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SOCIAL DEVELOPMENT

Environmental Management Program **12/1/9/2-V160**

LIM/EIA/0001672/2022

DRAFT EMPr FOR THE PROPOSED DEVELOPMENT OF CROPLANDS ON RE PTN3 OF FARM CONISTON 699 MS, WATERPOORT, MAKHADO LOCAL MUNICIPALITY, VHEMBE DISTRICT, LIMPOPO

March 2023

Prepared for: Koedoepan Boerdery (Pty) Ltd

Compiled by: A von Well

Document version 1.0 – Draft

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March 2023

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Senior Environmental Scientist – M.Sc. Environmental Management

REPORT DISTRIBUTION LIST

Surname	Organisation	Position/ Property
Landowner		
Mr A van Staden	Koedoepan Boerdery (Pty) Ltd	RE of Ptn 3 of Coniston 699 MS
Neighbouring landowners		
Mr B Schlesinger		RE of Woodlands 701 MS
Mr A van Staden	Sandpan Boerdery (Edms) Bpk	Ptn 2 of Esmefour 697 MS
Mr AS Tshivhula		Ptn 4 of Coniston 699 MS
Mr A Miles		Rochdale 870 MS
Mr Roberts	Fanja Trust	RE of Kliprivier 692 MS
Mr Japie van der Goot		P1 of Sutherland 693 MS
Mr B Lottering	Creosote pole plant	P1 of 700 MS
Other I&AP's		
W van Jaarsveld (CEO)	Agri Limpopo	
A Humphrey Jurgen Miles	Rochdale 870 MS	
Mr Prince Leshiba	Waterpoort Directly Affected Families Community Trust (WDAFCT)	
Mr Prince Leshiba	Waterpoort Community Foundation	
Mr Prince Leshiba	Waterpoort Community Development Trust (WCDT)	
Mr Enos Mulaudzi	Matahe Communal Property Association	
Authorities		
Mr Steven Kgobalale	Department of Agriculture, Land Reform and Rural Development	
Mr David Nethengwe	Department of Water & Sanitation (DWS)	
Ms Gavhi	Department of Rural Development & Land Reform: Land Claims Commissioner	
Municipal Manager	Vhembe District Municipality	
Ms Hilda Mpho Mudau	Makhado Local Municipality	
Ms Natasha Higgit	South African Heritage Resources Agency (SAHRA)	
Mr William Mothapo	Limpopo Department of Economic Development, Environment and Tourism (LEDET)	
	Adjacent landowners	
	Interested and Affected Parties	

DOCUMENT HISTORY

Report no	Date	Version	Status
12/1/9/2-V160	March 2023	1.0	Draft

RELATED DOCUMENTS

Report No	Date	Version	Report name
L19 030 E	November 2022	4.0	Consultation Scoping Report
12/1/9/2-V160	January 2023	5.0	Final Scoping Report
	07 June 2019	1.0	Palaeontological Impact Assessment
	August 2022	1.0	Grave Management Plan
	04 March 2023	2.0	Archaeological Impact Assessment
	August 2022	1.0	Terrestrial Biodiversity Impact Assessment
		1.0	Stormwater and erosion management plan
		1.0	Pollution control plan
12/1/9/2-V160	March 2023	1.0	CEIAR

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Table of contents

List of figures

1 GENERAL INFORMATION

AGES Limpopo (Pty) Ltd was appointed by **Koedoepan Boerdery (Pty) Ltd** to conduct an Environmental Impact Assessment to obtain the necessary environmental authorisation for the proposed clearance of approximately 422ha of indigenous vegetation for development of croplands. The proposed development will be located on the Remainder of Portion 3 of the farm Coniston 699 MS, approximately 7 km east-north-east of Waterpoort directly north of the R523 road - Figure 1.

1.1 Project objective

The Environmental Impact Assessment Report was done with the objective to supply the Limpopo Department of Economic Development, Environment & Tourism (LEDET) with the necessary environmental information to make an informed decision regarding the environmental impact assessment process.

1.2 Environmental management plan objective

The purpose of the Environmental Management Programme (EMPr) is to comply with section 24N of the National Environmental Management Act, 1998 (Act 107 of 1998) and Regulation No. R.982 of the Environmental Impact Assessment Regulations of 04 December 2014 (as amended).

The objective of the EMPr is further to provide adequate measures and/or recommendations to ensure that the environmental impacts, identified during the different phases of the project are kept to a minimum and that the most appropriate rehabilitation measures are correctly implemented to ensure the overall integrity of the proposed site.

The mitigation measures stated in the Environmental Management Programme (EMPr) must be adhered to as indicated for the different phases.

- No development may take place within the regulated area of a water course, without prior obtaining of a Water Use License from the Department of Water and Sanitation (DWS).

  General Notice 509 as published in the Government Gazette 40229 of 2016 as it relates to the NWA (Act 36 of 1998) states the following:

  In accordance with GN 509 of 2016, a regulated area of a watercourse for Section 21(c) and 21(i) of the NWA, 1998 is defined as:

  - *The outer edge of the 1 in 100-year flood line and/or delineated riparian habitat, whichever is the greatest distance, measured from the middle of the watercourse of a river, spring, natural channel, lake or dam;*
  - *In the absence of a determined 1 in 100-year flood line or riparian area the area within 100 m from the edge of a watercourse where the edge of the watercourse is the first identifiable annual bank fill flood bench; or*
  - *A 500 m radius from the delineated boundary (extent) of any wetland or pan.*

This notice should be read together with the Risk Assessment provisions in the **General Authorisation Notice** in Relation to Section 21.

- All mitigation and management measures contained in the **Palaeontological Impact Assessment** must be implemented.

- All mitigation and management measures contained in the **Archaeological Impact Assessment** and **Grave Management Plan** must be implemented.

- All mitigation and management measures contained in the **Terrestrial Biodiversity (Ecological) Impact Assessment** must be implemented.

- The **Stormwater and erosion management plan** must be implemented with commencement of site activities.

- The **Pollution control plan** must be implemented with commencement of site activities.

- A copy of the EMPr, Environmental Authorisation and any other applicable and required permits must be filed and kept at the site office during construction. The contents of these documents must be carefully perused and implemented. Newly appointed site agents/contractors must be informed regarding the abovementioned immediately.

- No additional listed activities which have not been applied for may take place without prior environmental authorisation and adherence to any other legislation which might be applicable.

The EMPr is relevant to the following proposed activity:

Clearance of approximately 422ha of indigenous vegetation for the development of croplands.

The following are listed activities of **Regulation R984 of 04 December 2014 (as amended),** of the **National Environmental Management Act, 1998 (Act 107 of 1998)** are triggered:

Activity 13: "*The physical alteration of virgin soil to agriculture, or afforestation for the purposes of commercial tree, timber or wood production of 100 hectares or more".*

Activity 15: "*The clearance of an area of 20 hectares or more of indigenous vegetation".*

2 ASPECTS OF THE ACTIVITY

The EMPr will cover the following potential impacts of the development on the surrounding environment, during the development/construction and operational phases of the project:

- Air pollution and noise
- Earthworks and vegetation clearance
- Surface and groundwater pollution
- Erosion and siltation
- Ecological (biodiversity) aspects
- Palaeontological and Heritage/Archaeological finds
- Visual impacts
- Socio-economic aspects

3 ENVIRONMENTAL MONITORING

3.1 The ECO shall have the following responsibilities:

- Ensuring that the necessary environmental authorizations (EA) and all necessary permits and water use licenses (if applicable) have been obtained by the applicant.
- Monitoring and verifying that the EMPr is adhered to at all times and taking action if specifications and mitigation measures are not followed.
- Monitoring and verifying that negative environmental impacts are kept to a minimum.
- Assisting contractors/applicant in finding environmentally responsible and sustainable solutions to environmental problems.
- Reporting on the environmental issues at site meetings.
- Keeping record of all activities/incidences on site in the site diary concerning the environment.
- Inspecting the site and surrounding areas regularly to monitor compliance with the EMPr.
- Keeping a register of complaints whilst recording and addressing any community complaints or issues.
- Monitoring the undertaking provided by the contractor/applicant to provide environmental awareness training to all new personnel on site.
- Ensuring that activities on site comply with other relevant environmental legislation.
- Issuing of warnings for contravention of the EMPr.
- Compilation of a monitoring checklist.
- Keeping a photographic record of progress on site from an environmental perspective.
- Assisting the site manager in finding environmentally responsible and sustainable solutions to problems.
- Keeping accurate and detailed records of these inspections.

