Is available.

7.2 REGIONAL

- Input supply

Farm inputs are provided from Malalane. The closest retail market is in Nelspruit, although there are numerous informal markets close by.

- Communication and electricity

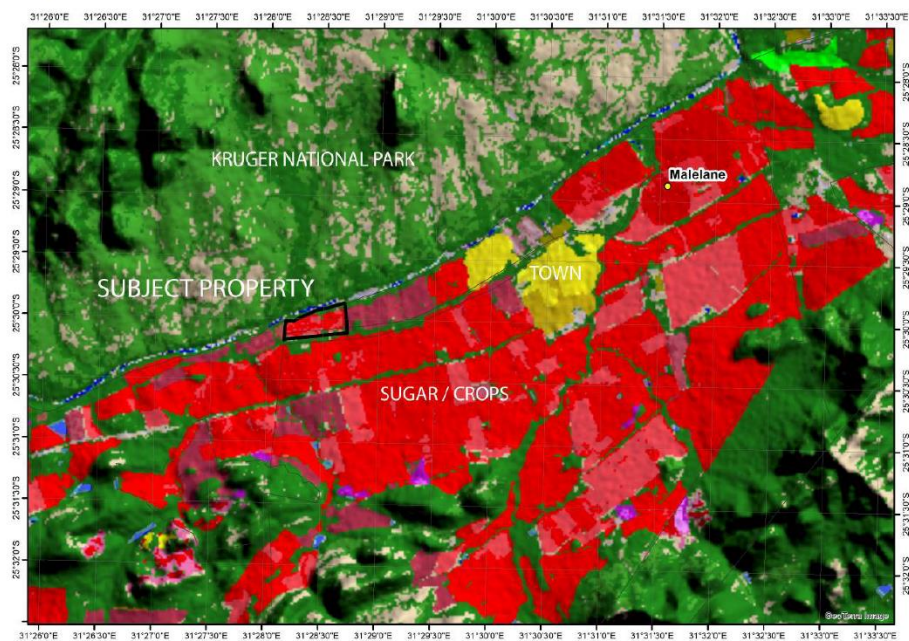
The area is supplied with cellular as well as land line communication. Eskom provides electricity. The capacity seems sufficient for the present activities.

8 SURROUNDING LAND USES

Main land uses within a 10km radius of the property are as follows:

- Sugar cane is the dominant crop;
- Orchards are found along the river;
- Nurseries directly adjacent;
- Field crops;
- Malelane is about 4km east and a small township directly south;
- The Kruger National Park is directly north of the site.

Figure 15. Surrounding land uses other than veld grazing and informal cropping (red indicates irrigated lands)



Impact of development on adjoining farming activities

- The estate will provide housing. It has nurseries directly west and a small settlement directly south of the western part of the development.
- It is our opinion that the development will not negatively influence farming activities of the adjoining properties.

9 IMPACT ASSESSMENT

9.1 IMPACT ON AGRICULTURAL PRODUCTION

The property will be removed from agriculture. Approximately 14.9 hectares of high potential farming land will be lost to agriculture.

9.2 IMPACT ON AGRICULTURAL RESOURCE UTILISATION

The property will be removed from agriculture. Approximately 14.9 hectares of high potential farming land will be lost to agriculture. The irrigation rights will be reemployed elsewhere, with no loss to agriculture.

9.3 AGRO-ECOSYSTEM IMPACT OF THE PROPOSED CHANGE IN LAND USE

Goods and services are the benefits arising from the ecological functions of ecosystems. Such benefits accrue to all living organisms, including animals and plants, rather than to humans alone.

- Production services

The land is now used for seed production and for instant lawn. The development will result in the loss of 14.9 hectares of high potential land. This will have a medium impact on local level but very little impact on regional level.

- Ecological services

The development will have no impact on the ecology. Instant lawn is produced on most of the high potential land. It's production has little beneficial impact on the environment.

- Socio-cultural services

The development will create more job opportunities that is available under farming.

10 CONCLUSION

The area in general has a tourism focus because of its proximity to the Kruger National Park. The effect is that land here will always be sought after for tourism and housing development.

The properties consists of 27 hectares that is used for seed production of crops and for instant lawn.

The soil along the river is alluvial and residual further away. Most of the soils have abundance of stones and is the main impediment to land use capability; more than half of the site was found to have more than 40% stone in the soil matrix, but certain portion contains more than 70%.

About 14,9 hectare is high potential land. The balance is either too rocky or under infrastructure and falls into Class iv and poorer. Availability of irrigation allowed for moderate potential land to become productive.

The development will result in the loss of 14,9 hectares of high potential land. This will have a medium impact on local level but very little impact on regional level.

It is further found that the development will have a little impact on the ecology. Instant lawn is produced on most the high potential land. It's production has little beneficial impact on the environment.

Further, the development will create more job opportunities that is available under farming.

11 SOURCES OF INFORMATION

- Criteria for high potential agricultural land in South Africa, Department of Agriculture, Directorate Land Use and Soil Management, 2002.
- Soil Management, Agricultural Research Council, 2005.
- GIS Layers, Environmental Potential Atlas, Department of Environment Affairs, 2002.
- Bing Satellite Imagery, 2017.
- Drone images, Index, 2017

12 ADDENDA

12.1 PHOTOGRAPHS



07.JPG



08.JPG



09.JPG



10.JPG



11.JPG



12.JPG



13.JPG



14.JPG











12.2 WATER RIGHTS

Suite 301, 8th Floor
The SAAGA Building
13 Street Street
Mbombela

Private Bag 531238
Mbombela
0300

Tel 013 753 5000
Fax 013 753 2786

INKOMATI-USUTHU
WATER MANAGEMENT BOARD

Enquiries/ Verification Office
Reference: 140JL/18
E-mail: verification@incmwb.co.za

Agronet CC

FORMER INKOMATI WATER MANAGEMENT AREA, WITHIN THE INKOMATI-USUTHU WATER MANAGEMENT AREA

CROCODILE RIVER MAJOR IRRIGATION BOARD - ORDER

MALELANE ESTATE A 140, JU, PORTION 8, SIZE 0.0000 ha: DECLARATION OF WATER USE AS AN EXISTING LAWFUL WATER USE IN TERMS OF SECTION 33(2) OF THE NATIONAL WATER ACT, 1998 (ACT 36 OF 1998)

Under Section 33(2) of the National Water Act, 1998 (Act 36 of 1998) [“the Act”], the following volume(s) are declared as existing lawful water use(s) on the above mentioned property.


Type of water use	Volume (m ³ /annum)
Taking of water for irrigation purposes	76,700.0000
Taking of water for non-irrigation purposes	
Storing of water	

This use may be continued with under Section 34(1) subject to any existing conditions or obligations attached to the use until a licence replaces it.

In terms of Section 148(1)(e) of the Act you may appeal against this declaration to the Water Tribunal within 30 (thirty) days from the date of this letter. The Water Tribunal can be contacted as follows:

The Registrar of the Water Tribunal, Mr Robert Mabe
Water Tribunal
Private Bag X316
Mbombela
0300
Tel: 012 336 7034
Email: maber@dws.gov.za


Nyikene-Maluka (Chairperson) | Mr MS Mthembu (Deputy Chairperson) | Dr JB Motswane | Dr PE Motswane | Ms SD Wiggins
Mr PA Mshangu | Mr PJ Venter | Mr JM Mathibulu | Dr TK Gyedu-Ababio (Ex-Officio)



Suite 801, 8th Floor
The MAXSA Building
11 Streak Street
Mbombela

Private Bag X11214
Mbombela
1200

Tel 013 753 9000
Fax 013 753 2786



INKOMATI-USUTHU
KROONBURG WATER MANAGEMENT AREA

Enquiries: Verification Office
Reference: 140JU/14
E-mail: verification@ucma.co.za

Agronet CC

FORMER INKOMATI WATER MANAGEMENT AREA, WITHIN THE INKOMATI-USUTHU WATER MANAGEMENT AREA

CROCODILE RIVER MAJOR IRRIGATION BOARD - ORDER

MALELANE ESTATE A 140, JU, PORTION 14, SIZE 0.0000 ha: DECLARATION OF WATER USE AS AN EXISTING LAWFUL WATER USE IN TERMS OF SECTION 33(2) OF THE NATIONAL WATER ACT, 1998 (ACT 36 OF 1998)

Under Section 33(2) of the National Water Act, 1998 (Act 36 of 1998) [“the Act”], the following volume(s) are declared as existing lawful water use(s) on the above mentioned property:

Type of water use	Volume (m ³ /annum)
Taking of water for irrigation purposes	7000 91,000.0000
Taking of water for non-irrigation purposes	
Storing of water	

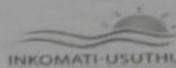
This use may be continued with under Section 34(1) subject to any existing conditions obligations attached to the use until a licence replaces it.

In terms of Section 148(1)(e) of the Act you may appeal against this declaration to the Water Tribunal within 30 (thirty) days from the date of this letter. The Water Tribunal can be contacted as follows:

The Registrar of the Water Tribunal, Mr Robert Mabe
Water Tribunal
Private Bag X316
Retoria
001

Phone: 012 336 7034
Mail: maber@dws.gov.za

P Nyakane-Maluka (Chairperson) | Mr MS Mthembu (Deputy Chairperson) | Dr JB Mchwantwa | Dr PE Molokwane | Ms SD Wiggins
Mr PA Shabangu | Mr PJ Venter | Mr JM Mathabula | Dr TK Gyedu-Ababio (Ex-Officio)



INKOMATI-USUTHU

WATER MANAGEMENT AREA

Suite 801, 8th Floor | Private Bag X11214 | Tel 013 752 9000
 The MAKSA Building | Mbombela | Fax 013 752 2786
 13 Struik Street | 1300

Empowerment Verification Office
 Reference: 14011-13
 E-mail: empowerment@dws.gov.za

Agronet CC

FORMER INKOMATI WATER MANAGEMENT AREA, WITHIN THE INKOMATI-USUTHU WATER MANAGEMENT AREA

CROCODILE RIVER MAJOR IRRIGATION BOARD - ONDER

MALELANE ESTATE A 140, JU, PORTION 13, SIZE 0.0000 ha: DECLARATION OF WATER USE AS AN EXISTING LAWFUL WATER USE IN TERMS OF SECTION 33(2) OF THE NATIONAL WATER ACT, 1998 (ACT 36 OF 1998)

Under Section 33(2) of the National Water Act, 1998 (Act 36 of 1998) [‘the Act’], the following volume(s) are declared as existing lawful water use(s) on the above mentioned property:

Type of water use	Volume (m ³ /annum)
Taking of water for irrigation purposes	123.500.0000
Taking of water for non-irrigation purposes	
Storing of water	

This use may be continued with under Section 34(1) subject to any existing conditions or obligations attached to the use until a licence replaces it.

In terms of Section 148(1)(e) of the Act you may appeal against this declaration to the Water Tribunal within 30 (thirty) days from the date of this letter. The Water Tribunal can be contacted as follows:

The Registrar of the Water Tribunal, Mr Robert Mabe
 Water Tribunal
 Private Bag X316
 Pretoria
 0001

Tel: 012 336 7034
 E-Mail: maber@dws.gov.za

Mr TP Nyakono-Maluku (Chairperson) | Mr MS Mthembu (Deputy Chairperson) | Dr JB Molekwa | Dr PE Molekwa | Mr SD Wiggins
 Mr PA Shabangu | Mr PJ Venter | Mr JM Mathibane | Dr TK Gyedu-Abalo (Ex-Officio)

12.3 POLICY CONSIDERATIONS

Although not yet enacted, the objectives of the *Preservation and Development of Agricultural Land Framework Bill, 2016* are to –

1. Regulate the subdivision, rezoning and protection of agricultural land;
 - preserve and develop agricultural land by –
 - Encouraging farming on agricultural land in collaboration with other role players; and provincial and local government to enable and promote the use of agricultural land for farming purposes and compatible uses in their policies, legislation, Integrated Development Plans, Spatial Development Frameworks and other relevant administrative frameworks and procedures;
 - discouraging or prohibiting – land uses unrelated to agriculture from taking place on agricultural land, including urban and other non-agricultural developments that are

likely to create conflict with established or proposed Protected Agricultural Areas; and subdivision and rezoning of agricultural land that results in fragmentation of farming systems, reduced agricultural productivity and land degradation;

- encouraging the mitigation of lost productive capacity of agricultural land if permanent impacts cannot be avoided and arise from development; and
 - promoting and encouraging long-term, viable farming units from an economic, environmental and social perspective;
2. implement a uniform, coordinated, cross-cutting national framework, including national norms and standards for the submission, consideration and approval or rejection of applications for the subdivision or rezoning of agricultural land to ensure coordinated, intergovernmental relations;
 3. build capacity in all three levels of government with regard to the consideration and execution of rezoning applications;
 4. ensure the sustainable use of the natural agricultural resources and maintain the agricultural landscape through the prohibition or discouragement of land use changes from agriculture to other forms of development;
 5. establish a framework that, in appropriate cases, facilitates concurrent land uses on agricultural land, such as renewable energy projects, without jeopardising long-term food security and natural resource integrity;
 6. protect the right to farm and to strengthen the rights of farmers to protect and manage agricultural land;
 7. establish formal structures at local, provincial and national levels to provide a basis for participation and to ensure transparency in, and accountability for, land use decisions that affect the availability and sustainable use of agricultural land;
 8. ensure that a minimum threshold of high potential cropping land available for agricultural production purposes is determined by the Department so as to maintain and increase food production and the potential productivity of the land concerned;
 9. demarcate Protected Agricultural Areas to ensure that high potential and best available agricultural land are protected against non-agricultural land uses in order to promote long-term agricultural production;
 10. encourage well-functioning intergovernmental relations and establish intergovernmental dispute resolution mechanisms; and
 11. establish an incentive-based regulatory regime that is linked to enforcement to actively promote the preservation and optimal agricultural use of agricultural land for agricultural production.

Inputs by municipality relating to high potential cropping land:

1. The provincial Department to which an application was submitted as contemplated in section 7, must send a copy of such application and all supporting documentation to the – (a) local municipality and district municipality; or (b) metropolitan municipality, concerned, as the case may be, within a period of 5 days after receipt of the complete application from the applicant.
2. The municipalities contemplated in subsection (1) must – (a) consider the application and supporting documents, taking into account the following: (i) the Integrated Development Plan; (ii) the Spatial Development Framework; (iii) the Local Economic Development plan; (iv) the Land Use Management Scheme; and (v) any other planning frameworks applicable to the area concerned; and (b) consult with traditional governance structures in the event that the application involves land occupied by a traditional community as contemplated in section 11.
3. The municipalities contemplated in subsection (1) must – (a) make a written recommendation in respect of the application; and (b) submit the recommendation contemplated in paragraph (a), together with any other written inputs, to the provincial Department concerned.

4. The recommendation by the municipalities contemplated in subsection (3) is not required in the event that the Intergovernmental Committee approves the application as contemplated in section 13. (a) In the event that the municipality concerned lacks sufficient capacity to fulfil its functions as contemplated in this Act, the provincial Department concerned, in consultation with the municipal manager, must execute such functions: Provided that the municipality concerned must comply with the provisions of subsection (3). (b) In the event that no recommendation is forthcoming from the municipality concerned after intervention by the provincial Department, the provincial Department must keep a record thereof and proceed with the application.
5. In the event that the municipality concerned does not submit its inputs to the provincial Department within a period of twenty days after receipt of the documents contemplated in subsection (1), the provincial Department is not obliged to consider its inputs.

ⁱ The Bill is still in process, but nevertheless, indicate the present thinking if the Department of Agriculture.

APPENDIX 4.4.2.
TERRESTRIAL ECOLOGY, BIODIVERSITY AND RIPARIAN ECOLOGY
REPORT

KRUGER MALELANE AGRI ESTATE: THE DEVELOPMENT OF A LIFESTYLE GATED COMMUNITY ON A CROP FARM

A specialist ecological study for an Environmental Impact Assessment on the Kruger Malelane Agri Estate, Greater Malelane Town Area (Mpumalanga)



SPECIALIST STUDY: ECOLOGICAL ASSESSMENT.

DR ANDREW DEACON
April 2021



A LIFESTYLE GATED COMMUNITY ON A CROP FARM

A specialist ecological study for an Environmental Impact Assessment on the Kruger Malelane Agri Estate, Greater Malelane Town Area (Mpumalanga)

April 2021

Dr Andrew Deacon (PhD Zoology)

Registered with the South African Council for Natural Scientific Professions
(Registration number: 116951)

Executive Summary

Rhengu Environmental Services were appointed to undertake an Environmental Impact Assessment (EIA) for the Kruger Malelane Agri Estate Development (Mpumalanga). This specialist ecological study forms part of the EIA process for the proposed project.

The Kruger Malelane Agri Estate (KMAE) development is planned as a unique lifestyle gated community on a crop farm in the Greater Malelane Town Area, Mpumalanga Province. The \pm 28.4 ha study area consists of a portion of Portions 8, 13 & 14 of the Farm Malelane Estate 140- JU. The area is located outside the 1:100 flood line of the Crocodile River and the river forms the southern boundary of the Kruger National Park.

This specialist report is based on the EIA guidelines provided in the Mpumalanga Biodiversity Sector Plan (MBSP). The Mpumalanga Tourism and Parks Agency (MTPA), as custodian of the environment in Mpumalanga, is the primary implementing agent of the MBSP for the province.

During the study, a total of three vegetation units were identified. These units consist of two subsections of untransformed riverine habitats and two units of transformed habitat types. These vegetation units and land cover type units are listed below:

Untransformed vegetation/habitat

1. Untransformed Riverine – Riparian and aquatic
 - 1a. Adjacent Crocodile River
 - 1b. Small stream on the eastern boundary

Transformed vegetation/habitat

2. Agriculture – Fallow lands
3. Infrastructure – housing

The fieldwork component of this study was conducted during the period November 2020 to April 2021. During the vegetation surveys, a total of 39 indigenous plant species were recorded during fieldwork as well as 11 exotic species, some declared alien invaders.

Aquatic macro-invertebrates were sampled in the unnamed drainage line according to the SASS5 method. The habitat scores at the sites are moderate and is thus categorized as “Fair”. On the other hand, the SASS scores represent a “Good” integrity and relative high number of families, which can be attributed to shallow, well aerated riffles, as well as some overhanging vegetation.

Six fish species were sampled in the unnamed drainage line and evaluated according to the FRAI method. The relative integrity score of 52% at this reach in the KMAE was placed within the limits of an ecological state category Class D (40 to 59%), which means this reach is “Largely modified”.

During surveys for frog species (November 2020 to April 2021), two of the 29 expected species were encountered in the KMAE project area. Using distribution maps and habitat quality, no endemic or threatened frog species are expected to occur in the project area. According to the distribution of reptiles in South Africa, 61 species have distribution ranges extending into the region. During the surveys of reptile species 3 of the 61 were encountered in the KMAE project area. Two threatened reptile species are expected for the surrounding area.

A total of 332 bird species were observed in this region during the Bird Atlas project. During the surveys of bird species, only 49 of the 332 species were encountered in the KMAE project area. Nineteen threatened bird species were recorded locally, many of these birds were observed in the adjacent KNP environment.

According to the distribution of mammals in South Africa, 100 species have distribution ranges extending into the region. During the surveys for mammal species only 3 of the 100 were encountered in the KMAE project area. A total of 35 observed mammal species were

listed for a property 160 metres downstream of the KMAE project area, which include 11 threatened species (most of these mammals were observed in the adjacent KNP environment).

Overlaying the BGIS Critical Biodiversity Areas map onto the project area, we found the KMAE is situated in the following sensitive areas:

- Terrestrial:
 - Ecological Support Area: Protected area buffer
 - Vulnerable Ecosystem Status: Granite Lowveld – Vulnerable
- Aquatic:
 - NFEPA River: Crocodile River

Apart from a drainage line which is classified as an Other Natural Area, most of the project area has been totally transformed by agriculture (“Heavily Modified”). On the other hand, the entire farm is situated in an ESA: Protected Area Buffer (Kruger National Park). According to the desired management objectives for an ESA: Protected Area Buffers, these buffers are areas around protected areas where changes in land-use may affect the ecological functioning or tourism potential of the adjacent protected area. The purpose of buffer zones is to reduce the impacts of undesirable land-uses on the environment and to provide opportunities for tourism/recreation.