3.2 The contractor/applicant shall have the following responsibilities:

- To implement all provisions of the EMPr. If the contractor/applicant encounters difficulties with specifications, he/she must discuss alternative approaches with the site manager and/or the ECO prior to proceeding.
- To ensure that all staff and sub-contractors are familiar with the EMPr.
- To make personnel aware of environmental issues and to ensure they show adequate consideration of the environmental aspects of the project.
- To rehabilitate any sensitive environments damaged due to negligence by the contractor/ applicant. This shall be done in accordance with the site manager and ECO's specifications.

4 ENVIRONMENTAL IMPACTS

Environmental impacts on a site may include:

4.1 Air quality (dust suppression and vehicle emissions)

Vehicle movement on site during land clearance and planting will generate dust on the development area.

4.2 Noise levels

Noise levels must be maintained at acceptable levels. Personnel working in areas with high noise levels must wear ear protection devices.

4.3 Dangerous substances management

Farming equipment and vehicles that contain dangerous substances, or which has the potential to spill dangerous substances will be operating on the lands. There will also be chemicals and other dangerous substances which are used on site and requiring storage on site. This creates the potential for possible spillages and the potential that these substances can pollute soil and water systems on site. It needs to be handled with care and strict control needs to be exercised over the handling and use of such substances.

4.3.1 Possible sources of dangerous substances

The following substances are **potentially** stored or used on site during the construction and operational period:

- Diesel stored either in stationary tanks or in mobile fuel trailers or bowsers on site.
- Oils needed for lubrication of the equipment and vehicles.

- Herbicides, pesticides and fertilizers.

4.3.2 Methods of storing dangerous substances on site

All dangerous substances on site must be handled in the following ways:

- Access to any of these substances must be strictly controlled and substances must be locked away when not in use.
- All containers or store-rooms where these substances are kept must have an impermeable floor and be able to contain the substance in the room/store where it may be cleaned up.
- Where the floor is not impermeable, the substances will be stored in a drip tray capable of containing any spills from these containers.
- Material Safety Data Sheets (MSDS) for the specific substances must be available in a central file and at the place where the substance is stored.
- All substances must only be issued against a signature - records must be kept.
- Fuel trailers, if used at this development, must be parked either with sufficient drip trays underneath or it must be parked on an area where there is plastic sheeting underneath to prevent ingress of the fuel/oil into the subsoil or groundwater. Polluted soil has to be removed from time to time to a dangerous waste disposal site.

4.3.3 Handling of spills

- Excavate contaminated soil to a depth where it is clean from the substance and store it in a closed container from which it cannot leak and is protected from rain.
- Have these soils removed by a registered contractor and keep records of volumes and details of each removal.
- Excavate the polluted soil to a depth below the pollutant and place on a plastic cover to prevent any leaching of the pollutant to the soil and groundwater.
- Have the soil removed from site by a company registered to do so to a permitted waste site or let the company treat the soil on site until the pollutants levels are low enough to dispose of the soil on site again.
- If there is any possibility that there is pollution of groundwater or surface water, samples must be taken for analysis, to ensure that pollution can be treated if necessary.

4.3.4 Training of staff

- All staff working on site and responsible for a specific area must be trained in the detection of spill incidents, and the reporting thereof.
- All staff on site must be trained in the use of spill response kits.
- All staff must be trained in the use of MSDS’s and first aid kits should it be necessary during any spill incident.

4.3.5 Reporting and record keeping

- All spill incidents must be reported to the environmental control officer who must then report it to the authorities as required by law.
- Each pollution incident must be entered into a register on site. All details about the spill, the emergency measures taken and the clean-up done must also be part of the entry in the register.
- Preventative measures must be drawn up to prevent recurrence of spill incidents.

4.4 Pollution resulting from waste generation on site (household and product waste)

Existing and new personnel arriving on site must be given a short training course in the principles of waste reduction, re-using and recycling. This must be a continuous process. Training must include steps to be taken in case of spillage or wastage and the clean-up process must be explained/illustrated so as to be understood by all involved. Measures must be in place for the removal of waste, including the availability of a sufficient number of weather- and scavenger-proof waste bins.

4.5 Water pollution

All personnel on site must be instructed to avoid and limit any waste and/or spillages. Instructions on how to handle spillages on site must be displayed clearly in a step-by-step format, at the site office in terms of steps to follow. Training should be provided and spill kits must be available on site at all times. Training and monitoring to ensure the application of herbicides are in accordance with manufacturers' guidelines must be provided. It must be ensured that drifting and leaching of chemicals during the application process are minimised.

4.6 Water usage

Water must be used according to the registered legal water use for the Waterpoort area farms owned by ZZ2.

4.7 Erosion and storm water management

The most important effect of erosion is the permanent loss of valuable topsoil at a site. If it is not controlled from the onset of a project and through the duration of the project, it will cause a loss of topsoil and can degrade the area permanently. Sediment transported by rainwater may end up in drainage channels and dams.

4.7.1 Actions to stop or minimise erosion

- The ridges where crops will be planted must follow the contours.
- Ensure that there is no unnecessary soil erosion resultant from the preparation activities.
- Construct a sufficient number of outflow drains from roads.
- Repair any signs of erosion after heavy downpours.

4.7.2 Monitoring of erosion on site

The farm manager is responsible for monitoring both the risk of erosion as well as actual erosion arising from activities on site. His/her responsibilities must include:

- Regular (after rainstorms) monitoring for erosion to determine if infrastructure on site (roads and other man-made structures) are contributing to erosion on site and on adjacent areas. All erosion damage observed must be rectified as soon as possible after the rain event and before the following rain event. If infrastructure does cause/contribute to erosion, mitigation measures must be implemented to prevent future erosion from occurring (i.e. rocks or gabions next to roadways or pipeline outlets which disperse stormwater, thus reducing velocity and speed and thereby reducing erosion damage).
- Monitor any erosion damage after rain events so that repairs to damaged areas can be done before the next rain event.

4.8 Natural fauna (wildlife) of the area

- No vegetation clearance or disturbance within drainage channels must be allowed and the proposed buffer areas from the riparian zone around the drainage channel must be protected from disturbance;
- Regular environmental training should be provided to workers to ensure the protection of fauna and affirm their understanding and commitment to conservation;
- Limit pesticide use to non-persistent, immobile pesticides and apply in accordance with label and application permit directions and stipulations for terrestrial and aquatic applications;
- Where trenches pose a risk to animal safety, they should be adequately cordoned off to prevent animals falling in and getting trapped and/or injured. This could be prevented by the constant excavating and backfilling of trenches during pipeline / infrastructure installation;
- Poisons for the control of problem animals should rather be avoided since the incorrect use thereof can have disastrous consequences for non-target species occurring in the area. The use of poisons for the control of rats, mice or other vermin should only be used after approval from an ecologist. The use of owl-boxes as biological pest control agents is recommended.

4.9 Invasive alien vegetation

The following methods can be used to control invasive alien plants:

- Mechanical methods - felling, removing or burning invading alien plants.
- Chemical methods - using environmentally safe herbicides.
- Biological control - using species-specific insects and diseases from the alien plant's country of origin. To date 76 bio-control agents have been released in South Africa against 40 weed species.

- Integrated control - combinations of the above three approaches. Often an integrated approach is required in order to prevent enormous impacts.

4.10 Fire

Practical training should be provided to all workers/staff by a qualified person in the use of fire extinguishers and all other firefighting equipment. An emergency plan aligned with the local Fire Department must be in place.

5 EMERGENCY PLAN

It is crucial that an emergency plan for the farm is put in place and that personnel at the farm are familiar with the actions and details of the plan. Typical emergencies for which an emergency plan would be required are:

- fires
- physical injury (wounds, broken limbs, lacerations, burns, electric shocks, etc.)
- medical emergencies (heart attacks, loss of consciousness, insect bites, etc.)
- riots or demonstrations
- fuel/chemical spillages

6 ENVIRONMENTAL AWARENESS PLAN

The goal of the awareness plan is to help employees make environmentally-conscious decisions in the workplace and in their private lives. The environmental awareness plan addresses from an environmental perspective, the management of staff, personnel and workers on site during the operational phase.

6.1 Environmental awareness training

The contractor/applicant must ensure that adequate environmental awareness training of senior site personnel take place and that all personnel receive an induction presentation on the importance and implications of the EMPr.

It is the contractor's or applicant's responsibility to provide the site foreman with no less than one hour's environmental training and to ensure that the foreman has sufficient understanding to relay the acquired information to the relevant construction workers or staff.

The contractor/applicant must ensure that all site personnel have a basic level of environmental awareness.

Training topics to personnel must include:

- An explanation of the importance of complying with the provisions and mitigation measures contained in the EMPr.
- Discussion of the potential environmental impacts of construction and operational activities.
- The benefits of improved personnel performance.
- Employees' roles and responsibilities, including emergency preparedness.
- Explanation of the mitigation measures that must be implemented when carrying out their activities.
- Explanation of the specifics of the EMPr and its specifications (no-go areas etc.).
- Explanation of the management structure of individuals responsible for matters pertaining to the EMPr.

6.2 Important aspects of an awareness plan

- All staff must receive environmental awareness training prior to commencement of their jobs at the farm.
- Allow for sufficient sessions to train all personnel with no more than 20 personnel attending each course.
- Refresher environmental awareness training must be available as and when required.
- All staff must be made aware of the conditions and controls linked to the EMPr and their individual roles and responsibilities in achieving compliance with the EMPr.
- A record of all environmental awareness training courses undertaken as part of the EMPr must be available.
- Workers must be educated on the dangers of open and/or unattended fires.
- A staff attendance register of all staff having received environmental awareness training must be available.
- Course material must be made available and presented in appropriate languages which all staff can understand.

6.3 Contents of an awareness program

Environmental awareness training must as a minimum include the following:

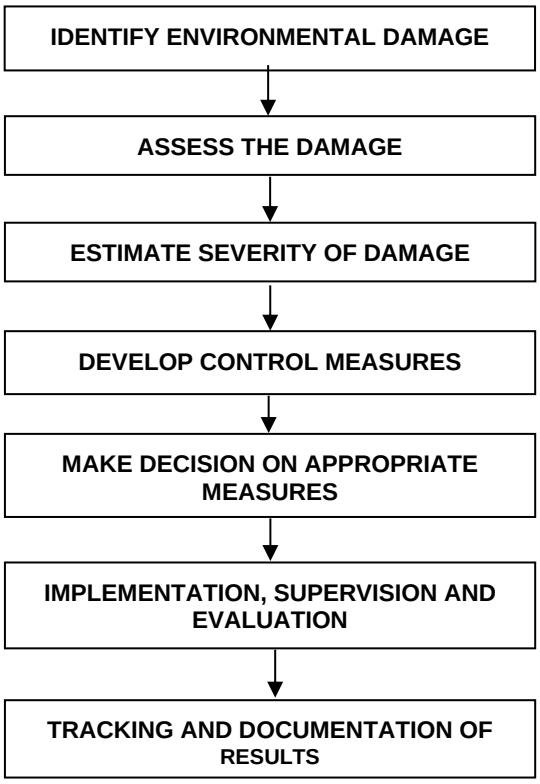
- Description of significant environmental impacts, actual or potential, related to their work activities.
- Mitigation measures to be implemented when carrying out specific activities.
- Emergency preparedness and response procedures.
- Water usage.
- Solid waste management procedures.
- Sanitation procedures.
- Fire prevention.

6.4 Methods of informing personnel

The following methods can be utilised to inform personnel:

- Use translators where necessary.
- Use the farm manager to explain more difficult/technical issues and to answer questions.
- The use of pictures and real-life examples are encouraged as these tend to be more easily remembered.
- Make use of environmental awareness posters.
- Environmental induction for all contractors, sub-contractors and their staff should they be required to come on site.

7 MANAGING PROCESS FOR ENVIRONMENTAL DAMAGE/INCIDENTS



8 PHASES OF DEVELOPMENT

Planning and design Phase	
Development Phase	
Operational Phase	

9 ENVIRONMENTAL MANAGEMENT PROGRAM

PLANNING & DESIGN PHASE						
Impact Management Outcome: Minimise impact to the environment by adhering to planning and design principles for the best design at the best locality & obtain all approvals						
Impact Management actions (mitigation measures)	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe: implementation	Responsible person	Frequency	Evidence: compliance
• Croplands and associated infrastructure must be remain within the approved development footprint.	Site manager, engineer and ECO	Determine best position for respective areas	Planning phase	Project manager	Once off	Maps/photos
• An Environmental Management Programme (EMPr) must be compiled and signed off by the developer and the contractor.	Site manager	Explain EMPr to developer & contractor	Before commencement of construction	Project manager	Once off	Signed EMPr
• An incident / non-compliance register and complaints register must be drawn up and kept up to date. These documents must be available to the LEDET on request.	Site manager	Implementation of register	Before commencement of construction	Project manager	Weekly	Records in register
• Environmental training for contractors must be done.	Site manager	Training to personnel & contractors	At arrival of contractor on site	Project manager	Once off	Training records
• It must be ensured that all legal requirements are met prior to any water transfer from the Existing Lawful Use from the adjacent farms, for use on RE Ptn3 Coniston 699 MS.	Site manager	Appoint consultant to submit WULA	If and when required	Project manager	Monthly	Monitor progress of WULA
• All authorizations required for the development must be obtained prior to the project commencing.	Site manager	Approvals must be available	Before commencement of construction	Project manager	Once off	Authorisations
• The **recommendations** contained in the **Archaeological Impact Assessment (AIA), section 7/Discussion and Recommendations, p.63 & Grave Management Plan, section 3/Discussion & Recommendations, p.41 must be used to compile a Site Management Plan**. • This plan must be explained to the project manager **prior to any site activities commencing.** • Buffer areas must be demarcated around these feature as per specialist recommendations. These buffer areas must be cordoned off, be clearly visible and must be considered no-go areas to construction personnel at all times.	Site manager	Compile & implement Site Management Plan	Before commencement of construction	Project manager	Monthly	Progress report