The potential impacts of the project on the biodiversity of the study area are assessed under the following broad categories, namely:

Activity 1. Construction of the lifestyle units.

- 1.1 Storm water and erosion/siltation
- 1.2 Pollution

- 1.2.1 Sewerage
- 1.2.2 Hazardous substances associated with construction activities
- 1.2.3 Solid waste

Activity 2. Construction of a dam in an unnamed drainage line.

- 2.1 Inundation of the stream
- 2.2 Migration barrier

Activity 3. Establishment of the orchards

- 3.1 Storm water and erosion/siltation

Activity 4. Human wildlife conflict – fences, elephants and orchards; scavenging; lighting, etc.

Activity 5. Alien invasive vegetation.

Reasoned opinion

It is evident that a central concern regarding the development on the KMAE property is the deterioration of the ground cover on the farm and the resultant erosion and siltation of the receiving environment. Most of the problem can be attributed to the neglected stormwater management of the farm in the recent years. With the current planned development, there are two sources of potential erosion:

- a) the residential areas with housing units, roads, and other forms of impervious surfaces;
- b) and the current fallow land to be developed into macadamia orchards.

To prevent the continuation of donga formation and sediment deposition on the receiving Kruger Park landscape, a number of stormwater decelerating schemes are available to the engineers when developing the stormwater drainage system. A number of these schemes are discussed in the ConSolv Engineering Service Report (2020) and a combination of these methods can be implemented in both the residential and agricultural areas.

In the residential areas, soakaways could be used to lessen the impact of runoff from impervious surfaces, rainwater harvesting can receive some of the water and swales along all the access roads, can all serve as primary local control systems. All channelled water should be slowed down before it reaches the KNP fence/boundary with decelerating systems, such as infiltration trenches and vegetated swales. The planting of lush Lowveld

gardens, which will establish rapidly in the rich soils and controlled watering systems, will also be an effective control addition to slow down stormwater.

Different controls could be incorporated in the orchards, beginning from the southern boundary, all the way to the storm water channelling system along the main road. The stormwater decelerating methods could include filter strips, swales, infiltration trenches and retention areas (see ConSolv Engineering Service Report, 2020). These systems will be able to slow down stormwater before it reaches the storm water channelling system which will intercept the surface flows before it reaches the residential areas.

However, it is important to firstly divert most of the initial flows towards the natural drainage line to the east of the property, thereafter the increased flow will then overflow into the secondary storm water channels. More important now is to slow down the water towards the point of release in order to prevent concentrated flows discharged into the receiving environment. In order for that to happen, it is suggested that the stormwater channels release the water into a system of drains and rock-filled sumps to slow down the flows and dissipate the released water over a wider surface area to prevent further erosion and siltation on the KNP side of the fence.

Pollution of the drainage systems (including the channelled stormwater) on the farm and the adjacent Crocodile River, is another concern in developing the estate. If there is a pollution risk, it will persist into the operational phase. There are three aspects of concern relating to potential pollution, namely the sewerage system, solid waste and hazardous substances associated with construction and afterwards stemming from household tasks.

The wastewater treatment addressing the sewerage effluent will be a waterborne sewerage system. The system will be installed with a Maskam Fusion WWTW which will ensure that the outflow from the system will conform to general standards required by the department of Water and Sanitation (DWS) and be used for irrigation of the macadamia orchards.

In order to protect the riverine area from potential sources of pollution, the following mitigation measures are proposed:

- Implementation and maintenance of the aquatic buffer zones around the local waterways,
- and adhering to Best Practice Guidelines and Specifications relating to all construction activities (camps, storage, dumping, ablution, servicing, cement mixing and stockpiling).

Solid waste will initially be managed effectively by the construction teams and during the operational phase the management of the estate development will fulfil this function. Refuse removal will be a daily door-door service by KMAE Management, and the refuse temporarily stored at a holding facility. The stored waste will be collected weekly by the Nkomazi Municipality.

Repairing and improving the dam/bridge structure over the small stream has a two fold function: i) damming water in the stream will create a small dam which will act as a water feature for the development; ii) the structure will also continue to serve as an access route to allow vehicles to cross the stream. The construction of an in-stream dam will have the following impact on the system:

- the completed dam wall will interfere with the flow in the river;
- the wall will act as a migration barrier for aquatic animals;
- when the dam basin fills with water, the water will inundate a relatively large area of natural riverine habitat and terrestrial landscape.

In order to address the migration barrier issue, a fishway (fish ladder) was proposed for the dam overflow, which will allow migrating fish swimming up the drainage line, to negotiate over the dam wall during their migration and disperse further upstream into the catchment.

However, based on the results of an assessment with regards to the necessity for providing a fishway at the said barrier (Kotze, 2021), it was concluded that a fishway will add little, if

any ecological benefit at the proposed dam site. Due to this assessment, it was decided that no fishway is required for installation at the proposed dam. This recommendation is based on ecological considerations.

As indicated in the section with reference to "Assessment of Impacts", most of the impacts can be mitigated to a certain degree. However, filling the dam and inundating the riparian vegetation are impacts that cannot be mitigated fully as a relatively large surface area is inundated and eliminated from the ecosystem footprint, therefore the significance of this action is still listed in a "Medium" category.

To protect the remaining riparian zone of the stream, a 10m buffer around the riparian zone has been established using the DWS Buffer Tool. In order to re-establish the link between the riparian corridors upstream and downstream of the dam basin, a 10m riparian buffer should also be established along the new marginal zone around the dam.

It is thus anticipated that, in order to mitigate for the impacts of the proposed dam on the environment, the listed adverse influences should be managed to such a degree that the overall ecology in the project area will still be functional.

It is expected that aspects such as "Human Wildlife Conflict" and "Alien Plant Control" can be managed without difficulty through protocols implemented by the KMAE Management and if maintained it should successfully mitigate these potential impacts.

By implementing all the mitigation measures and managing the system as prescribed on an ongoing basis, all the impacts will be addressed to a satisfactory level. Therefore, it is proposed that the construction and operation of the project should be authorised with the provision that the mitigation measures prescribed in this document are included in the EMPr.

General Requirements for EAPs and Specialists including Content of Specialist Reports in terms of Appendix 6 of the EIA Regulations, 2014

	Specialist reports and reports on specialist processes Checklist	STATUS
	Requirements for Specialist Reports Appendix 6 of Amendments to the environmental impact assessment regulations, 2014 (Government Notice No 326, 7th April 2017), promulgated in terms of National Environmental Management Act, 1998 (Act No. 107 of 1998).	Reference to section of specialist report or justification for not meeting requirement
1	A specialist report prepared in terms of these Regulations must contain—	
(a) i	The specialist who prepared the report; and	The title page of this report.
(a) ii	The expertise of that specialist to compile a specialist report including a curriculum vitae;	Section 1.6 Details of the Author; Appendix 2 of this report.
(b)	A declaration that the specialist is independent in a form as may be specified by the competent authority;	Appendix 1 of this report: Details of specialist and the declaration of interest following this section.
(c)	An indication of the scope of, and the purpose for which, the report was prepared;	1.3 Terms of Reference.
(cA)	An indication of the quality and age of base data used for the specialist report;	1.4 Database Review
(cB)	A description of existing impacts on the site, cumulative impacts of the proposed development and levels of acceptable change;	5.4 Assessment of impacts 5.3.6 Land-use guidelines 5.3.7 Desired management Objective
(d)	The duration, date and season of the site investigation and the relevance of the season to the outcome of the assessment;	2. Methodology - Baseline Data
(e)	A description of the methodology adopted in preparing the report or carrying out the specialised process inclusive of equipment and modelling used;	2. Methodology
(f)	Details of an assessment of the specific identified sensitivity of the site related to the proposed activity or activities and its associated structures and infrastructure, inclusive of a site plan identifying site alternatives;	5.2 Sensitivity mapping. 5.5 Conditions for inclusion in the environmental authorisation
(g)	An identification of any areas to be avoided, including buffers;	5.3.7 Desired management Objective
(h)	A map superimposing the activity including the associated structures and infrastructure on the environmental sensitivities of the site including areas to be avoided, including buffers;	5.3 Land-use planning and Decision-making: 5.3.5 Buffer zones
(i)	A description of any assumptions made and any uncertainties or gaps in knowledge;	1.5 Assumptions, Limitations and Knowledge gaps

	Specialist reports and reports on specialist processes Checklist	STATUS
(j)	A description of the findings and potential implications of such findings on the impact of the proposed activity (including identified alternatives, on the environment) or activities;	5.4 Assessment of impacts
(k)	Any mitigation measures for inclusion in the EMPr	5.4. Impact Assessment
(l)	Any conditions for inclusion in the environmental authorisation	5.5 Conditions for inclusion in the environmental authorisation.
(m)	Any monitoring requirements for inclusion in the EMPr or environmental authorisation	5.6 Monitoring requirements
(n)	A reasoned opinion -	
.i	As to whether the proposed activity, activities or portions thereof should be authorised;	5.7.2 Reasoned opinion
(iA)	Regarding the acceptability of the proposed activity or activities; and	5.7.2 Reasoned opinion
.ii	If the opinion is that the proposed activity, activities or portions thereof should be authorised, any avoidance, management and mitigation measures that should be included in the EMPr, and where applicable, the closure plan;	5.7.1 Summary of mitigation measures
(o)	A description of any consultation process that was undertaken during the course of preparing the specialist report;	5.7.3 Consultation process
(p)	A summary and copies if any comments that were received during any consultation process, and where applicable all responses thereto; and	n/a
(q)	Any other information requested by the competent authority.	n/a

DECLARATION

I, Andrew Richard Deacon, declare that I –

- act as an independent specialist consultant in the field of ecological science;
- do not have and will not have any financial interest in the undertaking of the activity, other than remuneration for work performed in terms of the Environmental Impact Assessment Regulations, 2006;
- have and will not have any vested interest in the proposed activity proceeding;
- have no, and will not engage in, conflicting interests in the undertaking of the activity;
- undertake to disclose, to the competent authority, any material information that have or may have the potential to influence the decision of the competent authority or the objectivity of any report;
- and will provide the competent authority with access to all information at my disposal regarding the application, whether such information is favourable to the applicant or not.

ANDREW RICHARD DEACON

Table of Contents

Executive Summary	
Specialist Reports and Reports on Specialist Processes Checklist	
Declaration	
Table of Contents	
Abbreviations	
1. Introduction	
1.1 Project Description	
1.2 Legislative Requirements	
1.3 Terms of Reference	
1.4 Database Review	
1.5 Assumptions, Limitations and Knowledge gaps	
1.6 Details of the Author	
2. Methodology	
Methods and approach	
2.1 Riverine Vegetation	
2.1.1 Riparian Delineation	
2.1.2 Buffers	
2.1.3 Riparian habitat surveys (VEGRAI)	
2.2 Specialist assessment: Aquatic Studies	
2.2.1 Aquatic Ecosystem Classification	
2.2.2 Aquatic biota surveys	
2.2.2.1 Aquatic invertebrate assessment	
2.2.2.2 Fish communities - Fish Response Assessment Index (FRAI)	
2.3 Specialist assessment of terrestrial vegetation for the project	
2.4 Specialist assessment of terrestrial fauna	
2.4.1 MTPA: Mammals/Birds	
2.4.2 Field surveys and habitat evaluation.	
2.4 Impact Assessment	
2.4.1 Mpumalanga Biodiversity Sector Plan (MBSP) and Threatened Ecosystems	
2.4.2 Habitat Sensitivity Assessment	
2.4.3 Impact Rating Methodology	
3. Description of the study area	
3.1 Present Ecological State of the study area	
3.2 Physiography of the study area	
4. Results	
4.1 Vegetation units and land cover types within the study area	
4.2 Ecological survey transects in the KMAE project area.	
4.3 Biodiversity Assessments	
4.4 Biota assemblages	
4.4.1 Vegetation communities	
4.4.2 Riverine Ecology	
4.4.2.1 The extent of the riparian habitat	
4.4.2.3 Surveys of Aquatic Invertebrates and Fish	
4.4.3 Terrestrial ecology	
4.4.3.1 Frogs	
4.4.3.2 Reptiles	
4.4.3.3 Birds	
4.4.3.4 Mammals	

5. Impact Assessment

5.1 Screening Report

5.2 Sensitivity Mapping

5.3 Land-use planning and Decision-making

5.3.1 The use of CBA maps in Environmental Impact Assessments

5.3.2 Critical Biodiversity Areas

5.3.3 Corridors for Connectivity

5.3.4 Riparian delineation

5.3.5 Buffer zones

5.3.6 Land-use guidelines

5.3.7 Desired management Objective

5.4 Assessment of Impacts

5.5 Conditions for inclusion in the environmental authorisation

5.6 Monitoring requirements

5.7 Recommendations

5.7.1 Summary of mitigation measures

5.7.2 Reasoned opinion

5.7.3 Consultation process

References

Appendices

Abbreviations

ADU	Animal Demographic Unit
AQV	Aquatic vegetation
ASPT	Average Score per Taxon
BA	Basic Assessment
BGIS	Biodiversity Geographic Information System
BODATSA	Botanical Database of Southern Africa
°C	Degrees Celsius
CARA	Conservation of Agricultural Resources Act
CBA	Critical Biodiversity Areas
cm	Centimetre
DALRRD	Department of Agriculture, Land Reform and Rural Development
Dr	Doctor
DWA	Department of Water Affairs (post-2010)
DWAF	Department of Water Affairs and Forestry (pre-2010)
DWS	Department of Water and Sanitation (since May 2014)
E	East
EA	Environmental Authorisation
EAP	Environmental Assessment Practitioner
e.g.	For example
ECO	Environmental Control Officer
EIA	Environmental Impact Assessment
EMF	Environmental Management Frameworks
EMPr	Environmental Management Programme
EN	Endangered
ESA	Ecological Support Area
FEPA	Freshwater Ecosystem Priority Areas
FRAI	Fish Response Assessment Index
FROC	Frequency of Occurrence
GGP	Gross Geographic Product
GIS	Geographic Information System
GPS	Global Positioning System
ha	Hectares
HCR	Habitat Cover Ratings
HQI	Habitat Quality Index
IHAS	Integrated Habitat Assessment System
IHI	Index of Habitat Integrity
IUCN	International Union for Conservation of Nature
kl/day	Kilolitre per day
km	Kilometre
km ²	Kilometre square
KMAE	Kruger Malelane Agri Estate
KNP	Kruger National Park
LUDS	Land-Use Decision Support Tool
m	Metre
m ²	Square metre
m ³	Cubic metre
m ³ s	Cubic metre per second
mamsl	Metres above mean sea level
MAP	Mean annual precipitation
max	Maximum
MBCP	Mpumalanga Biodiversity Conservation Plan

MBSP	Mpumalanga Biodiversity Sector Plan
min	Minimum
min	Minutes
mm	Millimetre
MNCA	Mpumalanga Nature Conservation Act
mS/m	milliSiemens per metre
MTPA	Mpumalanga Tourism and Parks Agency
MV	Marginal Vegetation
NEMA 1998)	National Environmental Management Act, 1998 (Act No. 107 of 1998)
NEMBA	National Environmental Management & Biodiversity Act
NEMPAA	National Environmental Management: Protected Areas Act
NFEPA	National Freshwater Ecosystem Priority Areas
NP	National Park
NSBA	National Spatial Biodiversity Assessment
NT	Near-threatened
NWA	National Water Act
ONA	Other Natural Areas
PAR	Register of Protected Areas
PCB	Polychlorinated biphenyl
PES	Present Ecological State
PESEIS	Present Ecological State, Ecological Importance and Ecological Sensitivity
PhD	Doctor of Philosophy
POSA	Plants of Southern Africa
Pr. Sci. Nat	Natural Scientific Professionals
Reg. no.	Registration number
RHP	River Health Programme
S	South
SA	South Africa
SANBI	South African National Biodiversity Institute
SANParks	South African National Parks
SARCA	South African Reptile Conservation Assessment
SASS5	South African Scoring System version 5
SCC	Species of Conservation Concern
SHI	Site Fish Habitat Integrity Index
SIC	Stones in Current
SOOC	Stones Out Of Current
SQ	Sub-quadernary
Sqm	Square metre
SSC	Species of Special Concern
SuDS	Sustainable Drainage Systems.
TOPS	Threatened or Protected Species
VEGRAI	Riparian Vegetation Response Assessment Index
WMA	Water Management Area
WSUD	Water Sensitive Urban Design
WWTW	Waste Water Treatment Works

1. Introduction

Rhengu Environmental Services were appointed to undertake an Environmental Impact Assessment for the Kruger Malelane Agri Estate Development (Mpumalanga). This specialist ecological study forms part of the EIA process for the proposed project (Figure 2).

This project and the report below, are based on the EIA guidelines provided in the Mpumalanga Biodiversity Sector Plan (MBSP, 2014). The Mpumalanga Tourism and Parks Agency (MTPA), as custodian of the environment in Mpumalanga, is the primary implementing agent of the MBSP for the province.

This report addresses the findings of the field surveys as well as a desktop review of the potentially occurring threatened flora and fauna in the proposed development footprint.

1.1 Project Description

Proposed Residential Township: Portions 8, 13 and 14 Malelane Estate 140 JU, Mpumalanga Province.

The Kruger Malelane Agri Estate (KMAE) development is planned as a unique lifestyle gated community on a crop farm in the Greater Malelane Town Area, Mpumalanga Province. The \pm 28.4 ha study area consists of a portion of Portions 8, 13 & 14 of the Farm Malelane Estate 140- JU. The area is located outside the 1:100 flood line of the Crocodile River and the river forms the southern boundary of the Kruger National Park (Figure 1).

The area is located between contours 290m and 311m above mean sea level and the average annual rainfall is 460mm. The terrain is undulating with relative flat gradients including a natural waterway along the eastern boundary. The ground surface drains via sheet-wash and the aforementioned drainage feature drains towards the north in the direction of the Crocodile River at an average gradient ranging of some 5%.

The registered owner of the property proposes to establish a residential development on the property. The aim of the development is to create a desirable landscape consisting of a mix of agriculture and lifestyle living facing the Kruger National Park. The development will consist of 25 subdivisions which will each have a demarcated area along the Crocodile River front or the stream to the east for the purpose of building a residence and the remainder of the property will be used for farming.

The development will be provided with internal services which will consist of a metered water connection for each building, a waterborne sewerage connection and access to a road network.

Access to the development will be from an existing road D1239, which is an extension of Opdraend Street in Malelane. Access to the development will be from road D1239 located along the southern boundary of the development area.

Water for the project will be provided from three sources. Firstly, the property has 13Ha of water rights on the Malelane Irrigation Board water canal which will be used for the farming operation. In addition to this, there are 3 boreholes on the property. Two of the boreholes will be utilised for domestic water supply to the residential properties and the other as supplementary water for the farm. Finally, water will be recovered from the sewerage treatment plant and this will be used to supplement the irrigation water on the farm.

A sewerage treatment plant will be constructed at a suitable position within the development area and all the sewerage from the reticulated sites within the development will be treated at this treatment plant. A Waste Water Treatment Plant will be constructed next to the water treatment plant and the treated water will be used for irrigation. The treated effluent will comply with the general standards required by the department of Water and Sanitation (DWS) and will be of such quality that the treated water can be used for irrigation purposes.

The area drains towards the north-east, and the lowest point is next to the Crocodile River. It is proposed that the sewer lines be placed outside the riparian buffer. No reticulation lines will be constructed within the 1:100-year flood line and one sewer pump station will be required to pump sewer to the proposed sewer treatment plant. The total Annual Average Dry Weather Sewerage Flow is estimated at 21.66 kl/day.