AIR QUALITY - CONSTRUCTION PHASE						
Impact Management Outcome: Minimise impact to the environment and people through the control/mitigation of air quality impacts						
Impact Management actions (mitigation measures)	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe: implementation	Responsible person	Frequency	Evidence: compliance
• Construction areas must be dampened during windy events.	Contractor	Water spray	During dry windy conditions	Project manager	Weekly	Visual check
• Vehicles used on or entering the construction site must be in good working order to reduce excessive smoke or fumes during operation.	Contractor	Regular services	Continuous	Project manager	Maintenance records according to schedule	Records
• Preparation of chemical applications must be done according to manufacturers' guidelines. • Spraying of chemicals must be done in no/low wind conditions.	Farm manager	Instruction to workers Visual checks	Daily	Owner	Daily	Visual check & application records
• No waste may be burned on site. Waste generated must be kept in weather- and scavenger-proof containers and removed on a weekly basis to the Makhado municipal registered landfill site.	Contractor	Supply waste containers & remove weekly	Continuous	Project manager	Monthly	Disposal records
• No plant material should be burnt on site. Plant material can be used as mulch or for compost.	Contractor	Stockpile, chip and place on site as required.	Continuous	Project manager	Monthly	Disposal records
• Dust suppression must be done at the access road when necessary.	Contractor	Water spray	During dry conditions	Project manager	Weekly	Visual check
• Firebreaks must be maintained to decrease the risk of accidental fires.	Farm manager	Maintain firebreaks	During dry season	Project manager	Monthly	Visual inspection

NOISE - CONSTRUCTION PHASE						
Impact Management outcome: Minimise impact to animals and people through the control/mitigation of noise impacts						
Impact Management actions (mitigation measures)	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe: implementation	Responsible person	Frequency	Evidence: compliance
• Contractors must comply with municipal noise regulations.	Contractor	Notify contractors of regulations	Continuous	Project manager	Weekly	Determine noise levels while on site
• Construction machinery must be fitted with noise mufflers and be in good working order.	Contractor	Vehicle maintenance	Continuous	Project manager	Maintenance records according to schedule	Records and noise levels
• All employees working in a noisy environment must be given the necessary ear protection gear.	Contractor	Physical handout	Always	Project manager	Weekly	Check use of ear protection by workers

SOIL & GROUND- AND SURFACE WATER POLLUTION - CONSTRUCTION PHASE						
Impact Management outcome: Minimise impact to the environment and people through the minimisation and control of groundwater and surface water pollution						
Impact Management actions (mitigation measures)	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe: implementation	Responsible person	Frequency	Evidence: compliance
Sanitation seepage						
• Temporary toilets must be placed on level ground and emptied/cleaned on a weekly basis by an approved contractor. • Contents of the toilets must be disposed of at a licensed sewerage works. • Temporary toilets must be provided at a rate of one toilet for every 15 workers.	Contractor	Removal of contents	Weekly	Project manager	Weekly	Records
Compaction of soil						
• Ensure that construction activities (movement of construction vehicles and personnel) remain within development footprint to minimise soil compaction and destruction of surrounding area.	Contractor	Delineate/demarcate construction area	Prior to construction	Project manager	Daily	Photographic records

SOIL & GROUND- AND SURFACE WATER POLLUTION - CONSTRUCTION PHASE						
Impact Management outcome: Minimise impact to the environment and people through the minimisation and control of groundwater and surface water pollution						
Impact Management actions (mitigation measures)	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe: implementation	Responsible person	Frequency	Evidence: compliance
• Demarcate access road clearly.						
Spillage of fuel and lubricants from construction vehicles and machinery						
• Machinery to be checked, serviced and maintained according to a schedule to prevent oil and fuel leaks.	Contractor	Maintenance	According to schedule	Project manager	Monthly	Service records
• Drip pans should be used during re-fuelling and servicing of construction vehicles. Used parts like filters should be contained and disposed of at a site licensed for dumping of these waste products. • Used or spilled oil should be taken to the nearest oil refiner or recycling plant for recycling.	Contractor	Site instruction	Continuous	Project manager	Monthly	Records of disposal
• During emergency repairs a suitable drip tray must be used to prevent spills onto the soil.	Contractor	Use drip trays or plastic sheeting	During repairs	Project manager	Monthly	Visual check & photographic proof
• Any spills must be treated and removed by a qualified agent.	Contractor	Appoint agent to treat and remove spills	When applicable	Project manager	Monthly	Records
• A dedicated parking area must be defined with drip trays beneath any leaking equipment.	Contractor	Mark out parking area	Once off	Project manager	Monthly	Visual checks
• Fuel/lubricant absorbing media (sawdust) within these drip trays should be used to contain any spilled liquids. These materials must be replaced regularly to prevent over saturation and potential spillage of free product. • The material must be disposed of as dangerous waste and be collected by an approved contractor/delivered to a suitable waste site. Chain of custody documentation must be provided as proof of end recipient.	Contractor	Place material in drip trays	Continuous	Project manager	Monthly	Photos & Records of disposal
Solid and domestic waste removal						
• Domestic waste must be kept in adequate weather- and scavenger-proof waste bins or storage cages and must be disposed of weekly at the Makhado registered municipal landfill site.	Contractor	Continuous	Weekly removal	Project manager	Monthly	Disposal records

SOIL & GROUND- AND SURFACE WATER POLLUTION - CONSTRUCTION PHASE						
Impact Management outcome: Minimise impact to the environment and people through the minimisation and control of groundwater and surface water pollution						
Impact Management actions (mitigation measures)	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe: implementation	Responsible person	Frequency	Evidence: compliance
• Waste must be sorted and recycled as far as practically possible.						
• The mixing of cement and paints must be done at designated areas to contain any spillages to protect surface and groundwater resources.	Contractor	Use designated areas	When applicable	Project manager	Monthly	Visual check
• Regular clean-up programs must be put into effect through-out the site to limit the impact of littering caused by construction activities.	Contractor	Daily clean-up	Continuous	Project manager	Monthly	Visual check
• No contaminants (soaps, detergents, lime, glues, paints, cement or fuels) may be disposed of on the site.	Contractor	Dedicated waste bins	Continuous	Project manager	Monthly	Visual check
Trenching & excavations for cables, foundations, and water infrastructure						
• Ensure strict compliance that no foreign matter is deposited in trenches or excavations. Any foreign matter must be removed immediately.	Contractor	Visual inspection before closure	Continuous	Project manager	Monthly	Spot checks
Storm water across cleared areas						
• Slopes must be kept to the minimum. • The ridges for planting must follow the contours. • Construct sufficient outflow drains from roads. • Erosion control measures must be implemented to minimise the amount of soil lost. • The **Stormwater and Erosion management plan** must be actioned.	Contractor	Construction according to plans	During construction phase	Project manager	Monthly	Check construction against plan
• Regular inspection must be done following rain events to ensure stormwater is mitigated and stormwater management measures are sufficient. Any damage observed must be repaired as soon as possible.	Contractor	Maintain and repair as required	During construction phase	Project manager	During construction phase	Visual check

WATER SUPPLY MANAGEMENT - CONSTRUCTION PHASE						
Impact Management outcome: Implement responsible water usage						
Impact Management actions (mitigation measures)	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe: implementation	Responsible person	Frequency	Evidence: compliance
Dust suppression measures & compaction						
• Water use must be kept to a minimum. Ensure that pipes and taps are not leaking - be aware of damages by construction machinery to underground pipes.	Contractor	Keep water use records	Continuous	Project manager	Weekly	Water use records
• Construction workers must be educated on the importance and ways to use water sparingly.	Contractor	Monthly training	Weekly	Project manager	Weekly	Training attendance list
• It must be ensured that annual cumulative water use from the Existing Lawful Use from adjacent farms do not exceed volume as authorised.	Project Manager	Apply abstraction schedule	Continuous	Project Manager	Daily measurements Monthly totals	Abstraction records