Refuse removal will be undertaken by KMAE Management. Waste will be collected weekly by the Nkomazi Municipality. It is proposed that solid waste be taken daily in municipal refuse bags to a holding facility at the entrance gate to the development. The holding facility must be properly walled in with a concrete floor, including water supply for washing of the area. The Nkomazi Municipality will collect the waste on a weekly basis.

Eskom is the supply authority for electricity in the area.

Proper storm water management is essential to ensure protection of life and property from flood hazards and that the natural environment is protected.

The objectives of storm water management can be summarised as follows:

- to provide a storm water drainage system for the protection of the property from damage by runoff from frequent storms;
- to prevent loss of life and reduce damage of the property from severe storms;
- to prevent land and watercourse erosion;
- to protect water resources from pollution;
- to preserve natural watercourses and their eco-systems;
- to achieve the foregoing objectives at optimal total cost.

The storm water channels and structures will be designed for a 1:2-year storm recurrence, except at the piped crossings where a 1:5 year storm recurrence is catered for. The infrastructure will be located within the road servitudes.



Figure 1: The KMAE project area location in the surrounding environment

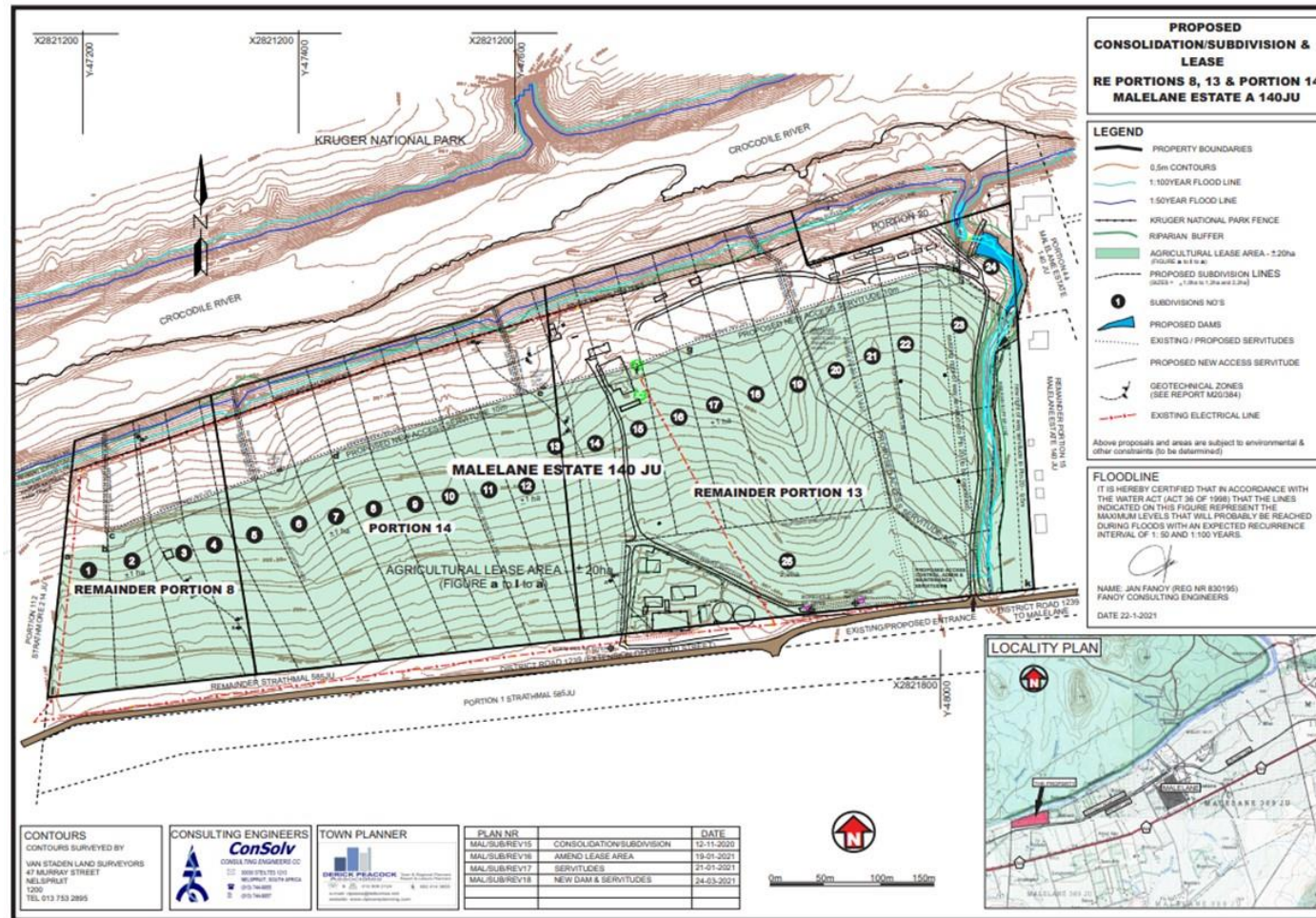


Figure 2: The proposed Kruger Malelane Agri Estate Development is planned as a unique lifestyle gated community on a crop farm in the Greater Malelane Town Area.



Figure 3: A map of the current farming operation and present ecological state of the Malelane Estates (Gouws, 2017).

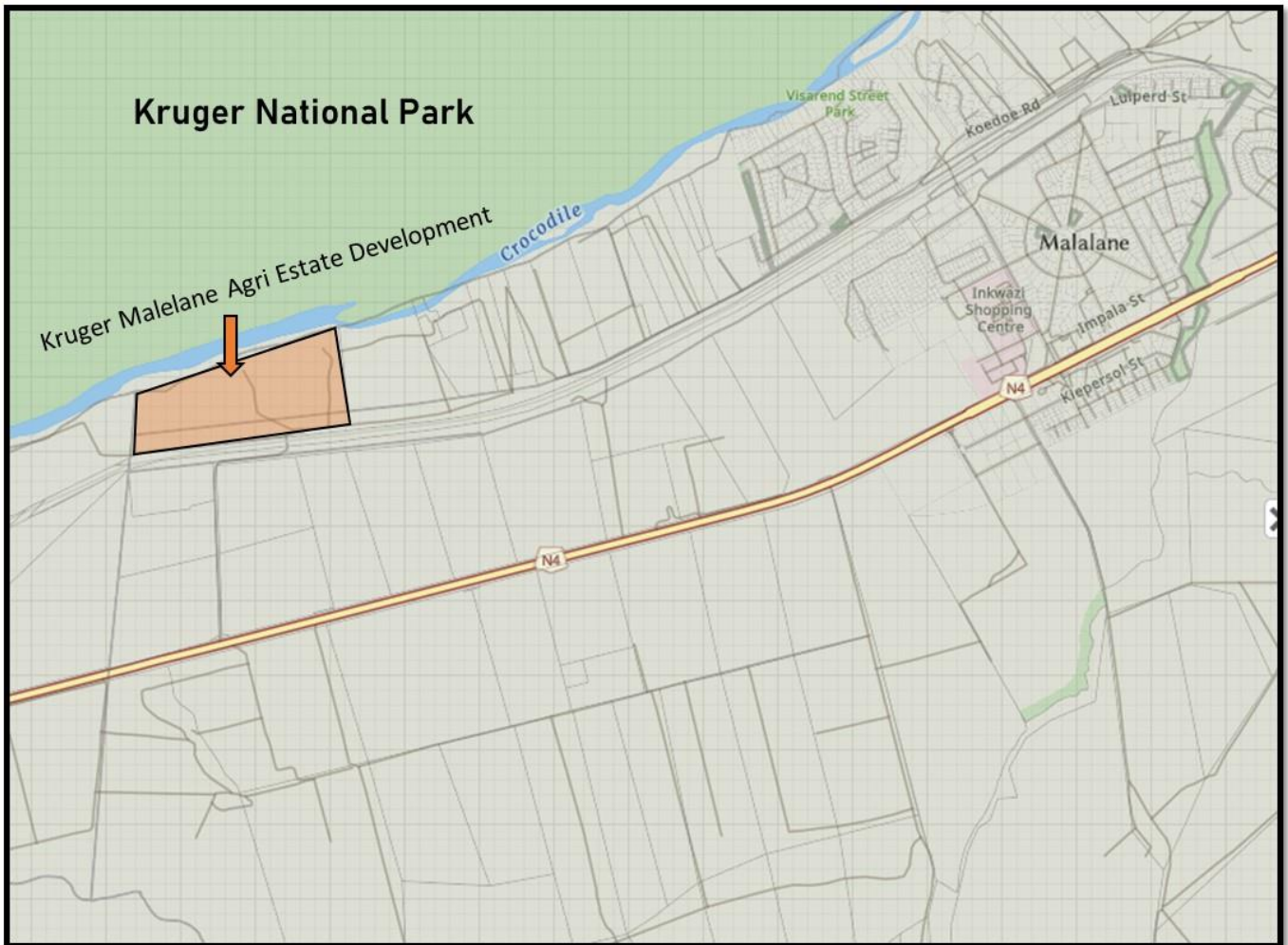


Figure 4: The proposed Kruger Malelane Agri Estate Development site (orange rectangle), illustrating the surrounding areas of importance.

An agricultural area over the aforementioned 25 subdivisions will be subject to an agricultural lease. The project will thus have both a “residential” as well as an agricultural component.

The property has in the past been used for agricultural purposes (Figure 3) and it was therefore decided to retain 20ha for agriculture, which will be an economical irrigation unit in terms of the standards of Department of Agriculture, Land Reform and Rural Development (DALRRD).

The project proposal is that 20 ha (with 12.4 ha listed water) still functions as agricultural via a long-term lease. Agriculture can thus be “classified as the dominant use as more than 71% of the property will still be utilised for agriculture. Planting of Macadamia orchards will improve and ensure the sustainable continued use of the property for agriculture (Gouws, 2017).

Proposed access bridge

The study area is bordered by a non-perennial drainage feature to the east, by a railway line to the south, by a wholesale nursery to the west and by the Crocodile River to the north. The ground surface drains via sheetwash and the drainage feature drains towards the north in the direction of the Crocodile River at an average gradient ranging of some 5%.

As part of the proposed development a small dam wall (that will also serve as a river crossing) at **an existing low water bridge** is considered.

In order to access the property in the NE boundary of the project area, the existing crossing needs to be raised to a level that aligns with the proposed new roadway which will service the riverfront stands. The most cost-effective way to achieve this, is by backfilling the affected area. This will result in the damming of the area to the south of the stream crossing. It is important that every measure be taken to ensure that the impact of this crossing is minimised.

The inclusion of the dam into the project will have many additional benefits over and above the necessity to provide access to the property in the NE corner of the property. The dam created by the access wall will enhance the overall experience of a lifestyle estate. It is an intention to create walks and picnic areas around the dam so that the property owners will be able to enjoy the birds, riverine environment and water features that this type of environment will encourage. The dam will also add an aesthetic charm to the property.

On the other hand, this proposed dam wall may create a migration barrier to fish and a study was initiated to assess the potential migratory impact of this proposed dam and determine the necessity and priority of implementing a fishway at the proposed structure (Kotze, 2021).

This stream may have been a seasonal drainage line under natural conditions and has been altered (made perennial) by irrigation return flows (sugar cane). An existing low-water bridge located on the property and in close proximity to the inflow of the Crocodile River (approximately 100m) already creates a migration barrier (due to drop/height during low flows and high velocity through pipes during high flows) (Figure 5a).

The stream, upstream of the current and hence proposed dam that can be used by aquatic biota, is only approximately 650m long. Upstream of the train bridge the catchment has been radically transformed by sugarcane (Figure 5c and d). Irrigation return flows are transported in a canal along the railway line that flows into the stream at the railway bridge. The canal is of no habitat value to fish and another migration barrier to movement (due to continuous high velocity over long distance) (Figure 5b).

The stream in its current state is highly transformed from its natural state, and it is estimated that the return flows have created a perennial stream that was once only a seasonal/ephemeral drainage line.

The habitat available within the approximately 650m of river is also in a poor state due to sedimentation and alien vegetation encroachment in the riparian zone and is generally of limited value to aquatic fauna.

Although this stream provides some refugia for fish (utilised by opportunistic biota because of the artificial habitat created by the return flows), it is thought to be of very limited ecological value (due to the short reach and relative low diversity) (Kotze, 2021).



Figure 5 (Kotze, 2021):

a: Existing bridge (barrier)

b and c: Canal / irrigation return flows (upstream of railway bridge).

d: Radically transformed upstream catchment (upstream of railway bridge).

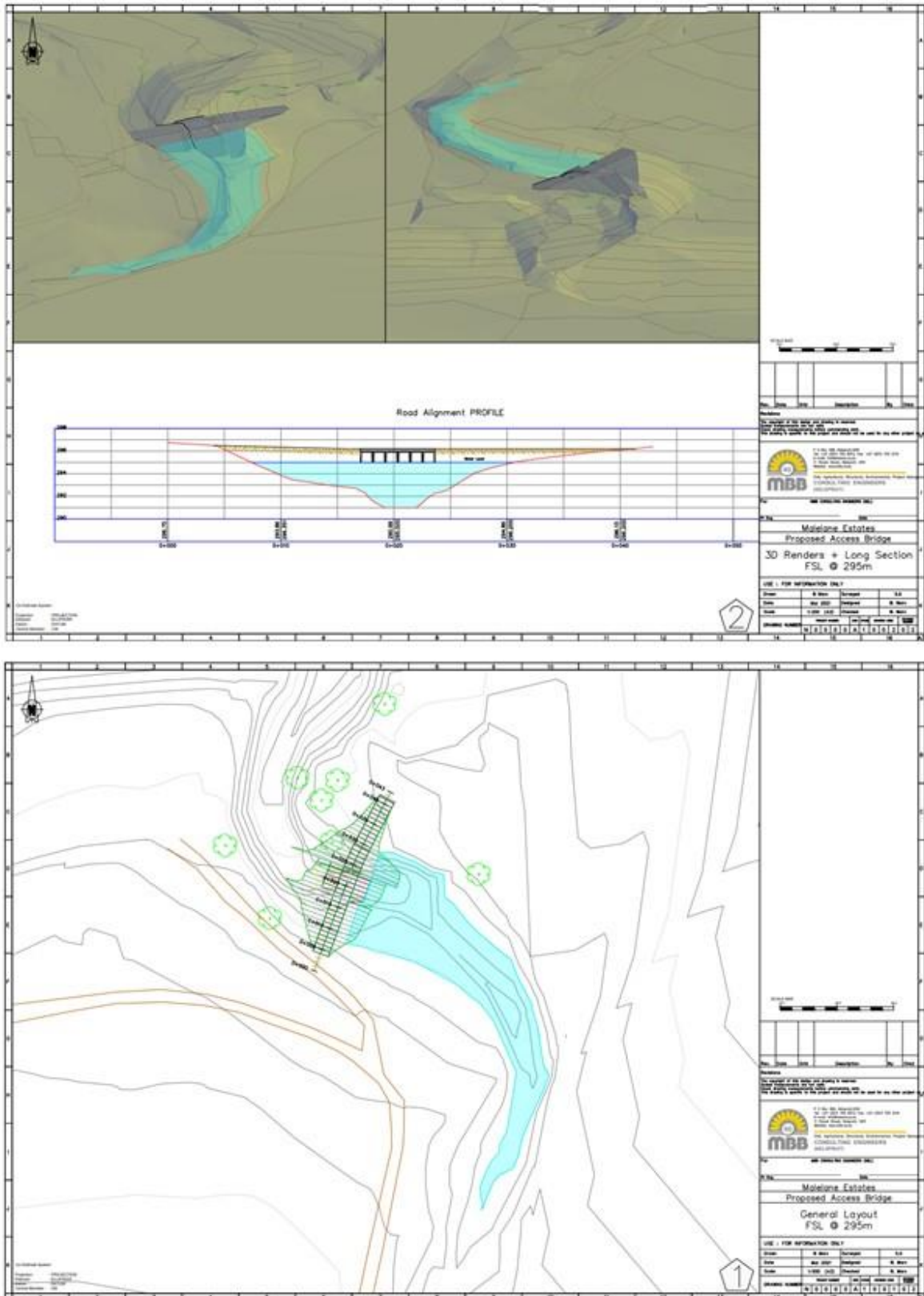


Figure 6: The general layout of the proposed access bridge in the Kruger Malelane Agri Estate Development unnamed drainage line.

1.2 Legislative requirements

The new Environmental Impact Assessment Regulations came into effect on the 4 December 2014. These regulations were amended in 2017 and with this in mind it is proposed that the procedure as described in Chapters 4 and 6 of Notice 326 and Listed in Government Gazette No. 40772, published on 7 April 2017 is followed. Notice is given in terms of Regulation 41 of this notice to carry out the following activities:

Property Description and Location:

Rural Residential and Agriculture Estate: Remainder Portions 8, 13 and 14 of Malelane Estate A 180 JU 4km from Malelane town. In terms of Government Notices 327, 325 and 324 an Environmental Impact Assessment is required in terms of the following listed activities that the applicant wishes to implement:

Government Notice: 327 of 7 April 2017 Gazette Number: 40227:

Activity 12: The development of-

(iii) bridges and or

(iv) dams, where the dam infrastructure and water surface area exceed 100sqm in size, where such development occurs - (a) within a water course or (c)within 32m of a water course.

Activity 19: The infilling or depositing of any material of more than 10 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock, of more than 10 cubic metres from-(i) a watercourse.

Activity 27: The clearance of an area of 1 hectare or more, but less than 20ha, of indigenous vegetation.

Activity 28: Residential, mixed, retail, commercial, industrial or institutional developments where such land was used for agriculture, game farming, equestrian purposes or afforestation on or after 1 April 1998 and where such development: (ii) will occur outside an urban area, where the total land to be developed is bigger than 1 hectare.

Government Notice: 324 of 7 April 2017 Gazette Number: 40227:

Activity 2: The development of reservoirs, excluding dams, with a capacity of 250 cubic metres or more in (f) Mpumalanga (ii) outside urban areas in (ff) areas within 10 kilometres of a National Park as identified in terms of NEMPAA.

Activity 4: The development of a road wider than 4 metres with a reserve less than 13.5 metres in (f) Mpumalanga (i) outside urban areas in (gg) areas within 10 kilometres of a National Park as identified in terms of NEMPAA.

Activity 12: The clearance of an area of 300 sqm or more of indigenous vegetation except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan.

Activity 14: The development of-(i) dams ..and infrastructure exceeding 10 sqm in size or (ii) infrastructure or structures with a physical footprint of 10 sqm or more where such development occurs- (a) within a water course or (c) ...within 32m of a water course, in (f) Mpumalanga (i) outside urban areas in (hh) areas within 10 kilometres of a National Park as identified in terms of NEMPAA.

Activity 18: The widening of a road by more than 4 metres or the lengthening of a road by more than 1 kilometre in (f) Mpumalanga (i) outside urban areas in (gg) areas within 10 kilometres of a National Park as identified in terms of NEMPAA.

1.3 Terms of Reference

Project Proposal: A development on the property Malelane Estates 140JU. This project is prepared for a Specialist Study for an EIA: An assessment of the local Ecology (fauna and flora) and an Environmental Evaluation of the 30-ha project area. The following services/specialist components will be addressed:

1: Specialist Studies for the EIA.

Specialist reports and reports on specialist processes as per EIA Regulations will be addressed and the following specialist reports will be completed for the EIA report:

1a: Vegetation studies (according to the MTPA Minimum Requirements). Establish historic location of original riparian vegetation. A Wetland Delineation report for the riparian corridor of the Crocodile River and other wetlands (according to methodology prescribed by DWS), with their scientific determined buffers in place. All these features need GPS boundaries, so that they could be overlain on a plan.

1b: Faunal studies (according to the MTPA Minimum Requirements), including herpetofauna, avifauna and mammals. Establish sensitivity of the landscape and determine potential habitats for local fauna.

2. General Reporting

- **Master Layout Plan:** Planned infrastructure will be included (supplied by the developers), and flood lines will be supplied (requested from the Engineer). All these features need GPS boundaries, so that they could be overlain on a plan.
- Discuss existing land and water use impacts (and threats) on the characteristics of the area.
- List and map sensitive environments in proximity of the project locality-sensitive environments.
- Suggest and discuss mitigation measures relating to the proposed project.

1.4 Database Review - an indication of the quality and age of base data used for the specialist report;

The following sources of information provided important information for the area as a whole.

Biota:

- Conservation-important biota listed for the quarter-degree grid 2531CB in the Mpumalanga Tourism & Parks Agency's (MTPA) (2021).
- Mpumalanga Species of Conservation Concern 2018.
- Protected species as listed under the Mpumalanga Nature Conservation Act (MNCA) (No. 10 of 1998), or the National Environmental Management: Biodiversity Act Threatened or Protected Species (NEMBA ToPS) (No. 10 of 2004).

Plants:

- List of all protected tree species, Government gazette, 2019.
- MTPA Minimum Criteria Guideline
- Vegetation Map for South Africa, Lesotho and Swaziland (Mucina & Rutherford, 2006).
- Riparian delineation and habitat evaluation was undertaken according to the DWAF Guidelines (2005) and DWAF updated manual (2008).
- Plants of South Africa (POSA) data from the South African National Biodiversity Institute (SANBI) (2021).
- SANBI Red List of South Africa 2021.

- Buffer Zone Tools (Macfarlane and Bredin, 2017).

Aquatic Macro-invertebrates

- Level I Ecoregion and the geomorphological zone, according to the method of Dallas (2007).
- SASS5 sampling technique (Dickens and Graham 2002).
- Aquatic habitat assessment (Kleynhans & Louw, 2008).

Fish:

- Fish distribution data sourced from the South African Institute for Aquatic Biodiversity (SAIAB), the Mpumalanga Tourism and Parks Agency (MTPA) 2020.
- Red Data: IUCN, 2019.
- Aquatic ecosystem classification, Ollis *et al.* (2013).
- MTPA Minimum Criteria Guideline.
- Fish reference Frequency of Occurrence (FROC) database (Kleynhans, Louw, & Moolman, 2007).
- Fish Response Assessment Index (FRAI) (Kleynhans 1999; Kleynhans *et al.* 2005).

Frogs:

- Red Data: IUCN, 2019.
- Du Preez, L. & Carruthers, V. 2009.
- Frog atlas project (Minter *et al* 2004).
- Detailed frog distribution records (Jacobsen 1989).

Reptiles:

- Reptile Atlas Project - Animal Demographic Unit (ADU), 2010.
- Atlas and Red List of the Reptiles of South Africa, Lesotho and Swaziland: Bates, et al, 2014.
- Red Data: IUCN, 2019.

Birds:

- Red Data: IUCN, 2019.
- Harrison, et al. 1997.
- MTPA Minimum Criteria Guideline
- Important bird areas of southern Africa (Barnes, K.N. (ed.), 1998)

Mammals:

- Red list: Child *et al*, 2016.
- Red Data: IUCN, 2019.
- MTPA Minimum Criteria Guideline.

Rivers

- Desktop Present Ecological State, Ecological Importance and Ecological Sensitivity per sub-Quaternary reaches in South Africa (DWS 2014).
- Ecoregion - Water Resource Classification System (DWS, 2005).
- DWS PESEIS documents (DWS, 2014).
- Identification and delineation of wetland and riparian areas – DWS 2005 and 2008, MacKenzie and Rountree, 2007.

General

- Google Earth coverage dated September 2020.
- MTPA. 2014. Mpumalanga Biodiversity Sector Plan Handbook.
- Mpumalanga LUDS maps (BGIS, 2015). Land-Use Decision Support Tool (LUDS) (2020).
- National Web based Environmental Screening Tool (2020).
- Protected areas: <https://www.environment.gov.za/> Register of Protected Areas (PAR).
- DWS Risk Matrix Impact Assessment method (GN 509).

1.5 Assumptions, Limitations and Knowledge gaps

Assumptions, Limitations and Knowledge gaps associated with this study include the following: The assumption has been made that:

- Project proponents will always strive to avoid and mitigate potentially negative project related impacts on the environment, with impact avoidance being considered the most successful approach, followed by mitigation. It further assumes that the project proponents will seek to enhance potential positive impacts on the environment.
- Red List species are, by their nature, usually very rare and difficult to locate. Compiling the list of species that could potentially occur in an area is limited by the paucity of collection records that make it difficult to predict whether a species may occur in an area or not. The methodology used in this assessment is designed to reduce the risks of omitting any species.
- The lists of fauna for the site are based on those observed at the site as well as those likely to occur in the area based on their distribution and habitat preferences. Due to the nature and habits of most faunal taxa it is unlikely that all species would have been observed during a site assessment of limited duration. Therefore, site observations are compared with literature studies where necessary.
- Animal species, especially birds, are mostly highly mobile and often migrate seasonally. Any field assessment of relatively short duration is therefore unlikely to record anything more than the most common species that happen to be on site at the time of the survey. Such field surveys are generally a poor reflection of the overall diversity of species that could potentially occur on site.
- The author is not involved with the decision regarding the construction of the dam related to the permit/license requirements of the National Water Act, 1998 (Act No. 36 of 1998).

1.6 Details of the Author

Dr Andrew Deacon (PhD Zoology) worked as a researcher at Scientific Services, South African National Parks (SANParks, 1989 - 2012). He was initially employed as an Aquatic ecologist to coordinate the multidisciplinary KNP Rivers Research Programme, but later was tasked to manage the monitoring and research programmes for small vertebrate ecology in 15 South African National Parks (including Addo-, Kalahari- and Kruger NP).

As a recognised scientist in the fields of Ichthyology and Terrestrial Ecology, he is currently engaged as a specialist consultant regarding ecological studies. He was involved in numerous research programmes and projects and produced EIA specialist reports (aquatic or terrestrial ecology) for 82 projects. Additionally, he also participated in Aquatic ecosystem projects, Environmental Water Requirement Studies and Faunal and ecosystems monitoring projects.

Apart from multiple environmental projects in South Africa, he has worked on assignments in the Democratic Republic of the Congo, Zambia, Mozambique, Zimbabwe, Namibia and Swaziland. He completed: Wetland Introduction and Delineation Course – Centre for Environmental Management: University of the Free State. He is a registered Professional Natural Scientist (Pr. Sci. Nat.) in the fields of Ecological Science (Reg. no. 116951).

2. Methodology

Methods and approach

This project, and this report, is based on the guidelines provided in the Mpumalanga Biodiversity Sector Plan Handbook (MTPA, 2014). According to the MBSP, “it is important to note that all decisions regarding land-use applications in Mpumalanga are going to be evaluated by the authorities using the CBA maps and data, so it makes sense to consider these proactively, either prior to, or during, the EIA process.”

The methods used in this report were undertaken in accordance with to the MTPA Minimum Criteria Guideline with special emphasis on Protected Species.

Baseline Data

Baseline data were collected during a single field survey undertaken during the dry season (July 2020). During the field survey detailed ecological data were collected and the following fields were covered:

2.1 Riverine Vegetation

2.1.1 Riparian delineation

It is important to differentiate between wetlands and riparian habitats. Riparian zones are not wetlands, however, depending on the ecosystem structure, wetlands can also be classified as riparian zones if they are located in this zone (e.g. valley bottom wetlands). Although these distinct ecosystems will be interactive where they occur in close proximity it is important not to confuse their hydrology and eco-functions.

Riparian delineations are performed according to “A practical field procedure for identification and delineation of wetlands and riparian areas” as amended and published by the Department of Water Affairs and Forestry (2005); (Henceforth referred to as DWAF Guidelines (2005).

Aerial photographs and land surveys were used to determine the different features and riparian areas of the study area. Vegetation diversity and assemblages were determined by completing survey transects along all the different vegetation communities identified in the riparian areas.

Riparian areas are protected by the National Water Act (Act 36 of 1998), which defines a riparian habitat as follows:

- “Riparian habitat includes the physical structure and associated vegetation of the areas associated with a watercourse which are commonly characterised by alluvial soils, and which are inundated or flooded to an extent and with a frequency sufficient to support vegetation of species with a composition and physical structure distinct from those of adjacent land areas.”
- Riparian areas include plant communities adjacent to and affected by surface and subsurface hydrologic features, such as rivers, streams, lakes, or drainage ways. Due to water availability and rich alluvial soils, riparian areas are usually very productive.
- Tree growth rate is high and the vegetation is lush and includes a diverse assemblage of species. The delineation process requires that the following be considered:
 - Topography associated with the watercourse;
 - Vegetation;
 - Alluvial soils and deposited material.

A typical riparian area according to the DWAF Guidelines (2005) is illustrated in Figure 7.

In addition to the DWAF Guidelines (2005) and DWAF updated manual (2008), the unpublished notes: *Draft riparian delineation methods prepared for the Department of Water Affairs and Forestry, Version 1* (Mackenzie & Rountree, 2007) were used for classifying riparian zones encountered on the property according to the occurrence of nominated riparian vegetation species.

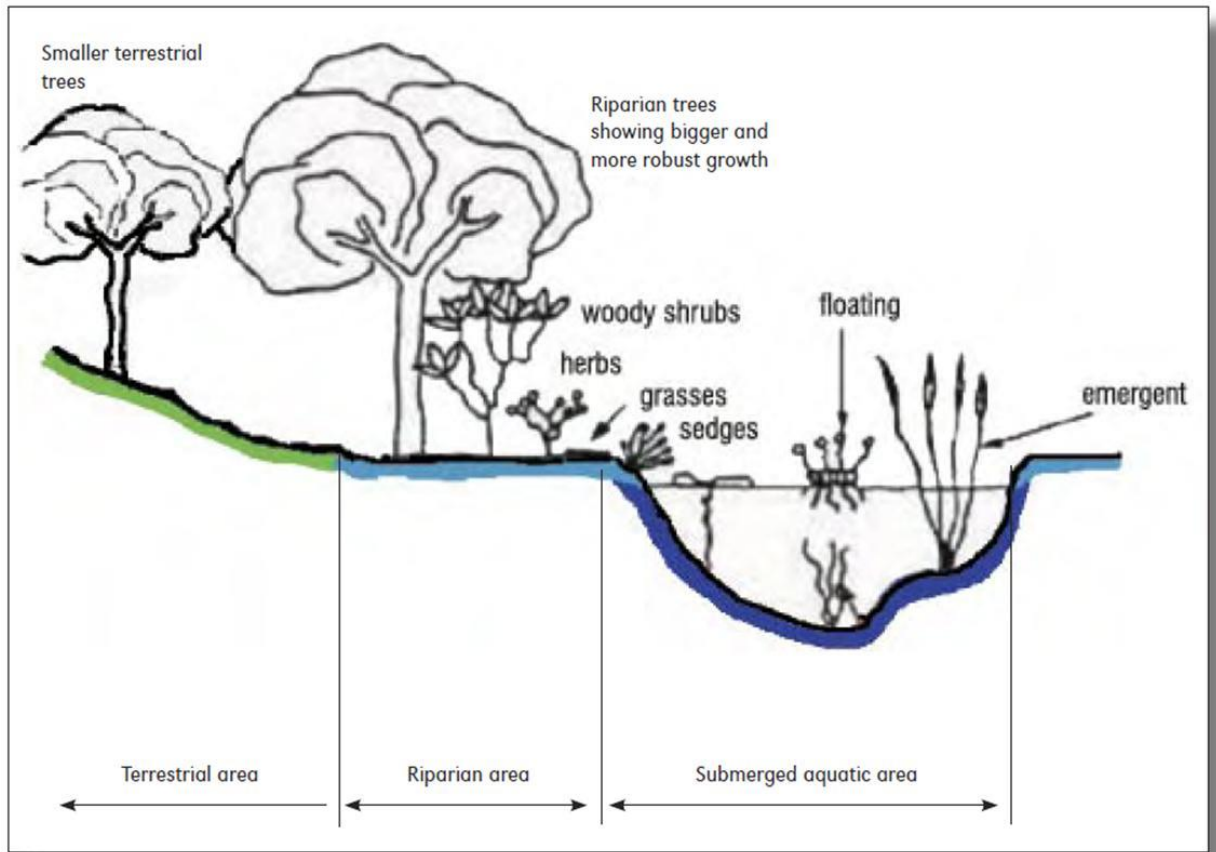


Figure 7: A cross section through a typical riparian area (DWAF Manual, 2008).

2.1.2 Buffers

Aquatic buffer zones are typically designed to act as a barrier between human activities and sensitive water resources thereby protecting them from adverse negative impacts. Buffer zones associated with water resources have been shown to perform a wide range of functions, and on this basis, have been proposed as a standard measure to protect water resources and associated biodiversity (Macfarlane et al, 2015). These functions include:

- Maintaining basic aquatic processes;
- Reducing impacts on water resources from upstream activities and adjoining land uses;
- Providing habitat for aquatic- and semi-aquatic species;
- Providing habitat for terrestrial species; and
- A range of ancillary societal benefits.

Due to their positioning adjacent to water bodies, buffer zones associated with streams and rivers will typically incorporate riparian habitat. Riparian habitat, as defined by the NWA,

includes the physical structure and associated vegetation of the areas associated with a watercourse. These areas are commonly characterised by alluvial soils (deposited by the current river system) and are inundated or flooded to an extent and with a frequency sufficient to support vegetation of species with a composition and physical structure distinct from those of adjacent land areas (Macfarlane et al, 2015).

However, the riparian zone is not the only vegetation type that lies in the buffer zone as the zone may also incorporate stream banks and terrestrial habitats depending on the width of the aquatic impact buffer zone applied. A diagram indicating how riparian habitat typically relates to aquatic buffer zones defined in this guideline is provided in Figure 8.

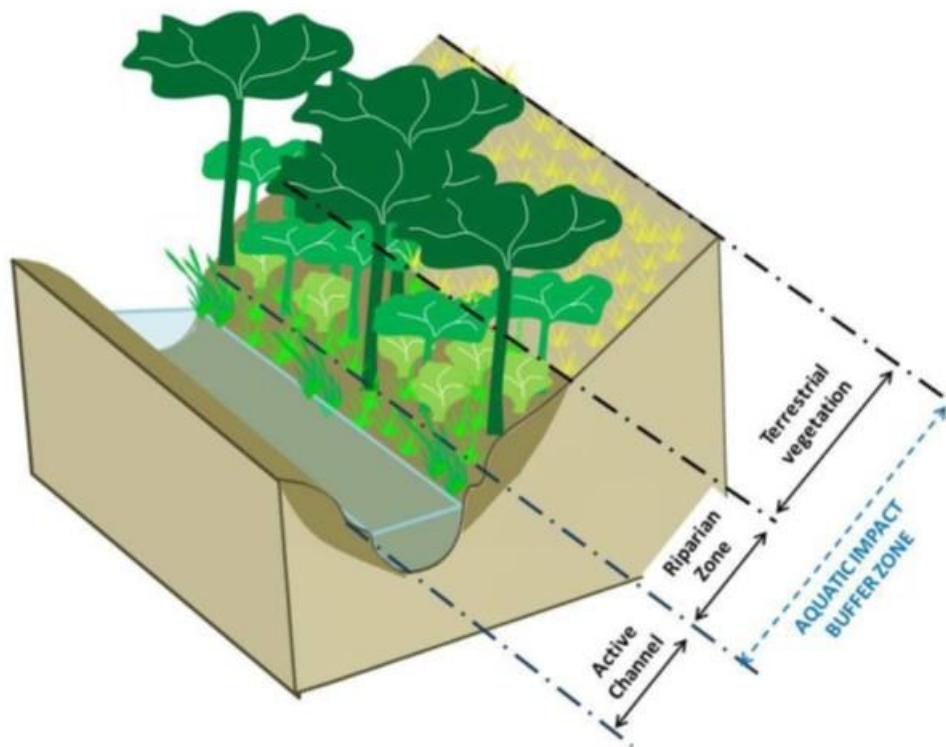


Figure 8: Schematic diagram indicating the boundary of the active channel and riparian habitat, and the areas potentially included in an aquatic impact buffer zone (Macfarlane et al, 2015).

Once an aquatic impact buffer zone has been determined, management measures need to be tailored to ensure buffer zone functions are maintained for effective mitigation of relevant threat/s. Management measures must therefore be tailored to ensure that buffer zone functions are not undermined. Aspects to consider include:

- Aquatic impact buffer zone management requirements;
- Management objectives for the aquatic impact buffer zone; and
- Management actions required to maintain or enhance the aquatic impact buffer zone in line with the management objectives. Activities that should not be permitted in the aquatic impact buffer zone should also be stipulated.

Determining appropriate management and monitoring of buffer zones

A series of Excel based Buffer Zone Tools have been developed to help users determine suitable buffer zone requirements (Macfarlane and Bredin, 2017). These include a rapid desktop tool for determining potential aquatic impact buffer zone requirements together with three site-based tools for determining buffer zone requirements for rivers, wetlands and estuaries.

Central to these tools is a buffer model, which is populated automatically from the data capture sheets provided. This is based on best available science and is used to generate buffer zone recommendations as part of the assessment process. The Overview of the stepwise assessment process for buffer zone determination (Macfarlane and Bredin, 2017) is illustrated in Figure 9.

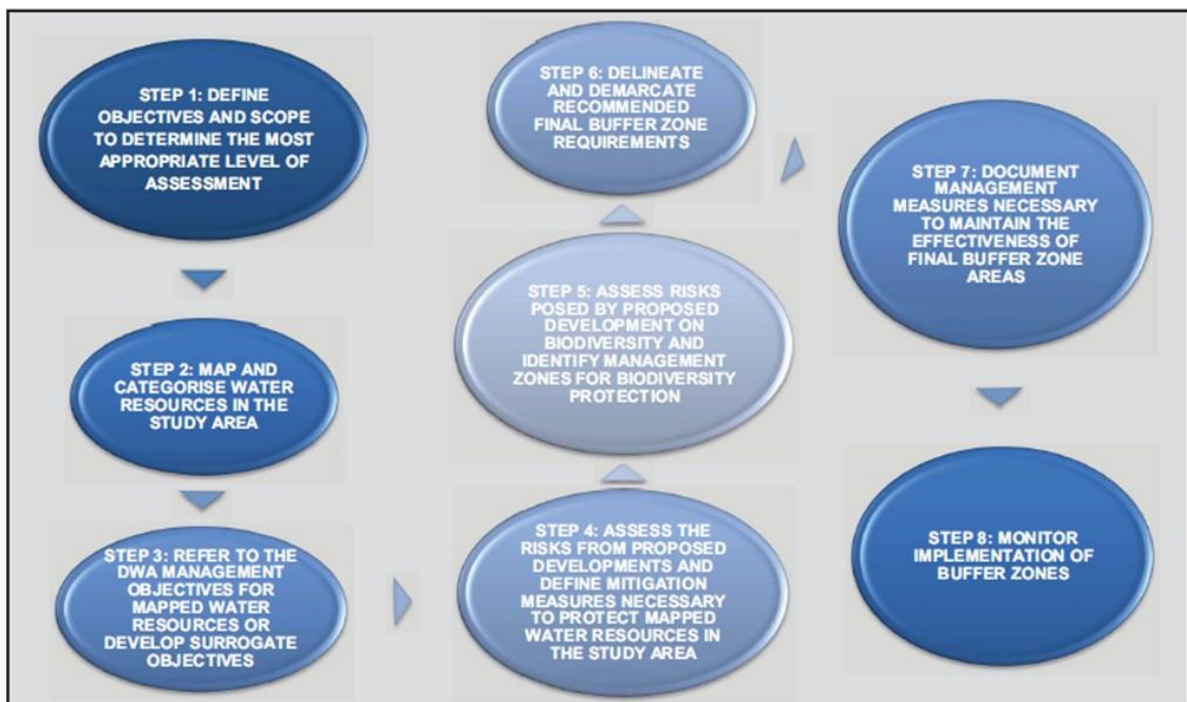


Figure 9: Overview of the stepwise assessment process for buffer zone determination (Macfarlane and Bredin, 2017).