ECOLOGY/BIODIVERSITY- CONSTRUCTION PHASE						
Impact Management outcome: Minimise and control impact to the ecological aspects during construction.						
Impact Management actions (mitigation measures)	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe: implementation	Responsible person	Frequency	Evidence: compliance
Site clearance - loss of protected plants/other vegetation						
• Indigenous vegetation which does not interfere with the development must be left undisturbed.	Contractor	Demarcate/fence development and no-go areas	During construction phase	Project manager	Weekly	Visual inspection
• Permits must be obtained from the Department of Forestry, Fisheries and Environment (DFFE) and/or LEDET should any of the protected plant species potentially occurring on the development footprint be impacted upon. These species should, where possible, be relocated to other areas of the farm. • A permit must be obtained from the Department of Forestry, Fisheries and Environment (DFFE) and/or LEDET for transplant or removal of	Project manager	Appoint ecologist to do survey of plants and trees to be removed and apply for permits	Before start of construction	ECO	Weekly	Visual check to ensure that only marked plants are removed

ECOLOGY/BIODIVERSITY- CONSTRUCTION PHASE						
Impact Management outcome: Minimise and control impact to the ecological aspects during construction.						
Impact Management actions (mitigation measures)	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe: implementation	Responsible person	Frequency	Evidence: compliance
Adansonia digitata, Boscia albitrunca, Sclerocarya birrea and *Vachellia erioloba* trees.						
• Protected, ecologically valuable and/or large tree species within the development footprint should be protected and incorporated as part of the landscaping of future development in the area as far as possible. • Should the project be approved, protected trees which cannot be retained will be earmarked for transplant/relocation, or removal as a last resort, by means of a tree survey which records the GPS co-ordinates and description of each specimen. Trees suitable for transplant/relocation will be relocated to other suitable areas on the farm.	Project manager	Appoint ecologist to do survey of protected trees to be transplanted / removed and apply for permits	Before start of construction	ECO	Weekly	Visual check to ensure that only marked plants are removed
Impact on wildlife						
• **A 30m buffer must be demarcated and retained from the edge of the riparian vegetation along the two drainage channels on site – Figure 5.** • **These areas should remain natural without any development or landscaping.** • **These buffers are:** - **to protect drainage channels from erosion** - **to conserve sensitive riparian habitat which must remain as wildlife corridors to allow fauna free movement across the site – Figure 5.** • **These areas must remain intact and must be demarcated as no-go areas to site personnel.**	Project manager	Demarcate corridors and educate staff on their status as no-go areas	Before start of construction	ECO	Weekly	Visual check to ensure natural areas remain undisturbed

ECOLOGY/BIODIVERSITY- CONSTRUCTION PHASE						
Impact Management outcome: Minimise and control impact to the ecological aspects during construction.						
Impact Management actions (mitigation measures)	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe: implementation	Responsible person	Frequency	Evidence: compliance
• Strict rules and penalties against the snaring, killing, catching or poaching of any animals will be enforced for all personnel and temporary workers. This restriction includes collection of fauna as pets, food or muti.	Contractor	Fine for transgressors	During construction phase	Project manager	Weekly	Incident log sheet
Inappropriate use of herbicides and pesticides						
• The use of poisons for the control of any animals or plant species may only be done with the input and consent from a pest control specialist or ecologist.	Contractor	Appoint specialist	When required	Project manager	Weekly	Verify type of poisons used
• A register must be kept of all relevant details of pesticide and herbicide usage.	Contractor	Compile register	When applicable	Project manager	Weekly	Inspection log sheet
Fires						
• Staff must be educated on the dangers of fires. The necessary safety measures must be in place on site.	Contractor	Training & keep site clean	Weekly	Project manager	Weekly	Training records & visual inspection
• No vegetation may be burnt on the construction site.	Contractor	Training and fines where there are transgressions	Daily	Project manager	Daily	Daily checking

ECOLOGY/BIODIVERSITY- CONSTRUCTION PHASE						
Impact Management outcome: Minimise and control impact to the ecological aspects during construction.						
Impact Management actions (mitigation measures)	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe: implementation	Responsible person	Frequency	Evidence: compliance
Cutting and collection of firewood						
• No indigenous trees on adjacent areas may be cut or wood collected for firewood or any other purpose. Removal of vegetation to be confined to the site only, as authorised in the environmental authorisation.	Contractor	Fine for transgressors	When applicable	Project manager	Continuous	Visual inspection
Control of alien invaders						
• The project manager/contractor is responsible for the eradication of alien invasive species during the construction phase. Control of such plants will involve killing the plants present, killing the seedlings and establishing and introducing alternative plant cover to suppress regrowth. • Alien vegetation should be monitored and regularly removed by hand. Chemical control is not recommended. Removed alien plant material must be disposed of at a registered waste disposal site.	Contractor	Check area for presence of alien invader plants	Continuous	Project manager	Continuous	Visual inspection
• Monitor for alien invasive species on a monthly basis during the rainy season.	Contractor	Walk-over monitoring	Monthly	Project manager	Monthly	Visual inspection

HERITAGE RESOURCES - CONSTRUCTION PHASE						
Impact Management outcome: Prevent/minimise negative impacts on heritage resources						
Impact Management actions (mitigation measures)	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe: implementation	Responsible person	Frequency	Evidence: compliance
Earthworks and excavations						
• The following recommendations from the Archaeological (Heritage) Impact Assessment (p.63) should be implemented**, prior to site preparation or ground clearance commencing**: 1. Areas where archaeological materials were recorded should be excluded from development and cordoned off to prevent farm machinery accidently impacting archaeological resources. - **KMZ files should be provided to the developer and farm manager so that they know where to cordon off.** - Fencing the area would be appropriate. - The delineation of graves and social areas needs to be communicated to farm workers, to ensure that tractors/trucks etc. do not accidentally impact graves or social areas. - Fences and buffers must be maintained and adhered to at all times. 2. **Areas where social/family areas were recorded be excluded from development and cordoned off to prevent farm machinery accidently impacting social resources and possibly graves.**	Contractor/Developer	Implement according to recommendations and Site management plan	**Prior to construction activities near heritage sites as identified in the AIA.**	Project manager/Farm manager	Monthly	Visual inspection and monitoring checklist

HERITAGE RESOURCES - CONSTRUCTION PHASE						
Impact Management outcome: Prevent/minimise negative impacts on heritage resources						
Impact Management actions (mitigation measures)	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe: implementation	Responsible person	Frequency	Evidence: compliance
3. The family cemeteries: Access to the graves needs to be provided to the descendants, according to the landowner standard protocol for grave visitation and access, as the ancestors still play a role in the lives of the living family. • 2022 cemetery 2 marked as **22.8** should be adequately fenced – Appendix E. 4. All grave areas indicated that fall inside or outside the excluded area- should be fenced off, with access for families allowed as per the landowners standard procedure for grave visitation and access. 5. **A buffer zone of 30m has been provided for the graves. Grouped together these areas should be included in the excluded area – Fig 5.** 6. The center strip along the calcareous drainage lines has already been excluded due to ecological and environmental reasons. In terms of heritage this area has been extended to include archaeological, grave and social areas. 7. **Monitoring should take place when ground works begin**. **Although the community has stated that they know of no further graves, there remains a possibility that other graves, especially those of children and babies, may still be found during ploughing and general ground works, vigilance therefore needs to be maintained.** 8. Should palaeontological materials be uncovered during construction, all activities should be suspended, the area and finds should be left undisturbed, be cordoned off immediately and a qualified palaeontologist must be contacted to conduct rescue operations.						