Once a final buffer zone area has been determined, appropriate management measures should be documented to ensure that the water quality enhancement and other buffer zone functions, including biodiversity protection, are maintained or enhanced. Key aspects addressed include:

- Demarcating buffer zones.
- Defining suitable management measures to maintain buffer functions.
- Reviewing the need to integrate protection requirements with social and development imperatives.
- Monitoring to ensure that buffer zones are implemented and maintained effectively.

2.1.3 Riparian habitat surveys (Riparian Vegetation Index — VEGRAI)

The general components of the VEGRAI are specified as following:

- It is a practical and rapid approach to assess changes in riparian vegetation condition.
- It considers the condition of the different vegetation zones separately but allows the integration of zone scores to provide an overall index value for the riparian vegetation zone as a unit.
- The vegetation is assessed based on woody and non-woody components in the respective zones and according to the different vegetation characteristics which include, inter alia:
 - Cover
 - Abundance
 - Recruitment
 - Population structure
 - Species composition
- It provides an indication of the causes for riparian vegetation degradation.
- It is impact based. This means that the reference condition will only be broadly defined and based on the natural situation in the absence of impacts. Where possible, however, reference conditions should be derived based on reference sites or sections.

The index is based on the interpretation of the influence of riparian vegetation structure and function on in-stream habitat.

Although biodiversity characteristics are used in assessing the riparian vegetation condition, it is not a biodiversity assessment index *per se*.

For this study, the Level 3 VEGRAI will be used as Level 3 is applied by the River Health Programme (RHP) and for rapid Ecological Reserve purposes. This level will be aimed at general aquatic ecologists.

2.2 Specialist assessment: Aquatic Studies

2.2.1 Aquatic Ecosystem Classification

Aquatic ecosystems were classified according to a hierarchical system described by Ollis *et al.* (2013).

2.2.2 Aquatic biota surveys

Macro-invertebrates and fish are good indicators of river health. By making use of established and accepted survey methods (SASS5 for invertebrates and FRAI-based surveys for fish) and incorporating the habitat aspects, a proper basis for biological diversity can be obtained.

The different components of the proposed development and its impact on the aquatic environment will be assessed for the river in the project area. The following recognised bio-parameters and methods will be used:

- Aquatic invertebrates: South African Scoring System version 5 (SASS5).
- Fish communities: Fish Response Assessment Index (FRAI). Applicable fish habitat assessments such as the Habitat Cover Ratings (HCR) and Site Fish Habitat Integrity Index (SHI) will be used to assess the habitat potential and condition for fish assemblages.

2.2.2.1 Aquatic invertebrate assessment

Benthic macro-invertebrate communities of the selected sites were investigated according to the South African Scoring System, version 5 (SASS5) approach. An invertebrate net (30cm x 30cm square with 0.5mm mesh netting) was used for the collection of the organisms. The available biotopes at each site will be identified on arrival. Each of the biotopes was then sampled separately and by different methods. Sampling of the biotopes was done as follows:

Stones in current (SIC): Movable stones of at least cobble size (3 cm diameter) to approximately 20 cm in diameter, within the fast and slow flowing sections of the river. Kick-sampling is used to collect organisms in this biotope. This is done by placing the net on the bottom of the river, just downstream of the stones to be kicked, in a position where the current will carry the dislodged organisms into the net. The stones are then kicked over and against each other to dislodge the invertebrates (kick-sampling) for ± 2 minutes.

Stones out of current (SOOC): Where the river is calm, such as behind a sandbank or ridge of stones or in backwaters. Collection is again undertaken using the kick-sampling method, except in this case the net is swept across the area sampled to catch the dislodged biota. Approximately 1 m² is sampled in this way.

Sand: These include sandbanks within the river, small patches of sand in hollows at the side of the river or sand between the stones at the side of the river where flow was slow or no flow was recorded. This biotope is sampled by stirring the substrate, shuffling or scraping of the feet is done for half a minute, whilst the net is continuously swept over the disturbed area.

Gravel: Gravel typically consists of smaller stones (2-3 mm up to 3 cm). Sampling similar to that of sand.

Mud: It consists of very fine particles, usually as dark-coloured sediment. Mud usually settles to the bottom in still or slow flowing areas of the river. Sampling similar to that of sand.

Marginal vegetation (MV): This represents the overhanging grasses, bushes, twigs and reeds from the riverbank. Sampling is undertaken by holding the net perpendicular to the vegetation (half in and half out of the water) and sweeping back and forth in the vegetation (± 2 m of vegetation).

Aquatic vegetation (AQV): Rooted, submerged or floating waterweeds such as *Potamogeton*, *Aponogeton* and *Nymphaea*. Sampled by pushing the net (under the water) against and amongst the vegetation in an area of approximately one square meter.

The organisms sampled in each biotope were identified and their relative abundance is also noted on the SASS5 datasheet. Habitat assessments, according to the habitats sampled, were performed due to the fact that changes in habitat can be responsible for changes in SASS5 scores. This was achieved by applying the SASS orientated habitat assessment indices. The indices used are the Integrated Habitat Assessment System (IHAS) score sheet and the Habitat Quality Index (HQI).

The SASS5 method was used to establish the macro-invertebrate integrity in all three of the main habitat assemblages: stones, vegetation and sand/mud/gravel. The associated habitat types were determined with the Invertebrate Habitat Assessment System (IHAS) and the Habitat Quality Index (HQI).

Although the SASS5 method was used as prescribed by DWS, it must be kept in mind that this method was designed for water quality purposes. Therefore, the macro-invertebrate integrity scores may vary throughout the year as water quality changes, due to flow variation, as should be the case in the pre- and post-construction phases of the monitoring project.

Aquatic invertebrates were sampled using a standard SASS net and identified to at least family level according to the SASS5 sampling technique (Dickens and Graham 2002). The SASS5 results were classified into one of six Present Ecological State categories, ranging from Natural (Category A), to very Critically Modified (Category F). The limits for each category varied depending on the Level I Ecoregion and the geomorphological zone, according to the method of Dallas (2007) (Figure 10).

The quality of each instream habitat where macro-invertebrates were sampled was assessed in terms of the suitability for aquatic macro-invertebrates using a simple, five-point scale (0 = absent; 1=very poor; 5=highly suitable). Each habitat category was assigned weighted importance value that varied according to the geomorphological stream type. The weighted values were multiplied by the suitability rating (0-5), and the results were expressed as a percentage, where 100% = all habitats highly suitable. The percentage values were converted to a category (A to F), to allow easy comparison among sites or sampling events.

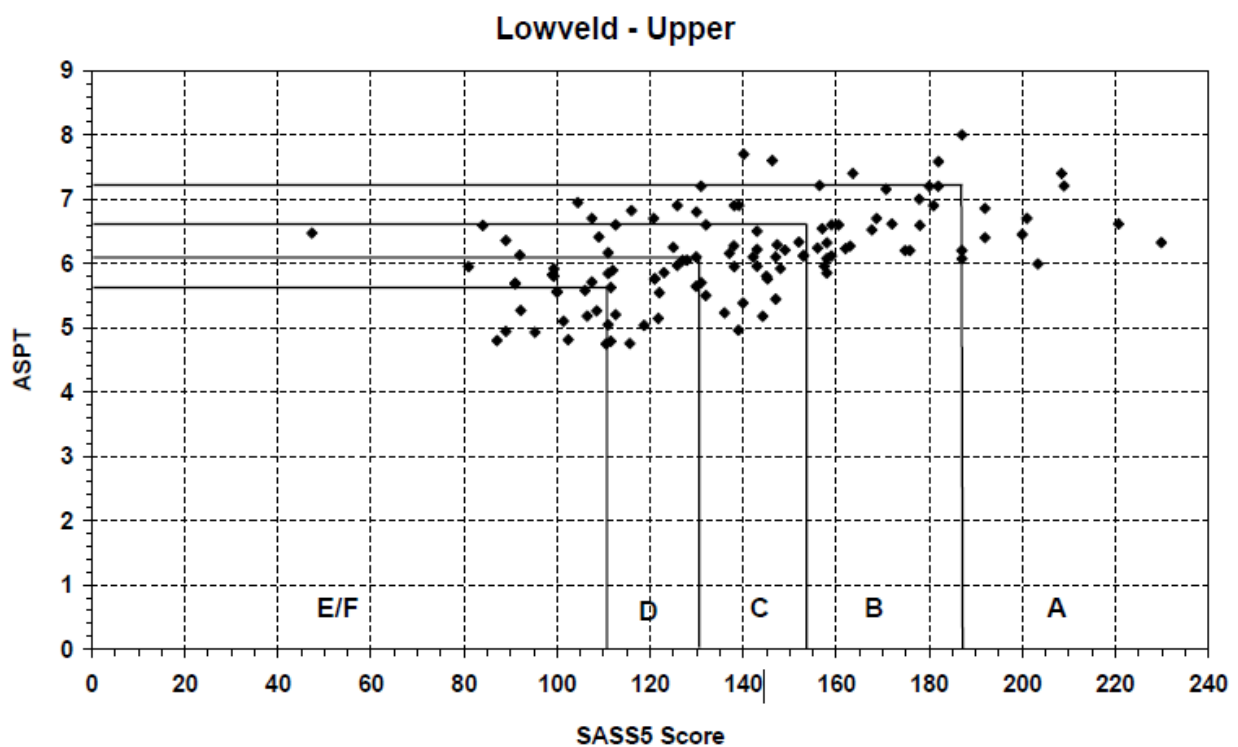


Figure 10. Guidelines used to delineate the Present Ecological State Categories in terms of SASS5 biomonitoring results in the upper portions of the Lowveld Ecoregion (Dallas 2007).

2.2.2.2 Fish communities - Fish Response Assessment Index (FRAI)

The biotic assessment method uses a series of fish community attributes related to species composition and ecological structure to evaluate the quality of an aquatic biota. Data on distribution, richness, length frequency and abundance will be collected. The sampling methods include fish traps, seine nets, mosquito nets and electro-fishing.

Fish segment identification, species tolerance ratings, abundance ratings, frequency of occurrence and health status techniques are applied during this survey to determine the integrity of the fish communities.

On arrival at the site a basic on-site visual appraisal is made of the habitat types available on that particular day at that particular flow. A site diagram is compiled indicating the different habitat types and the various components thereof. Sampling takes place in each of the

different habitat types. These different habitat types are sampled separately using different methods.

a) Electro-shocking

Electro-shocking commences in the downstream component of the habitat. One person uses a backpack electro-shocker for shocking, using a scoop net to catch the stunned fish. The researcher progresses upstream, keeping the fish caught in a bucket until that particular habitat is surveyed. Each habitat shocked is timed. It is necessary to take care (as far as possible) when shocking so as not to disturb the remainder of the habitat still to be surveyed. As each habitat is completed the fish species caught, are identified, recorded and released back into their respective habitat types.

Any fish species that cannot be identified at the time is preserved in 10% formalin (in a sample bottle with label inside) for later identification by experts. The data sheet is completed for that particular habitat – recording every fish, its age class (adult, sub-adult, juvenile) and whether any fish is diseased (e.g. visible ecto-parasites). Each habitat type is recorded (e.g. shoot, riffle or pool etc.), as well as the width, depth, substrate, the extent sampled, the percentage of algae on substrate, whether there was any vegetation and the turbidity. The flow of that particular habitat is classified into one of five flow classes (no flow, slow flow, medium flow, fast and very fast flow).

The electro shocking device is used to sample certain habitat types: shoots, riffles, rapids, shallow- medium depth pools in stream and off stream, runs and back waters.

b) Cast net

A cast net (a weighted circular net that is thrown into the water) is used in pool type or slower flow and deeper habitat types. As with method (a) all aspects of the habitat type are recorded including the fish species, numbers, age class and health. The number of throw efforts per habitat is also recorded.

2.3 Specialist assessment of terrestrial vegetation for the project

In accordance with the accepted proposal for this study, the botanical specialist study presented in the current report was to assess the footprint of the KMAE development. The scope of work will include the Terrestrial- and Riparian Components as per the MTPA Minimum Criteria Guideline with special emphasis on Protected Species, including GPS coordinates for encountered species to facilitate obtaining the necessary permits.

Minimum requirements guidelines from the Mpumalanga Tourism and Parks Agency:

1. A map indicating the total area (ha) of disturbance/transformation on the property, including the proposed development.
2. A map indicating vegetation communities and sensitive areas on the property. The map should include the delineation of a 30m buffer zone around any sensitive areas.
3. A map indicating all surrounding land use on adjacent properties.
4. A list of threatened plants species (Red Data Listed) that may potentially occur in the area should be submitted.
5. A floristic survey should be conducted during the growing season with at least two visits undertaken (\pm November and \pm February). Visits during other seasons will be determined by the flowering and fruiting times of species that do not occur during the summer season.
6. The MTPA should be supplied with a list of all plant taxa encountered during the surveys. The following should be investigated: threatened species (Red Data Listed), important medicinal species, protected species (Mpumalanga Conservation Act, 1989) as well as endemic taxa.

7. Plants that have been surveyed and which may be of conservation importance should be identified down to species level.
8. The MTPA should be supplied with a detailed list of all threatened species, including their locality information as well as details regarding date, GPS location and spatial resolution.
9. A list of threatened species that could potentially occur but were not found during site visits should be provided separately. In respect of each such species an opinion on the likelihood of that species occurring on the site and the reason for that opinion should be provided.
10. A list of alien plant species occurring on the property should be provided.
11. The invasion extent of category 1 & 2 plants (CARA: Act 43 of 1983, Regulation 15) should be investigated.
12. Any existing or planned eradication programmes of alien vegetation should be indicated in the report.
13. Relocation plans of plants of conservation importance should be included and this relocation should be undertaken by specialists that have expertise in the area of environmental concern (EIA Guideline Document).

Desktop

Vegetation communities and general land use patterns were identified prior to fieldwork using satellite imagery on Google Earth. Conservation-important plant species listed for the quarter-degree grid 2531CB in the Mpumalanga Tourism & Parks Agency's (MTPA) threatened species database, as well as the Plants of South Africa (POSA) data from the South African National Biodiversity Institute (SANBI), were used to produce a list of the most likely occurring species, which were searched for during fieldwork.

Conservation-important plants include those listed as species of conservation concern by the SANBI Red List of South Africa or protected species as listed under the Mpumalanga Nature Conservation Act (MNCA) (No. 10 of 1998), or the National Environmental Management: Biodiversity Act Threatened or Protected Species (NEMBA ToPS) (No. 10 of 2004).

Fieldwork

In accordance with the accepted proposal for this study, the botanical specialist study presented in the current report was to assess the footprint of the KMAE proposed development.

Vegetation communities identified in the desktop phase were ground-truthed during a field visit during July 2020. The project area as well as the surrounding environment was surveyed on foot and dominant plant species were listed according to each of the vegetation communities.

The study area was broadly stratified into major classes on the basis of gradient, aspect, terrain units (e.g. crest, mid-slope and foot slope), rock cover, soils, land-use and vegetation physiognomy.

A total of 8 sites were surveyed and floristic data is summarised in Table 9. Environmental parameters recorded at each stand included the following:

- locality coordinates using a Global Positioning System (GPS) receiver;
- terrain unit (midslope, foot slope, etc.);
- estimated percentage surface rock cover; and
- any visible disturbances (e.g. grazing, fire, old lands).

This floristic classification was used only to guide the identification of the robust 'vegetation units' described in this report, which are based on qualitative and semi-quantitative floristic and habitat data gathered at the sites surveyed during the study.

Parameters such as geology, topography, etc. were also obtained from the relevant topographical-, geological- and soils maps.

For the purposes of this study, the most recent version of the Mpumalanga Biodiversity Conservation Plan (MBCP) map of ecological sensitivity was obtained from the Mpumalanga Tourism and Parks Agency, and the boundaries of the study area were superimposed on this map. The MBCP divides the entire province into the following categories of importance in terms of biodiversity conservation value: 'Irreplaceable', 'Highly Significant', 'Important and Necessary', 'Least Concern' and 'No Natural Habitat Remaining'. **No 'Irreplaceable' or 'Important and Necessary' areas occur within the study area.**

2.4 Specialist assessment of terrestrial fauna

A detailed desktop study on all faunal species recorded in the past was completed and includes a description of red data and protected status according to the IUCN red data list and the National Environmental Management Biodiversity Act (TOPS List). All applicable literature was reviewed and extensive background studies regarding species distributions, habitat preferences and species status were updated accordingly. The potential occurrence of threatened species was also evaluated from historical records, available literature, habitat availability and personal experience. The fauna species list thus represent the majority of species occurring in the study area and provide a solid basis from which the project can continue to develop a comprehensive species list. The following detailed desktop studies and baseline animal assessment were conducted:

- Identification of all animal species expected to be present according to desktop studies of all relevant animal groups, namely birds; herpetofauna (amphibians and reptiles); and mammals. Potential occurrence of fauna in the study area was predicted based on knowledge of known habitat requirements of local fauna species.
- Lists of conservation-important mammals, birds, reptiles and frogs potentially occurring within the proposed agricultural development were prepared using data from the MTPA's threatened species database and applicable literature. The above data was captured mostly at a quarter-degree spatial resolution, but was refined by excluding species unlikely to occur within the study area, due to unsuitable habitat characteristics (e.g. altitude and land-use).
- Identification of all red data protected and conservation important species per animal group and the compilation of distribution maps and GPS coordinates where recorded.
- Design management and monitoring programmes to successfully monitor and manage all red data and protected and/or conservation important species.
- The assessment includes a review of all relevant literature, completion of field surveys, production of specialist reports and development of management recommendations.

The current status of the faunal environment and an evaluation of the extent of site-related effects were determined using selected ecological indicators. At the same time, all rare and endangered species, protected species, sensitive species and endemic species (conservation important faunal species) were identified and used to update and supplement existing studies. Ideally faunal surveys should cover the summer season, stretching from October to February. The surveys were conducted during January 2021. The surveys included the following faunal groups:

Amphibians, reptiles, birds and mammals were surveyed in pre-selected units. Emphasis was placed on fauna with high conservation value and their probability of occurrence in the

unit. These include meticulous searches on fixed transects in all the representative biotopes to assess the presence/absence of amphibians, reptiles, birds and mammal species. Where necessary, special methods were implemented to augment the chances of finding species, including traps, nocturnal spotlight searches and identifying tracks and scats. Special emphasis is placed on finding threatened species.

Minimum requirements guidelines from the Mpumalanga Tourism and Parks Agency:

2.4.1 MTPA: Mammals/Birds

1. The Mpumalanga Biobase Report should be consulted for obtaining background on the conservation value of land and areas of sensitivity within the Mpumalanga Province. This report is obtainable from the Mpumalanga Tourism and Parks Agency (MTPA).
2. A list of all potential species should be submitted. The following should be highlighted for threatened (Red Data) species.
 - i. International Red Data status (Latest version of IUCN Red Data List)
 - ii. National Red Data status (Latest version)
 - iii. Endemic status of each species
 - iv. Protection status of each species (Mpumalanga Nature Conservation Act 10 of 1998)
3. A full survey to determine species richness should be undertaken. The time of year to conduct surveys should depend on the activity pattern of the species. The survey area should not be restricted to the proposed site of development but should include all habitat types over the entire property as well as adjacent areas. These surveys should be performed by specialists with expertise in the area of environmental concern (EIA Guideline document).
4. A list of all species recorded during the survey should be supplied to the MTPA. Species data (GPS point locality, species name and date) should be forwarded to the MTPA.
5. Where total destruction is going to take place:
 - i. Specified faunal species must be captured and relocated to suitable habitat in the area.
 - ii. The operations must be handled by specialists with expertise in the area of environmental concern (GIS Guideline document).
 - iii. Species data (GIS point locality, species name and date) must be forwarded to the MTPA.
6. Maps indicating
 - i. Areas of sensitivity
 - ii. Areas already disturbed/transformed and size (ha)
 - iii. Proposed development and size
 - iv. Land-use on surrounding properties.
 - v. Location of important species as well as roosting and hibernation sites e.g. caves of ecological importance, in relation to the proposed development.
7. Recommendations on buffer zones will only be made once comprehensive species lists have been received and reviewed in the EMP/Scoping Reports.
8. A list of threatened species that can potentially occur but were not found during site visits or surveys should be provided. In respect of each such species an opinion on the likelihood of that species, occurring on the site and the reason for that opinion should be provided.
9. A list of exotic/introduced vertebrate species occurring on the property should be provided.
10. An ethically accepted plan for the eradication or removal of any exotic/introduced species posing a threat to indigenous species should be included in the report.
11. Any existing and/or planned actions to prevent free movement/roaming of domestic animals such as dogs, cats, goats and pigs should be provided.

2.4.2 Field surveys and habitat evaluation.

Terrestrial vertebrate surveys

Amphibians, reptiles, birds and mammals were surveyed in pre-selected units. Emphasis was placed on fauna with high conservation value and their probability of occurrence in the unit. These include meticulous searches on fixed transects in all the representative biotopes to assess the presence/absence of amphibians, reptiles, birds and mammal species. Where necessary, special methods were implemented to augment the chances of finding species, including traps, nocturnal spotlight searches and identifying tracks and scats. Special emphasis is placed on finding threatened species.

- **Amphibian surveys**

Visual encounter surveys and audio monitoring are appropriate techniques for both inventory and monitoring of amphibian species. Both visual and auditory surveys were conducted along all transects, in plots, along streams and around ponds. Most amphibians are detectable in this manner. To ensure a comprehensive inventory, all possible microhabitats were also searched, namely: soil, water, tree trunks and beneath rocks, during both the day and at night.

- **Reptile surveys**

The most practical way to monitor reptiles, over large areas, is to sample along transects and systematically search encountered refuge areas. Transects were surveyed in different habitats and all "cover" objects within a specified distance of the line turned over and checked. One particular strength of transect monitoring is that it can be used to relate reptile abundance to habitat variables, such as vegetation and cover. The main objective of the survey is not to find as many reptiles as possible, but to get a reliable estimate of available habitat and quality of shelter and to compare these with expected reptiles and their required suite of habitat types.

- **Bird surveys**

Transects are probably the most widely used method of estimating the number of bird species in terrestrial habitats. Traditionally, observers will move along a fixed route undertaking surveys and recording the birds they see on either side of the route. For small birds, which are usually relatively numerous, a transect width of 10m on either side of the route (or 20-30m in open habitats) was found to be suitable for this study.

Transects were placed in such a way that all dominant soil and associated habitat types were adequately covered. Birds outside the transect band or those flying over were noted. Surveys always commenced at first light when avian activity was at its peak. Bird calls are equally important in bird surveys and especially important during point counts in rugged terrain and dense bush where visual observations are limited. Point surveys can also be used within wide open areas where birds can be spotted from a distance, for example pans and grassland flats.

- **Mammal surveys**

The same line-transects were surveyed on foot to monitor diurnal mammal species. Each sighting as well as the related vegetation features were recorded to establish habitat preferences. All major habitat types were assessed. Visual sightings, as well as all signs of mammal presence (tracks and scats) were used as indicators of presence for some species.

- **Habitat surveys**

Representative habitat transects within the study area were surveyed. Macro- and micro-habitat surveys were conducted to assess the quality of habitat and its potential to support various faunal species.

In assessing the habitat profiles in conjunction with the distribution data per species, accurate information on the probability of the species occurring in the relevant biotopes was obtained. Thus, a list of expected species for the different biotopes in the survey area was compiled and compared with the fauna observed during monitoring surveys.

The information obtained from the micro-habitat surveys was used to support the prediction abilities of the process. To this end, quality and quantity of habitat aspects provide an indication of species abundance, while presence or absence of habitat aspects indicates the probability of species occurrence. Habitat quality classifications could be a useful indication of resource utilisation (especially in adjacent areas).

The quality of baseline data is considered reasonable and appropriate for the purposes of this report.

2.4 Impact Assessment methodology

2.4.1 Mpumalanga Biodiversity Sector Plan (MBSP) and Threatened Ecosystems

It is important to note that all decisions regarding land-use applications in Mpumalanga are going to be evaluated by the authorities using the CBA maps and data (Figures 39 to 31), so it makes sense to consider these proactively, either prior to, or during, the EIA process (MBSP Handbook, 2014).

The following are extracts from the MBSP Handbook (2014) provided as background to our approach: “Environmental assessment is used to determine the broad ‘environmental fit’, and ecological sustainability of proposed land-use changes. It also establishes the biodiversity context within which a change in land-use is being contemplated and against which its likely impacts (both site-based and cumulative) must be assessed. CBA maps and their associated land-use guidelines provide a proactive and scientific basis for assessing the potential impacts of proposed land-uses and play an important role in providing a biodiversity-sensitive perspective in this process.”

Preliminary systematic biodiversity plans will help ascertain whether any habitat modification will contribute to cumulative impacts and compromise biodiversity targets for specific ecosystems or species, or by contributing to habitat fragmentation and degradation of ecological processes.

<p>1</p> <p>Prepare for the site visit</p>	<p>Purpose: To determine the biodiversity context of the proposed land-use sites (using CBA maps, land-use guidelines and underlying GIS layers)</p>		
		<p>Establish how important the site is for meeting biodiversity targets? (Is it in a CBA or ESA)</p>	
		<p>Assess if the proposed land-use is consistent with the desired management objectives for the site (Use the land-use guidelines)</p>	
		<p>Find out if threatened or other red data-listed species or ecosystems are present</p>	
<p>2</p> <p>Conduct the site visit</p>	<p>Purpose: To Ground-truth the CBA maps and conduct additional biodiversity assessments</p>		
	<p>Compare mapped land cover with observed land cover at the site</p>	<p>Record observed features in site assessment report</p> <p>Further planning to proceed using ground-truthed land cover</p>	
	<p>Compare mapped CBA or ESA features with ground-truthed ones</p>	<p>Verify biodiversity features, paying special attention to locality and ecosystem threat status of CBA wetlands, and functionality of ecological corridors; report any discrepancies between mapped and observed features to MTPA</p>	
	<p>Identify compromises and solutions that minimise impacts on biodiversity and conflicts in land-use</p>	<p>Retain natural habitat and connectivity in CBAs and ESAs</p>	
		<p>Apply the mitigation hierarchy</p>	
		<p>Secure priority biodiversity in CBAs and ESAs through biodiversity stewardship</p>	
		<p>Remedy degradation and fragmentation through rehabilitation</p>	
		<p>Promote long-term persistence of taxa of special concern</p>	
	<p>3</p> <p>Assess impact on biodiversity</p>	<p>Purpose: To make recommendations regarding the impacts of the proposed land-use development on biodiversity</p>	
		<p>When impacts are likely to be insignificant</p>	<p>Biodiversity specialist to write a brief report that: demonstrates that MBSP has been meaningfully consulted; describes the state of biodiversity at the preferred and alternative sites; describes what the impacts will be (local and landscape-scale); includes a map/maps and interpreted photographs that illustrate likely impacts on biodiversity</p>
<p>When significant impacts are unavoidable</p>		<p>CBAs and ESAs: Treat as 'red flags' and avoid any irreversible loss of habitat; biodiversity specialist, with detailed ToR, to conduct detailed surveys and advise on layout of development; find alternative sites if possible</p> <p>ONAs: biodiversity specialist to survey site for presence of special habitats and species of special concern and take these into account in recommendations</p>	

Figure 11: A summary of the first three steps to be followed in using the CBA maps proactively in environmental impact assessments.

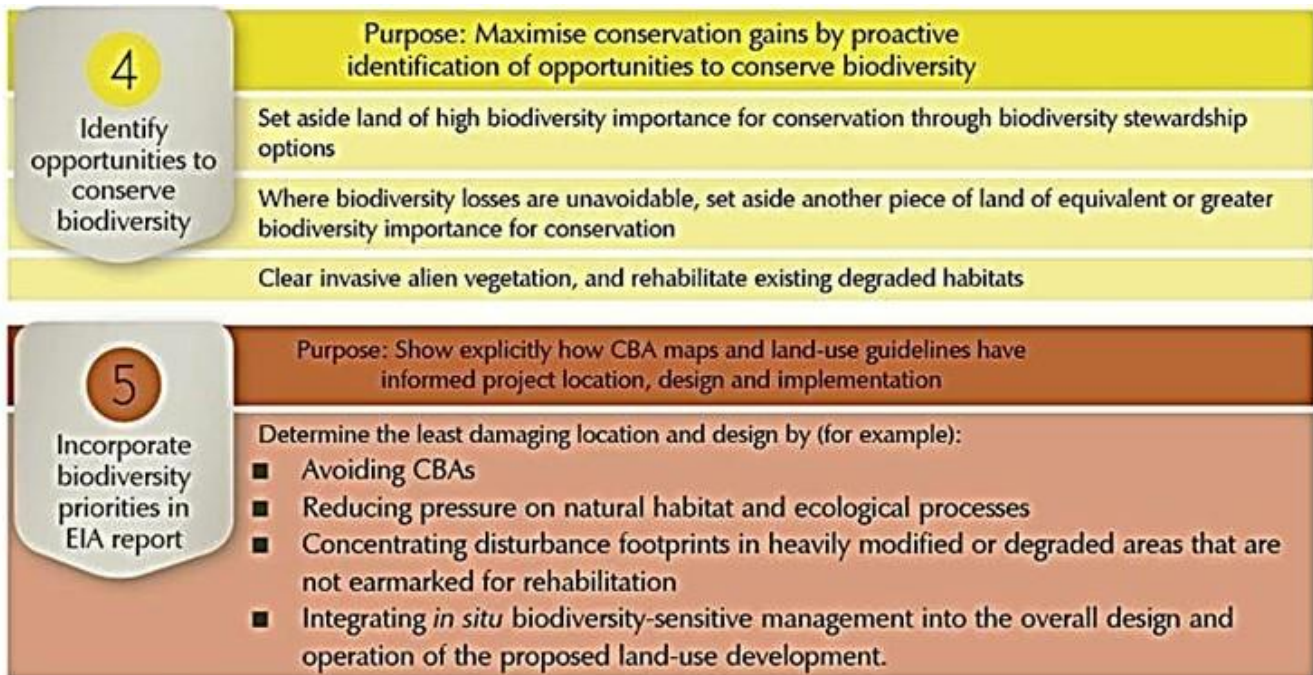


Figure 12: A summary of steps 4 and 5 to be followed in using the CBA maps proactively in environmental impact assessments.

Explanation of the Mitigation hierarchy

Identify the best practicable environmental options by avoiding loss of biodiversity and disturbance to ecosystems, especially in CBAs, by applying the **mitigation hierarchy** and the land-use guidelines (Figure 13).



Figure 13: The Mitigation Hierarchy consists of 4 steps: avoid and prevent, minimise, rehabilitate and offset.

Spatial data sets that indicate Critical Biodiversity Areas

To establish how important the site is for meeting biodiversity targets, a number of resources and tools are used as prescribed by the Mpumalanga Biodiversity Sector Plan (MBSP) (Mpumalanga Biodiversity Sector Plan, 2014). Specifically, the Land-Use Decision Support Tool (LUDS) and the MBCP are extensively used to compile the LUDS Report (BGIS, 2016). LUDS was developed to facilitate and support biodiversity planning and land-use decision-making at a national and provincial level. Its primary objective is to serve as a guideline for biodiversity planning but should not replace specialist ecological assessments.

Critical Biodiversity Areas (CBAs) are areas of the landscape that need to be maintained in a natural or near-natural state in order to ensure the continued existence and functioning of species and ecosystems and the delivery of ecosystem services. If these areas are not maintained in a natural or near-natural state then biodiversity conservation targets cannot be met. Maintaining an area in a natural state can include a variety of biodiversity-compatible land uses and resource uses.

Land-Use Decision Support Tool (LUDS)

To establish how important the site is for meeting biodiversity targets, it is necessary to answer the following three simple but fundamentally important questions:

- How important is the site for meeting biodiversity objectives (e.g. is it in a Critical Biodiversity Areas (CBA) or Ecological Support Area (ESA)?
- Is the proposed land-use consistent with these objectives or not (to be checked against the land-use guidelines)?
- Does the sensitivity of this area trigger the requirements for assessing and mitigating environmental impacts of developments, or in terms of the listed activities in the EIA regulations?

2.4.2 Habitat sensitivity assessment

Much of the current conservation effort in South Africa is focused on promoting land-use practices that reconcile development opportunities and spatial planning at a landscape scale, with the over-arching goal of maintaining and increasing the resilience of ecosystems. This 'landscape approach' to biodiversity conservation involves working within and beyond the boundaries of protected areas to manage biodiversity within a mosaic of land-uses (MBSP: Lötter et al, 2014).

Initially an ecological sensitivity map of the project area was produced by integrating the information collected on-site with the available ecological and biodiversity information available in the literature and various relevant reports. This includes delineating the different vegetation and habitat units identified in the field and assigning sensitivity values to the units based on their ecological properties. Additionally, values and potential presence of vegetation and fauna species diversity, as well as species of conservation concern, were evaluated.

A three-step methodology was used to identify ecosystems:

- Step 1: Identify clusters of very high Irreplaceability planning units from the systematic biodiversity plan.
- Step 2: Delineate ecosystems using ecological, topographical and/or geological features.
- Step 3: Assess the threat value (high to low) for each ecosystem based on data Included In the systematic biodiversity planning process, to categorise as critically endangered, endangered or vulnerable respectively.

Five, broad-scale botanical biodiversity 'sensitivity' categories were identified and were developed for practical mapping purposes (Table 1). They are intended as a summary of the perceived botanical biodiversity value and sensitivity, of mapped broad-scale vegetation and land-cover type units. Based on the assessment, the sensitivity of the project footprint can be divided into five categories of sensitivity: Very high, High, Moderate, Low and Negligible.

The purpose of producing a habitat sensitivity map is to provide information on the location of potentially sensitive biodiversity features in the study area, including areas of natural vegetation, habitat types supporting important biodiversity features or high diversity, areas supporting important ecological processes and habitat suitable for any species of conservation concern.

An explanation of the different sensitivity classes is given in Table 1. Areas containing untransformed natural vegetation of conservation concern, high diversity or habitat complexity, Red List organisms or systems vital to sustaining ecological functions are considered potentially sensitive. In contrast, any transformed area that has no importance for the functioning of ecosystems is considered to potentially have low sensitivity.

Table 1: Explanation of sensitivity ratings.

Sensitivity	Factors contributing to sensitivity	Example of qualifying features
VERY HIGH	<ul style="list-style-type: none"> • Indigenous natural areas that are highly positive for any of the following: • Presence of threatened species (Critically Endangered, Endangered, Vulnerable) and/or habitat critical for the survival of populations of threatened species. • High conservation status (low proportion remaining intact, highly fragmented, habitat for species that are at risk). • Protected habitats (areas protected according to national/provincial legislation, e.g. National Forests Act, Draft Ecosystem List of NEMBA, Integrated Coastal Zone Management Act, Mountain Catchment Areas Act, Lake Areas Development Act) • And may also be positive for the following: • High intrinsic biodiversity value (high species richness and/or turnover, unique ecosystems) • High value, ecological goods & services (e.g. water supply, erosion control, soil formation, • carbon storage, pollination, refugia, food production, raw materials, genetic resources, cultural value) • Low ability to respond to disturbance (low resilience, dominant species very old). 	<ul style="list-style-type: none"> • CBA areas. • Remaining areas of vegetation type listed in Draft Ecosystem List of NEMBA as Critically Endangered, Endangered or Vulnerable. • Protected forest patches. • Confirmed presence of populations of threatened species.
HIGH	<ul style="list-style-type: none"> • Indigenous natural areas that are positive for any of the following: • High intrinsic biodiversity value (moderate/high species richness and/or turnover). Presence of habitat highly suitable for threatened species (Critically Endangered, Endangered, Vulnerable species). • Moderate ability to respond to disturbance (moderate resilience, dominant species of intermediate age). • Moderate conservation status (moderate proportion remaining intact, moderately fragmented, habitat for species that are at risk). • Moderate to high value ecological goods & services (e.g. water supply, erosion control, soil formation, carbon storage, pollination, refugia, food production, raw materials, genetic resources, cultural value). • And may also be positive for the following: 	<ul style="list-style-type: none"> • Habitat where a threatened species could potentially occur (habitat is suitable, but no confirmed records). • Confirmed habitat for species of lower threat status (near threatened, rare). • Habitat containing individuals of extreme age. • Habitat with low ability to recover from disturbance. • Habitat with exceptionally high diversity (richness or turnover). • Habitat with unique species composition and narrow distribution. • Ecosystem providing high value ecosystem goods and services.

	<ul style="list-style-type: none"> Protected habitats (areas protected according to national / provincial legislation, e.g. National Forests Act, Draft Ecosystem List of NEMBA, Integrated Coastal Zone Management Act, Mountain Catchment Areas Act, Lake Areas Development Act). 	
MEDIUM-HIGH	<ul style="list-style-type: none"> Indigenous natural areas that are positive for one or two of the factors listed above, but not a combination of factors. 	<ul style="list-style-type: none"> Corridor areas. Habitat with high diversity (richness or turnover). Habitat where a species of lower threat status (e.g. (near threatened, rare) could potentially occur (habitat is suitable, but no confirmed records).
MEDIUM	<ul style="list-style-type: none"> Other indigenous natural areas in which factors listed above are of no particular concern. May also include natural buffers around ecologically sensitive areas and natural links or corridors in which natural habitat is still ecologically functional. 	
MEDIUM-LOW	<ul style="list-style-type: none"> Degraded, secondary or disturbed indigenous natural vegetation. 	
LOW	<ul style="list-style-type: none"> No natural habitat remaining. 	

A Biodiversity Sector Plan can be used to guide conservation action (such as identifying priority sites for expansion of protected areas), or to feed spatial biodiversity priorities into planning and decision-making in a wide range of cross-sectoral planning processes and instruments such as provincial and municipal integrated development plans and spatial development frameworks, land-use management schemes, environmental management frameworks and environmental management plans (MBSP: Lötter et al, 2014).

2.4.3 Impact Rating Methodology

It is the goal of the impact assessment process to determine the significance of potential environmental impacts associated with the proposed development. The significance of an impact is defined as a combination of the consequence of the impact occurring and the probability that the impact will occur. Each impact was evaluated individually, however the possibility of a cumulative impact was also considered and evaluated accordingly.

The potential impacts or risks associated with the proposed development were assessed based on the following criteria:

- Applicable phase: Construction, Operational, (Decommissioning)
- Nature of impact: Provides a description of the expected impacts (Negative, neutral or positive)

The criteria used to determine impact consequence are presented in the table below.

Table 2: Criteria used to determine the consequence of the impact.

Rating	Definition of Rating	Score
A. Extent - the area over which the impact will be experienced		
Site	Confined to the site, or part thereof	1
Local	Effect limited to 3 to 5km of the site	2
Regional	Effect will have an impact on a regional scale.	3
B. Intensity - the magnitude of the impact in relation to the sensitivity of the receiving environment, taking into account the degree to which the impact may cause irreplaceable loss of resources		
Low	Site-specific and wider natural and/or social functions and processes are negligibly altered	1
Medium	Site-specific and wider natural and/or social functions and processes continue albeit in a modified way	2
High	Site-specific and wider natural and/or social functions or processes are severely altered	3
C. Duration - the timeframe over which the impact will be experienced and its reversibility		
Short-term	Up to 2 years	1
Medium-term	2 - 15 years	2
Long-term	>15 years	3

The scores are then combined (A+B+C) to determine the Consequence Rating (Table 3).

Table 3: Calculation of the consequence score.