HERITAGE RESOURCES - CONSTRUCTION PHASE						
Impact Management outcome: Prevent/minimise negative impacts on heritage resources						
Impact Management actions (mitigation measures)	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe: implementation	Responsible person	Frequency	Evidence: compliance
9. The discovery of previously undetected subterranean heritage remains on the terrain must be reported to the Limpopo Heritage Authority or the archaeologist, and may require further mitigation measures.						
• The **Site Management Plan (p. 13)** must be executed, and the process must be overseen by a person qualified to do so. • Care must be taken in the excavations and moving of soil to observe any archaeological feature of importance. • **If subsurface archaeological deposits, artefacts or skeletal material were to be recovered in the area during construction activities, all activities should be suspended, the area and finds should be left undisturbed, be cordoned off immediately and the archaeological specialist should be notified immediately.**	Contractor	Implement according to recommendations and Site management plan	At the onset of construction activities near heritage sites as identified in the AIA.	Project manager	Monthly	Visual inspection and monitoring checklist

SAFETY & SOCIO-ECONOMICS - CONSTRUCTION PHASE						
Impact Management outcome: Ensuring a safe/secure construction environment and enhance socio-economic development						
Impact Management actions (mitigation measures)	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe: implementation	Responsible person	Frequency	Evidence: compliance
Construction activities - safety of employees						
• The Safety Act (Act 85 of 1993) and the Regulations at the time of construction apply. The Act requires the designation of a Health and Safety representative when more than 20 employees are employed.	Contractor	Apply Act	Continuous	Project manager	Weekly	Verify number of employees on site

SAFETY & SOCIO-ECONOMICS - CONSTRUCTION PHASE						
Impact Management outcome: Ensuring a safe/secure construction environment and enhance socio-economic development						
Impact Management actions (mitigation measures)	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe: implementation	Responsible person	Frequency	Evidence: compliance
• A first aid kit must be available at the site office.	Contractor	Supply first aid kit	Daily	Project manager	Weekly	Visual inspection
• All personnel must be informed of emergency procedures and contact numbers must be displayed prominently.	Contractor	Training talks	Weekly	Project manager	Weekly	Training records
• Personal Protective Equipment (PPE) and safety gear must be provided to all site personnel (e.g. hard hats, safety boots, masks etc.).	Contractor	Supply PPE	When required	Project manager	Weekly	Verify if employees are using PPE
• Firefighting equipment must be available and must be inspected regularly to ensure that it is in proper working order and easily accessible. • No solid waste or vegetation may be burnt on the site or surrounding areas.	Contractor	Supply & inspect firefighting equipment	Weekly	Project manager	Weekly	Inspection log sheet
Construction activities - socio-economic impact						
• Local labour must be used wherever possible during the construction phase.	Contractor	Appoint local people	Construction phase	Project manager	Monthly	Staff records