Combined Score (A+B+C)	3-4	5	6	7	8-9
Consequence Rating	Very low	Low	Medium	High	Very high

The probability of the impact occurring needs to be considered in order for the final significance rating to be informed by the specific context.

Table 4: Probability Classification.

Probability - the likelihood of the impact occurring	
Improbable	<40% chance of occurring
Possible	40% - 70% chance of occurring
Probable	>70%- 90% chance of occurring
Definite	>90% chance of occurring

The significance of the impact is attained by cross-referencing probability against consequence, as is listed below.

- Significance:
- Low: Where the impact will have a relatively small effect on the environment and will not have an influence on the decision
- Medium: Where the impact can have an influence on the environment and the decision and should be mitigated
- High: Where the impact definitely has an impact on the environment and decision regardless of any possible mitigation.

Table 5: Status and Confidence classification.

Status of Impact	
Indication whether the impact is adverse (negative) or beneficial (positive)	+ ve
	- ve
Confidence of Assessment	
The degree of confidence in predictions based on available information, the EAP's judgement and/or specialist knowledge.	Low
	Medium
	High

The impact significance rating should be considered by authorities in their decision-making process based on the implications of ratings ascribed below:

- **INSIGNIFICANT:** the potential impact is negligible and **will not** have an influence on the decision regarding the proposed activity/development.
- **VERY LOW:** the potential impact is very small and **should not** have any meaningful influence on the decision regarding the proposed activity/development.
- **LOW:** the potential impact **may not** have any meaningful influence on the decision regarding the proposed activity/development.
- **MEDIUM:** the potential impact **should** influence the decision regarding the proposed activity/development.
- **HIGH:** the potential impact **will** affect the decision regarding the proposed activity / development.
- **VERY HIGH:** The proposed activity should only be approved under special circumstances.

Significance post mitigation: Describes the significance after mitigation.

Mitigation: Provides recommendations for mitigation measures.

3. Description of the study area

3.1 Present Ecological State of the study area

This report covers an area on the Portions 8, 13 & 14 of the Farm Malelane Estate 140- JU in the Malalane area, Mpumalanga. The study area is located within the quarter degree grid 2531CB. The site is located within the Ehlanzeni District Municipality, Mpumalanga Province.

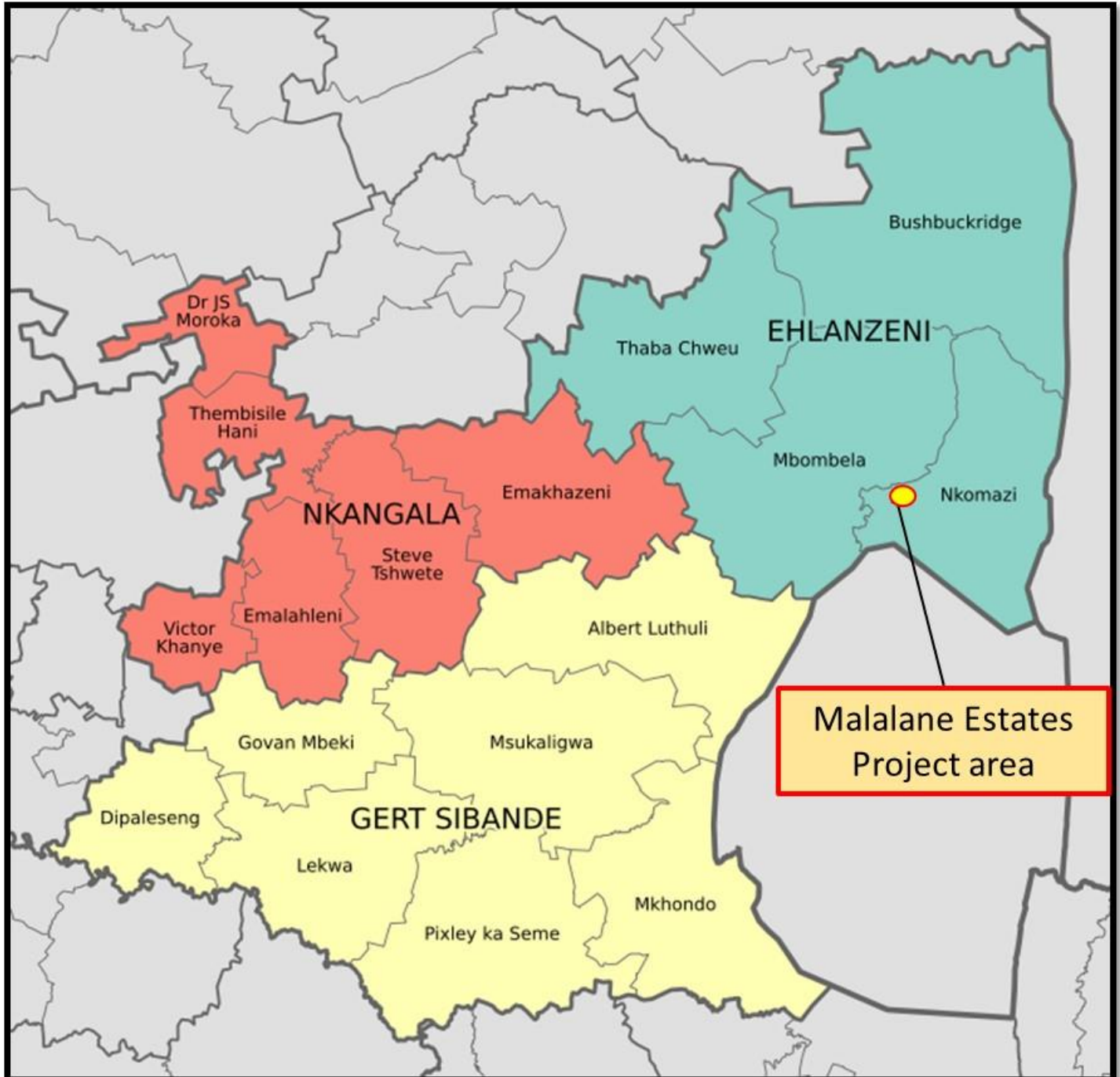


Figure 14: Location of the KMAE project area.

Local Municipality

The Ehlanzeni District Municipality is located in the Komati River catchment of the Inkomati WMA. There are a number of towns and rural villages that make up the Municipality. The Ehlanzeni District Growth and Development Plan is of relevance and it describes the importance of the Maputo Development Corridor as it provides Ehlanzeni specifically Mbombela with the status of being classified as an economic development node.

According to Statistics South Africa's September 2005 labour force survey, Agriculture was the fourth highest formal employer in the province: 11.5% of the province's formal employment. Forestry and other agricultural activities provide jobs far in excess of their contributions to Provincial GGP – the sector comprises 6.1% of total GGP yet provides 18.1% of the employment opportunities in the province. Although resources in this sector are constrained, agriculture holds significant employment potential for the province.

The Nkomazi Local Municipality is characterised by farms, manufacturing and tourism, as the main source of employment and economic activity. The employment sector or industries in which the people of Nkomazi are involved shows that the Agriculture Sector employs 22% of the work force. (Nkomazi Local Municipality, 2013). In the Mpumalanga Province the agriculture sector contributes about 14% to the economic activity. Associated land uses in the area include agriculture, nature conservation, cattle ranching, game breeding, tourist facilities and hunting (Nkomazi Local Municipality, 2013).

The original Malalane Estates farm was an agricultural venture which was used to produce perennial summer and winter crops. The only existing infrastructure consists of a number of residential structures which are located in the north-eastern portion of the farm and an agricultural irrigation system with water sourced from the Crocodile River. The study area is bordered by a non-perennial drainage feature to the east, by a railway line to the south, a wholesale nursery to the west and by the Crocodile River to the north (Figure 1).

The area bordering the farm is totally developed with agriculture (Figure 15). Main land uses within a 10km radius of the property are as follows:

- Sugar cane is the dominant crop;
- Orchards are found along the river;
- Nurseries directly adjacent;
- Field crops;
- Malelane is about 4km east and a small township directly south;
- The Kruger National Park is directly north of the site.

Farming potential

Although the soil is rocky, it is suitable for orchards. It was recently used for seed production of maize and sunflowers, with the balance under instant lawn. The land is too small for livestock.

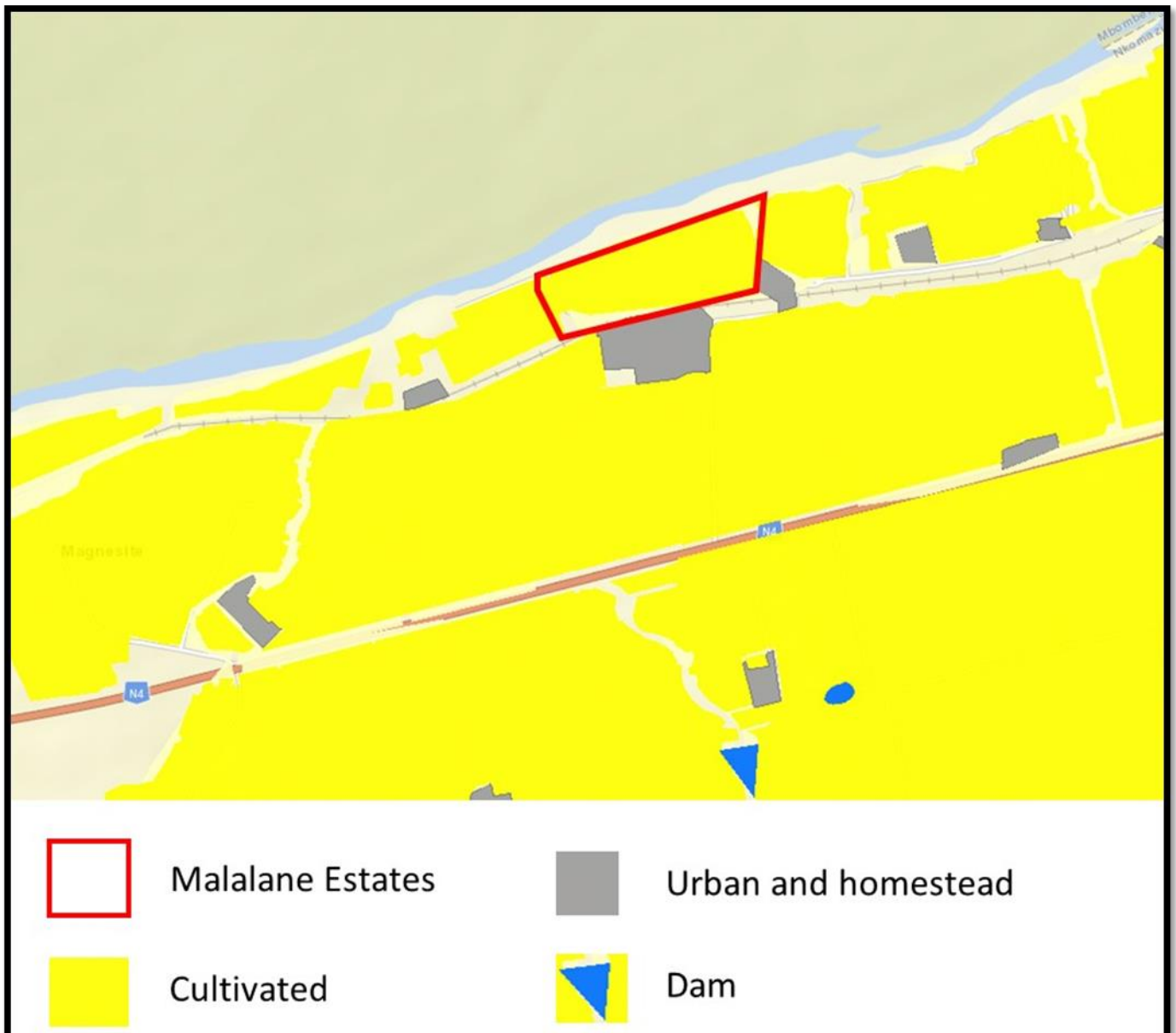


Figure 15: The land cover for the KMAE project area as per the Mpumalanga LUDS maps (BGIS, 2015).

The historic land use of the Malelane Estate is summarised in Table 6.

Table 6: The land use on the farm pre-2020 (Gouws, 2017).

Land use	Area (ha)
Cultivated	18.5
Housing	2.2
Industry (Packing shed)	0.3
Instant lawn	5.9
Vacant	6.2
TOTAL	33.1



Figure 16: The land use classes for the KMAE project area (Gouws, 2017).

The property consists of 27 hectares that was used for seed production of crops and for instant lawn. Approximately 14.9 hectare is classified as high potential agricultural land. The balance is either too rocky or under infrastructure. Availability of irrigation allowed for moderate potential land to become productive. Instant lawn was produced on most of the high potential land.

The composite Figure 17 illustrates the following:

- Figure 17a presents a screen grab from Google Earth (the year 2004), showing dense vegetation on the embankment between the river and the fence, probably reeds and shrubs.
- Figure 17b presents the same area, however 16 years later (the year 2020);
- note the lack of vegetation on the embankment between the river and the fence;
- also note the colour of the soil on the embankment between the river and the fence;
- and the brown circles mark the formation of erosion gulleys forming on the slope below the farming area and the fence.
- Figure 17c indicates the distinct colour difference of the embankment between the river and the fence in front of the farming area and the rest of the upstream and downstream embankment.

Although the change in vegetation cover cannot be explained initially (it might be owing to the extended drought), but the red soil colour most probably comes from topsoil washed from the farm and deposited below the lands. The erosion gulleys also indicate concentrated flows from areas channelled between croplands, also transporting the red, well-drained Hutton soils to the area below.

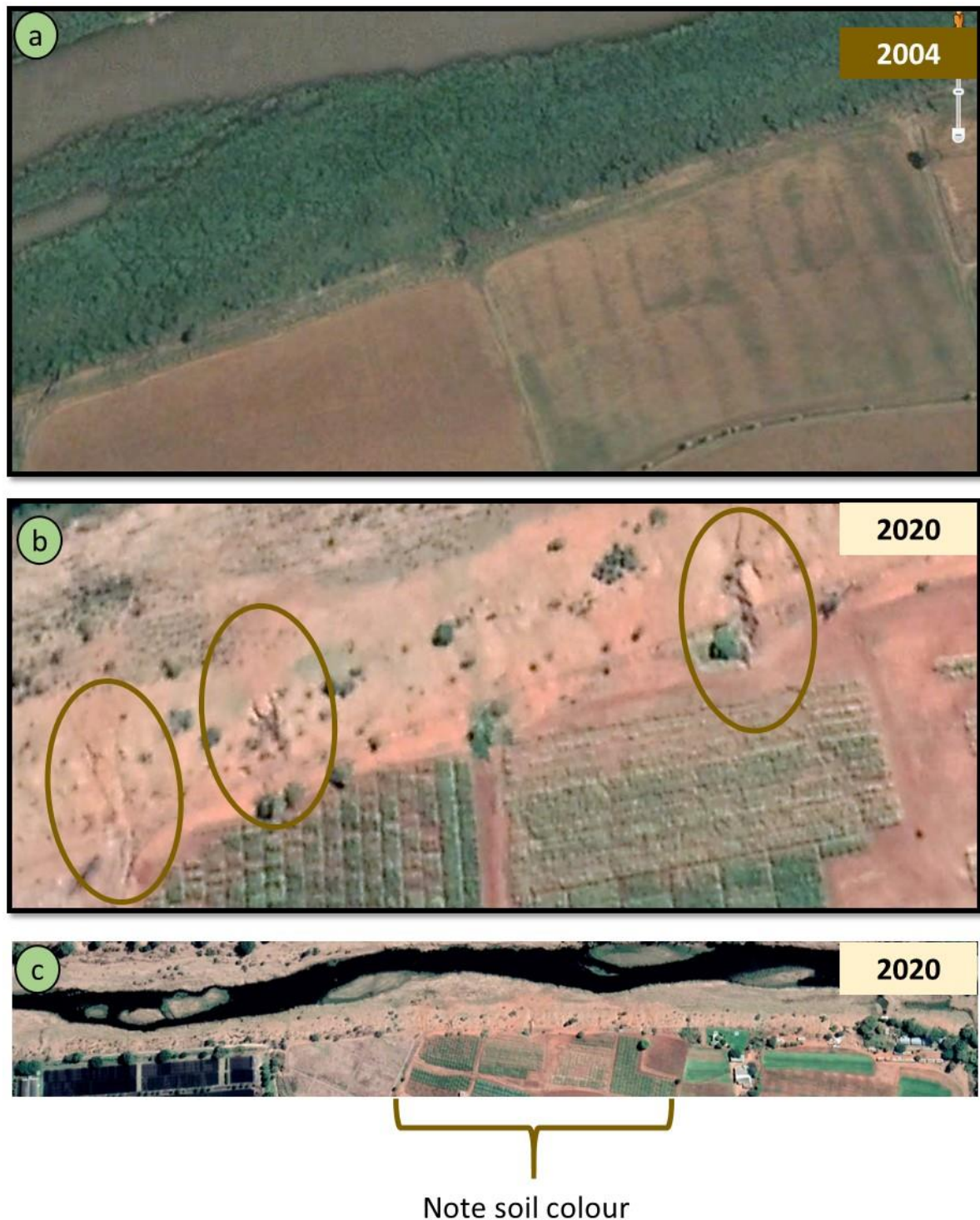


Figure 17:

17a: A screen grab from Google Earth going back to 2004.

17b: Another screen grab from Google Earth, 16 years later (2020). Note the changes in bank vegetation and ground cover and erosion gullies emanating from the farm property.

17c: Note the red colour of the soil in front of the farm portion in comparison with the adjacent embankment areas.

3.2 Physiography of the study area

Ecoregion and River Characteristics

The vegetation type of the project area consists of Granite Lowveld (SVI 3; Mucina & Rutherford, 2006).

Distribution: A north-south belt on the plains east of the escarpment from Thohoyandou in the north, with an eastward extension to Mica and Hoedspruit to the area east of Bushbuckridge. Substantial parts are found in the Kruger National Park spanning areas east of Orpen Camp southwards through Skukuza and Mkuhlu, including undulating terrain west of Skukuza to the basin of the Mbyamiti River. Altitude 250-700 m.

Vegetation & Landscape Features: Consists of tall shrubland with few trees to moderately dense low woodland on deep sandy uplands. Also includes dense thicket to open savanna in the bottomlands and a dense herbaceous layer on fine-textured soils.

Geology & Soils: From north to south, the Swazian Goudplaats Gneiss, Makhutswi Gneiss and Nelspruit Suite (granite gneiss and migmatite), and further south still, 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 lowlands.

The property is located on alluvium close to the river and residual towards the south. The topography consists of mid-slopes that slopes towards the north. The higher lying morphological units consist of red well-drained Hutton soils with loose stone in places (Figure 18). Most of the soils have abundance of stones and is the main impediment to land use capability; more than half of the site was found to have more than 40% stone in the soil matrix, but certain portion contains more than 70%.

Conservation: Vulnerable but Least Concern according to the MBSP Handbook. Target 19%. Some 17% statutorily conserved in the Kruger National Park. About the same amount conserved in private reserves, mainly the Selati, Klaserie, Timbavati, Mala Mala, Sabi Sand and Manyeleti Reserves. More than 20% already transformed, mainly by cultivation and by settlement development. Erosion is low to moderate.

The vegetation type represents tall shrubland with few trees to moderately dense low woodland on the deep sandy uplands. Dense thicket to open savanna occurs in the bottomlands. The dense herbaceous layer contains the dominant *Digitaria eriantha*, *Panicum maximum* and *Aristida congesta* on fine-textured soils, while brackish bottomlands support *Sporobolus nitens*, *Urochloa mosambicensis* and *Chloris virgata*. At seep lines where convex topography changes to concave, a dense fringe of *Terminalia sericea* occurs with *Eragrostis gummiflua* in the undergrowth.

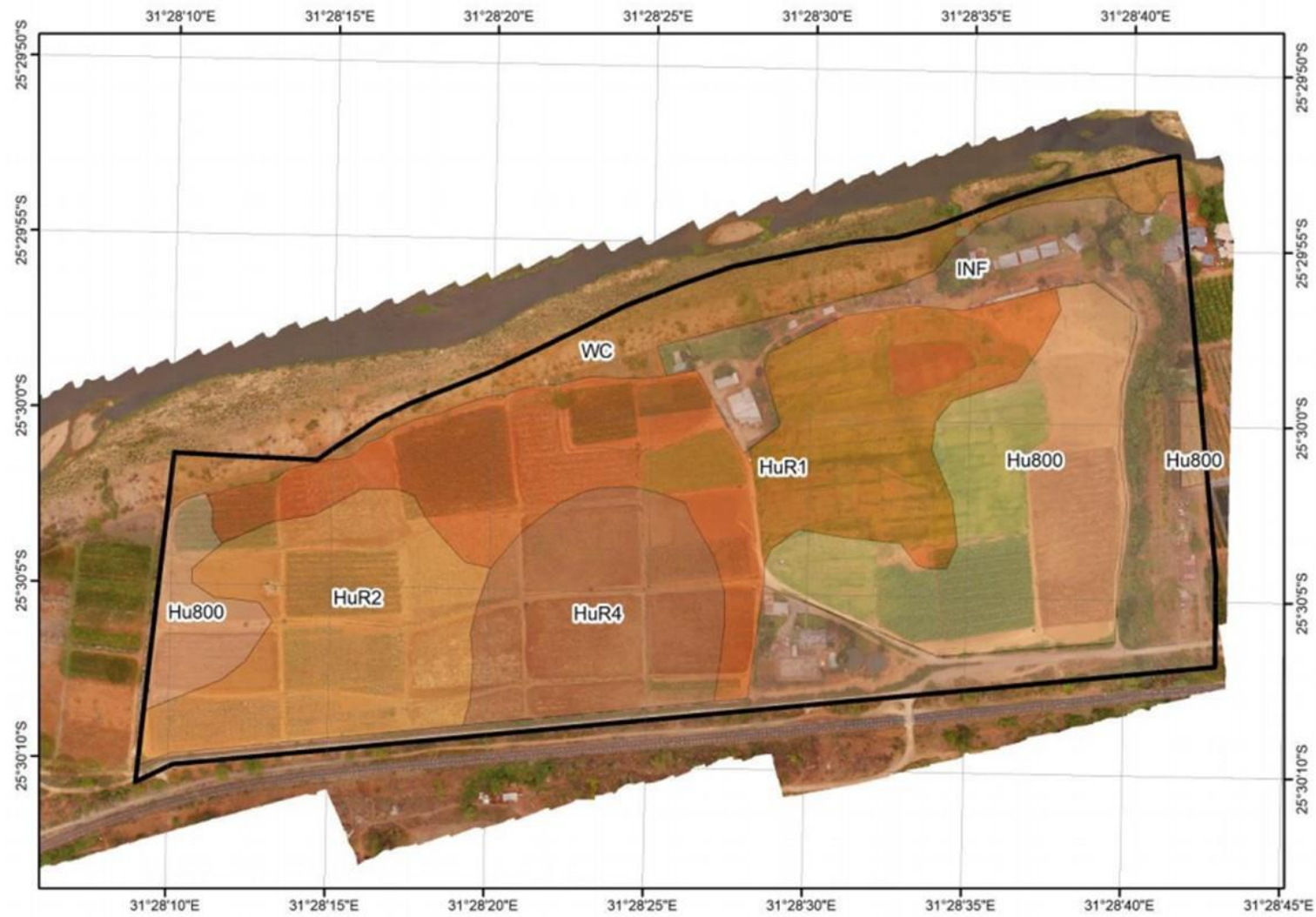


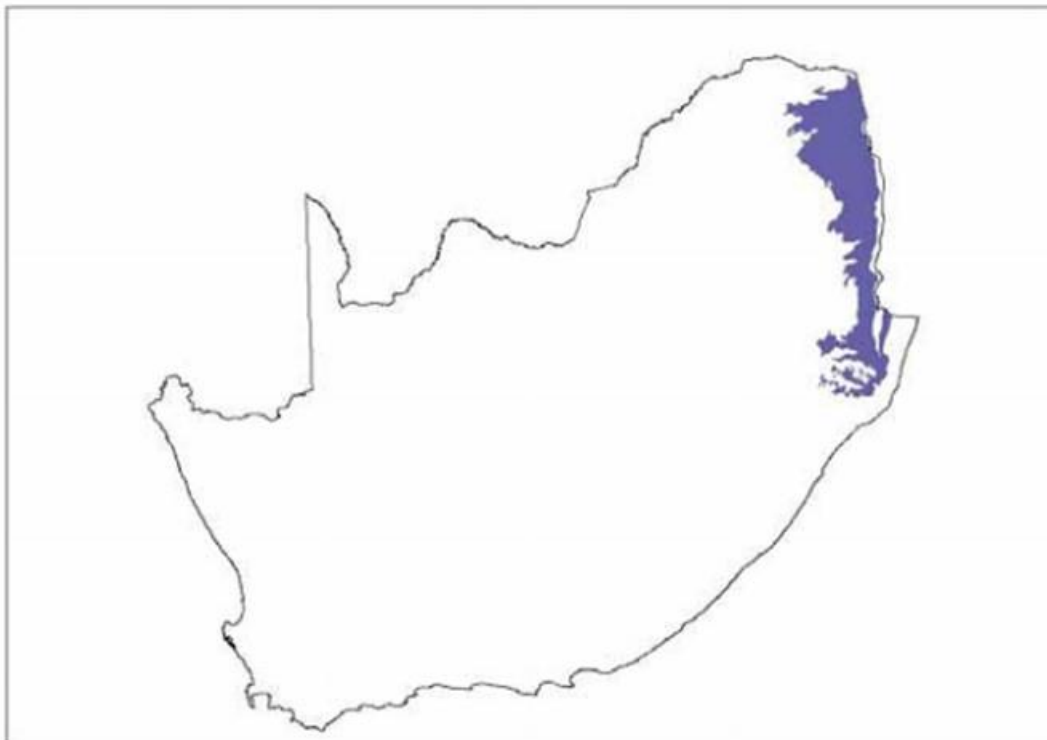
Figure 18: Soil properties on the KMAE project area (Gouws, 2017).

Catchment and Wetland Setting

The Farm Malelane Estate is situated in the Crocodile River Sub-Water Management Area which form part of the Inkomati drainage system. The project site is located in quaternary catchment X24D and the Crocodile River is the northern boundary of the farm (Figure 1).

K1.1.1 Ecoregion 3: Lowveld (Figure 19)

This hot and dry region is characterised by plains with a low to moderate relief and vegetation consisting mostly of Lowveld Bushveld types. Open hills with high relief and low mountains with high relief are present towards the west on the boundary with the North Eastern Highlands. In the north Mopane Bushveld and Mopane Shrubveld occur (Kleyhans et al., 2005).



K1.1.2 Figure 19: Preliminary Level I River Ecoregional classification System for South Africa: Ecoregion 3.07: Lowveld Ecoregion.

General: Although several large perennial streams traverse this region, e.g. White and Black Umfolozi, Mkuze, Pongolo, Great Usutu, Komati, Crocodile, Sabie, Olifants, Letaba and Luvuvhu, few perennial streams originate here.

- Mean annual precipitation: Tends to be moderate towards the west, but low over most of the region.
- Coefficient of variation of annual precipitation: Mostly moderate.
- Drainage density: Mostly low, but high in some of the central areas.
- Stream frequency: Mostly low to medium but high in some of the central areas.
- Slopes 80% of the area.
- Median annual simulated runoff: Mostly low/moderate, but moderate in areas.
- Mean annual temperature: High to very high.

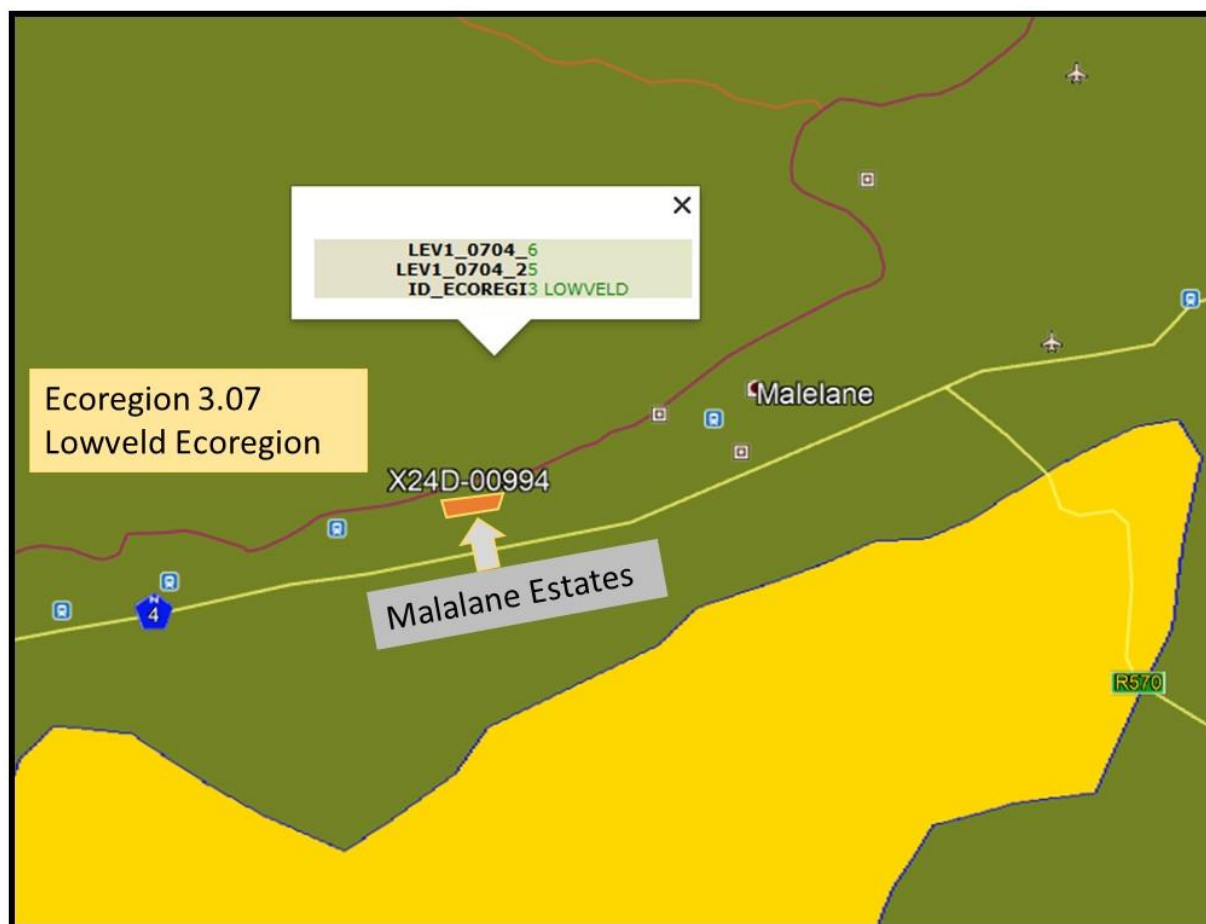


Figure 20: The project site is located in the Lowveld (3.07) Ecoregion according to the Water Resource Classification System (DWS, 2005).

Table 7: Main attributes of the Lowveld Ecoregion.

MAIN ATTRIBUTES	NORTH EASTERN HIGHLANDS
Terrain Morphology: Broad division (dominant types in bold) (Primary)	Plains; Low Relief; Plains; Moderate Relief; Lowlands, Hills and Mountains; Moderate and High Relief (limited)
Vegetation types (dominant types in bold) (Primary)	Mopane Bushveld; Mopane Shrubveld; Mixed Lowveld Bushveld; Sour Lowveld Bushveld
Altitude (m a.m.s.l) (primary)	0-700; 700-1300 limited
MAP (mm) (modifying)	200 to 1000
Coefficient of Variation (% of annual precipitation)	<20 to 35
Rainfall concentration index	30 to >65
Rainfall seasonality	Early to late summer
Mean annual temp. (°C)	16 to >22
Mean daily max. temperature (°C): February	24 to 32
Mean daily max. temperature (°C): July	18 to >24
Mean daily min. temperature (°C): February	14 to >20
Mean daily min temperature (°C): July	4 to >10
Median annual simulated runoff (mm) for quaternary catchment	10 to >250

The catchment reference numbers were obtained from the DWS PESEIS documents. The Google Earth image in Figure 21 indicates the location of the Kruger Malelane Agri Estate in the X24D catchment. The project area is situated along the banks of the Crocodile River within the X24D-00994 subcatchment.

The water quality in the lower Crocodile River (downstream from the Kaap River confluence) is poor due to agricultural runoff, which is associated with pesticides, increased trace metals, nutrients and electrical conductivity. Hyacinth infestation is very common in parts of this section and this section has been associated with sporadic fish mortalities (probably due to low dissolved oxygen concentrations).

The Kaap River has a potential impact on the lower Crocodile River due to agricultural runoff (increase in pesticides, trace elements and nutrients). Mining activities in the Kaap have a high impact on water quality in this river during low flows (increase in sulphate, electrical conductivity, iron, zinc, arsenic and cyanide, and a decrease in pH.)

In the lower sections, increased sediment loads as well as elevated dissolved salt concentrations have also been associated with stressed aquatic ecosystems. The capacity of the Crocodile River, in terms of its ability to cope with anthropogenic disturbances without suffering adverse effects, is inversely related to the existing water quality and directly related to the volume of water available (Kleynhans (1999)).

Summarized description of the modifications: Cultivated lands common along some sections (water abstraction). Weirs in some parts. Removal of bank vegetation in sections. Some erosion in sections. Runoff from urban areas and industries. Flow regulation by Kwena Dam – somewhat dampened by Nels River. Water hyacinth common during most years (Kleynhans (1999)).

Crocodile River Reach, X24D-00994, which includes the river reach adjacent to the KMAE project area, reaches from the confluence of the Nsikazi to the confluence of the Matjulu tributary. This section of the Crocodile River forms the Kruger National Park border with the northern bank in the KNP and the southern bank impacted by the town of Malelane, low density housing and tourism accommodation as well as irrigated agriculture, mostly sugarcane (18%) and citrus (cultivated orchards 1.6%).

The Instream IHI for the SQ reach X24D-00994 was calculated at 78.08% rating this SQ reach as a BC category indicating that the instream habitat integrity is close to largely natural with few modifications most of the time. Flow regime has been slightly to moderately modified and pollution is limited to sedimentation. A small change in natural habitat types may have taken place. However, the ecosystem functions are essentially unchanged (Roux, et al., 2018).

This EWR site (X2CROC-MALEL) within this river reach falls within the Kruger National Park and the habitat found is typical of the Lowveld reaches and is characterised as a low gradient stream consisting of large sandy pools with isolated riffles and runs. The substrate consists primarily of sand with some rocks and cobbles including aquatic macrophytes. No slow deep habitat was available and a side channel with some backwaters was also present. The fish velocity depth classes present was slow shallow, fast deep and fast shallow, all moderately abundant. Most of the rocky substrate was covered with thick algae (Roux, et al., 2018).

A Fish Ecstatus rating of 78.3% was calculated for this monitoring point based on all available information, placing it in an ecological Category BC (close to largely natural with low diversity and abundance of species). Stream conditions based on SASS methodology for aquatic macro-invertebrates rated as moderately impaired (Category C).

The Vegetation Conditions derived from the PES-EIS model for this reach is calculated at 72.5% and is consistent with a Category C – moderately modified indicating a loss and change of natural habitat. The Riparian IHI was calculated at 81.04% rating this reach as a Category BC indicating a close to largely natural reach with few modifications most of the time. The overall Riparian Ecostatus consisting of a combination of the Vegetation Condition and the Riparian IHI was therefore determined as a Category C (72.5%) indicating that the riparian vegetation for this SQ reach is moderately modified (Roux, et al., 2018).

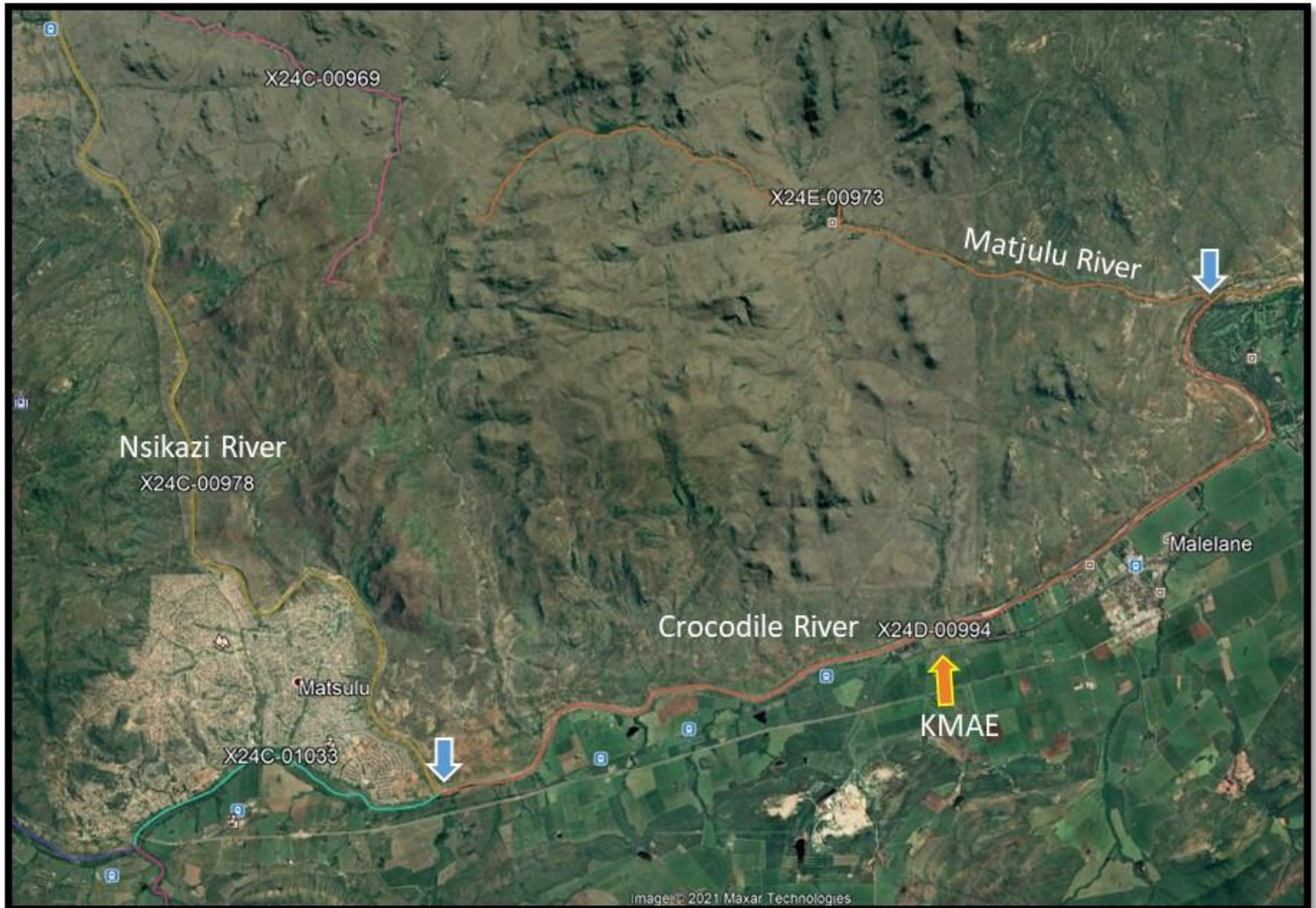


Figure 21: The Crocodile River Reach, X24D-00994, which includes the river reach adjacent to the KMAE project area, reaches from the confluence of the Nsikazi to the confluence of the Matjulu tributary.