10 MAPS & PHOTOS

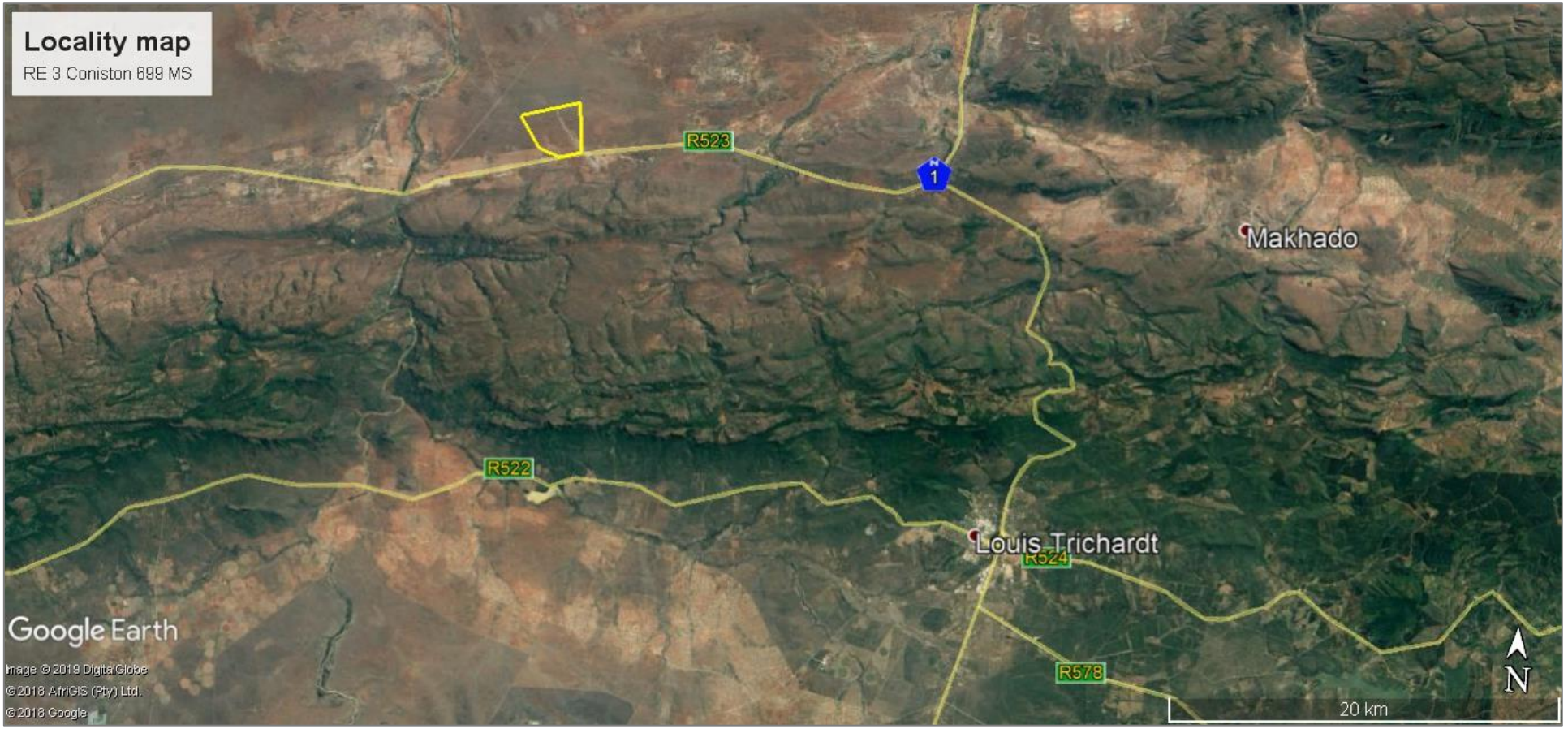


Figure 1. Locality of the project site

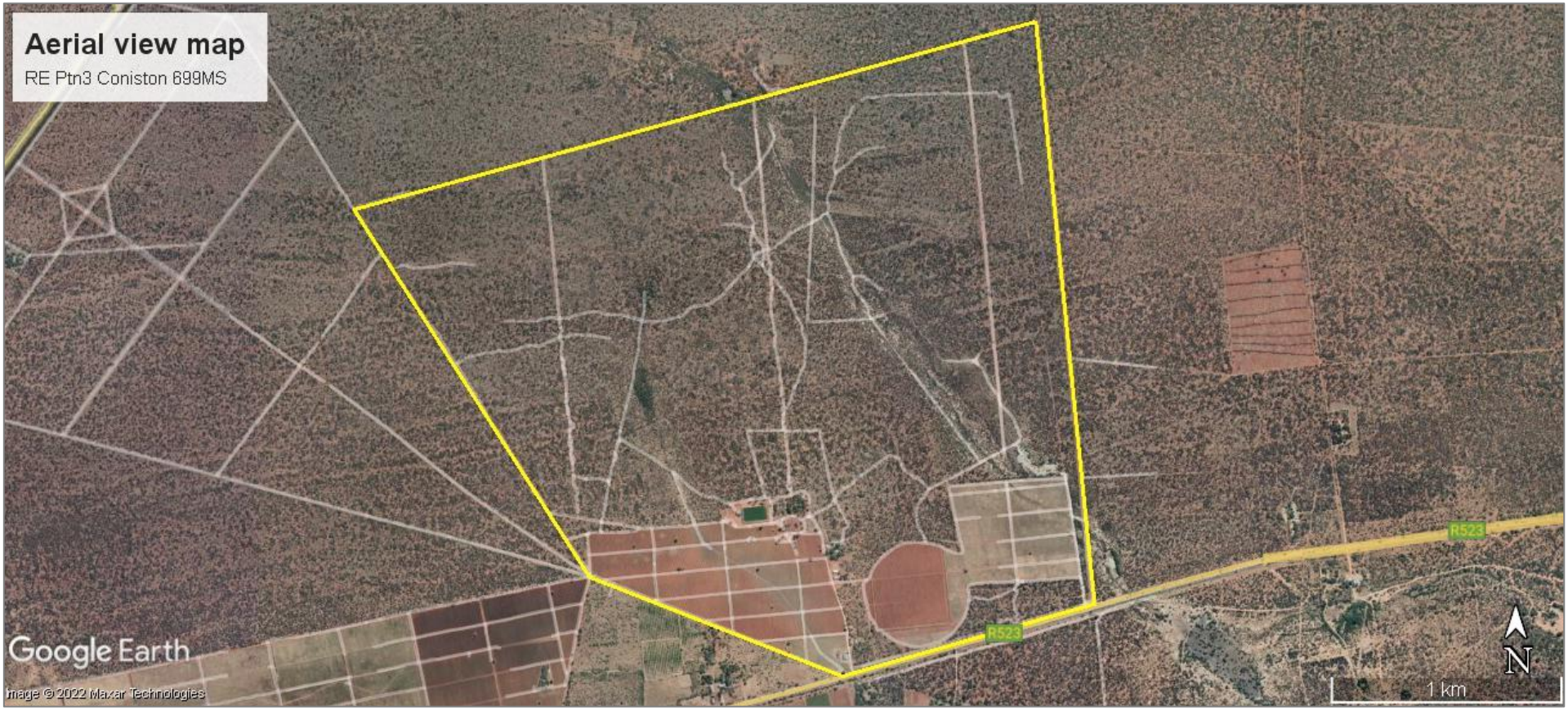


Figure 2. Aerial view of project site

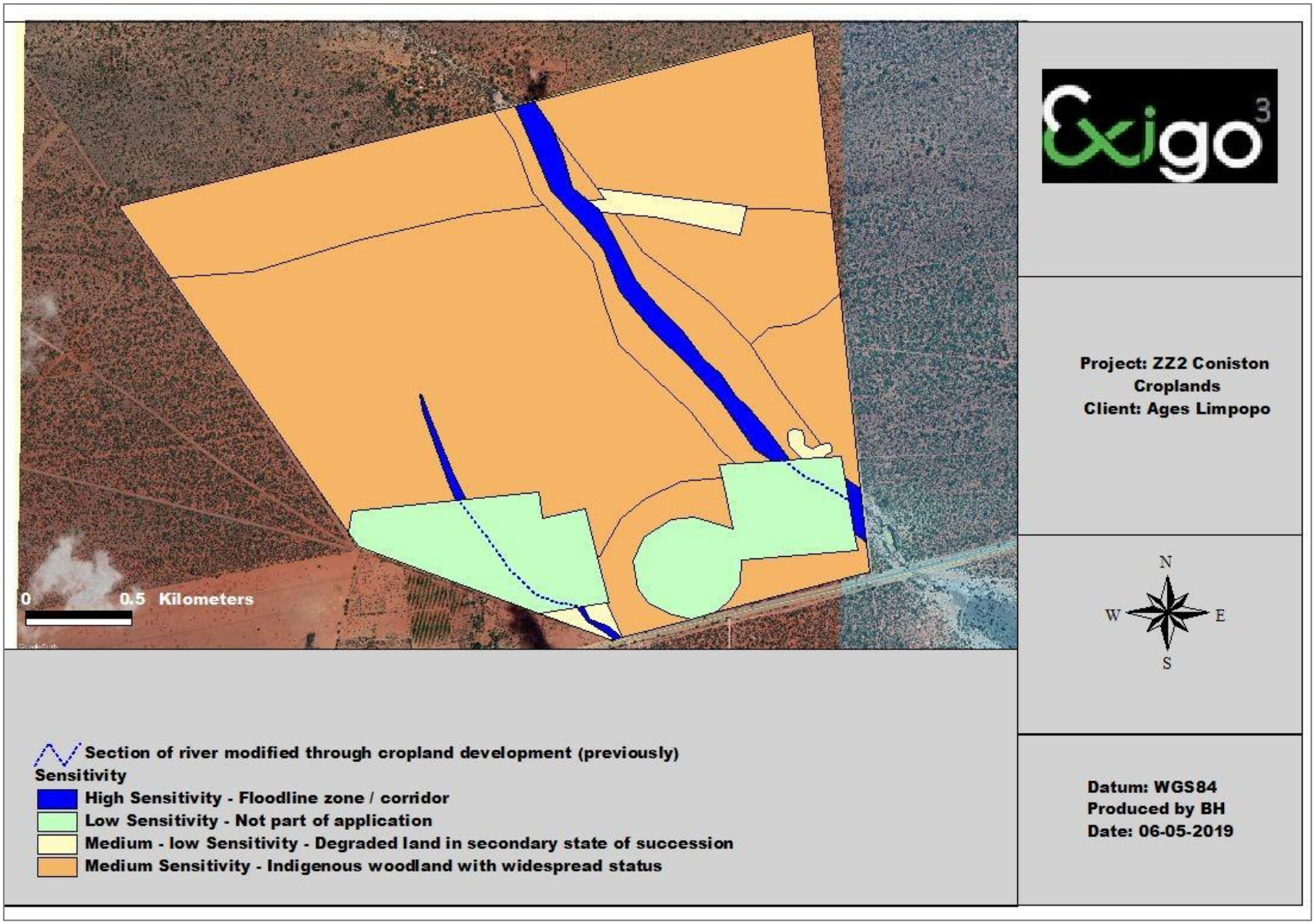


Figure 3. Ecological sensitivity map

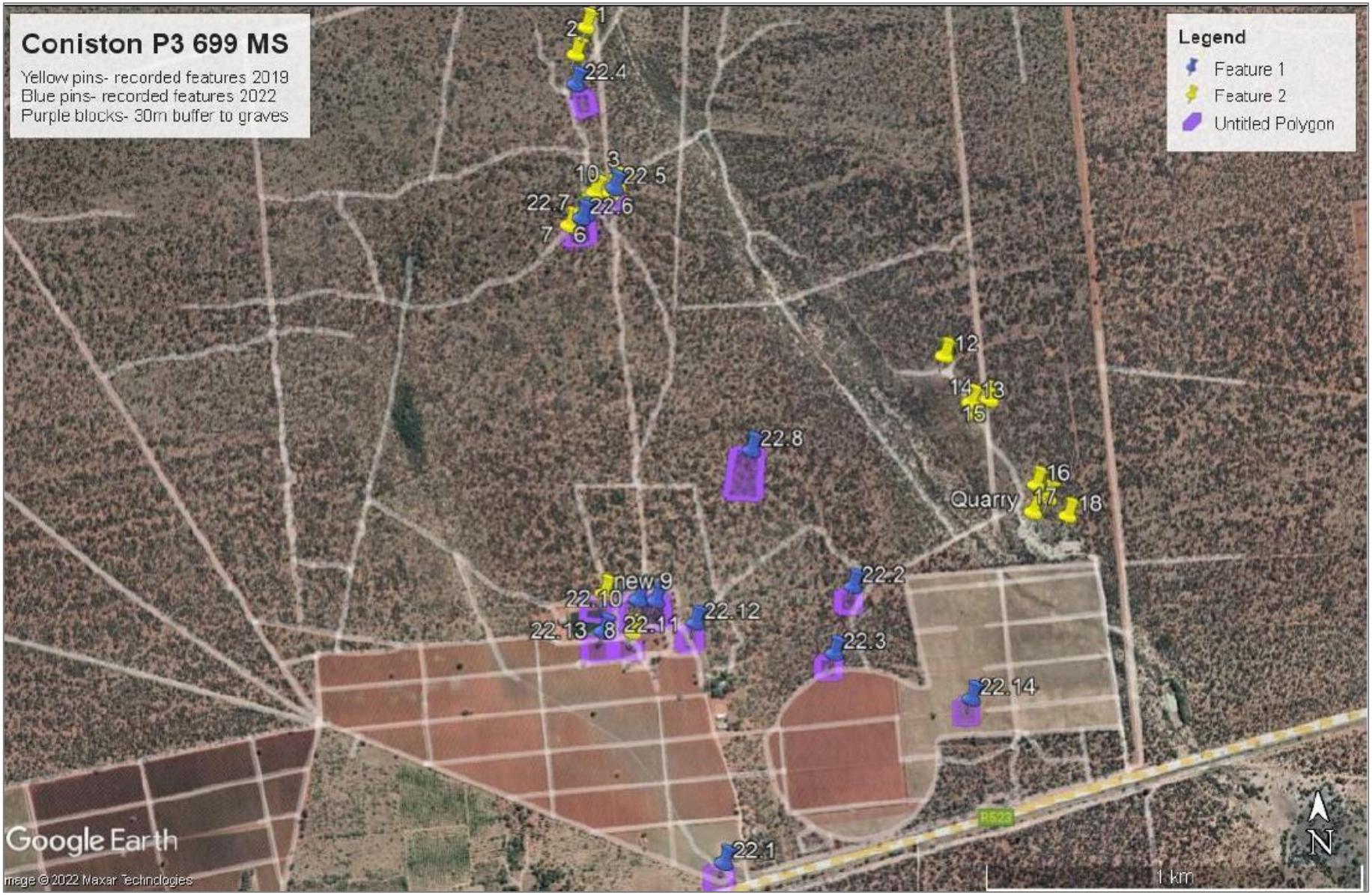


Figure 4. Heritage features recorded (for a complete list with GPS coordinates, refer Appendix E, p.53-55, section 4.7 "Summary of recorded heritage resources and impacts"

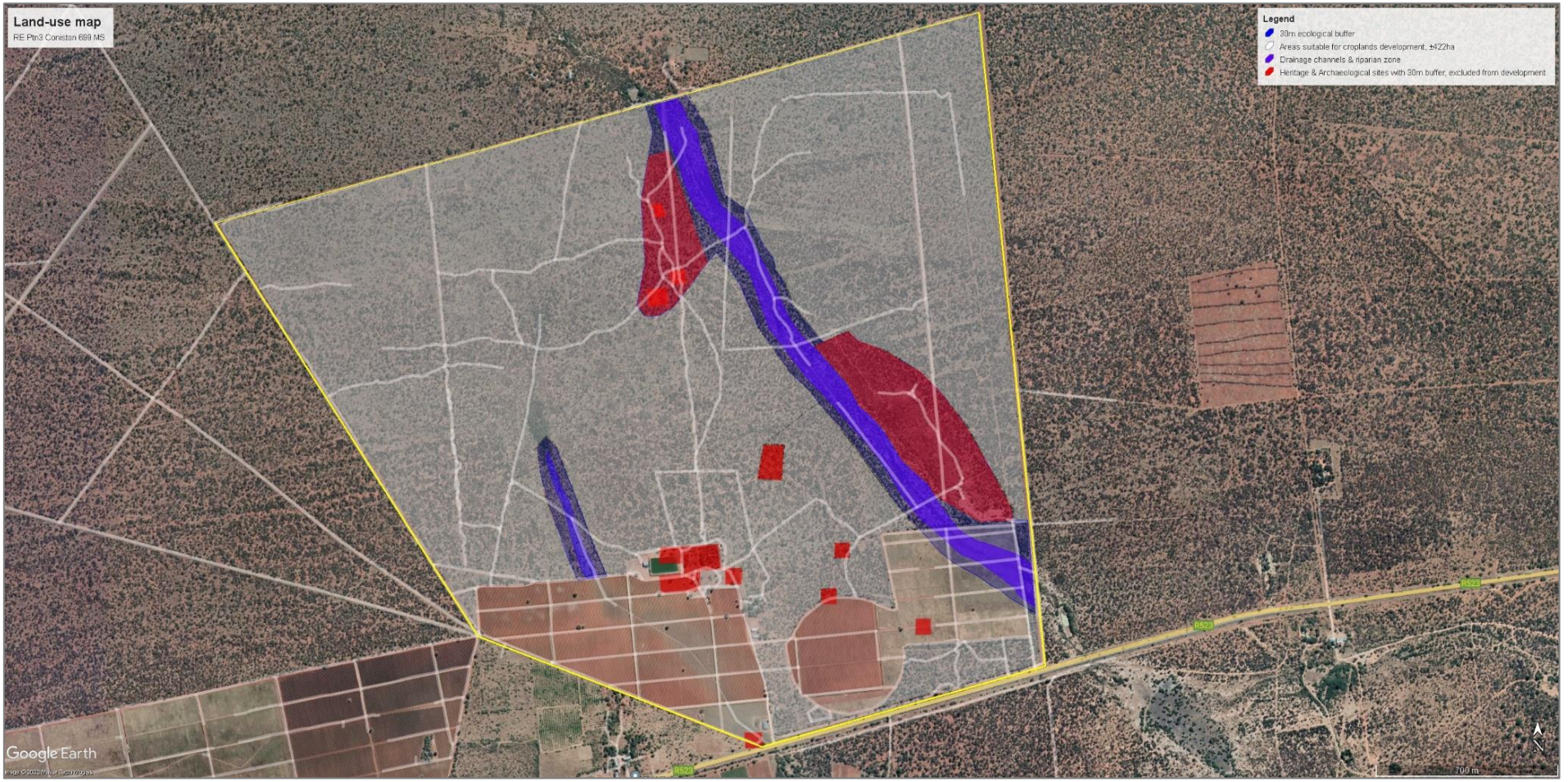


Figure 5. Land use map indicating areas suitable for development, and buffer areas to be excluded from development (heritage and ecological sensitivity)

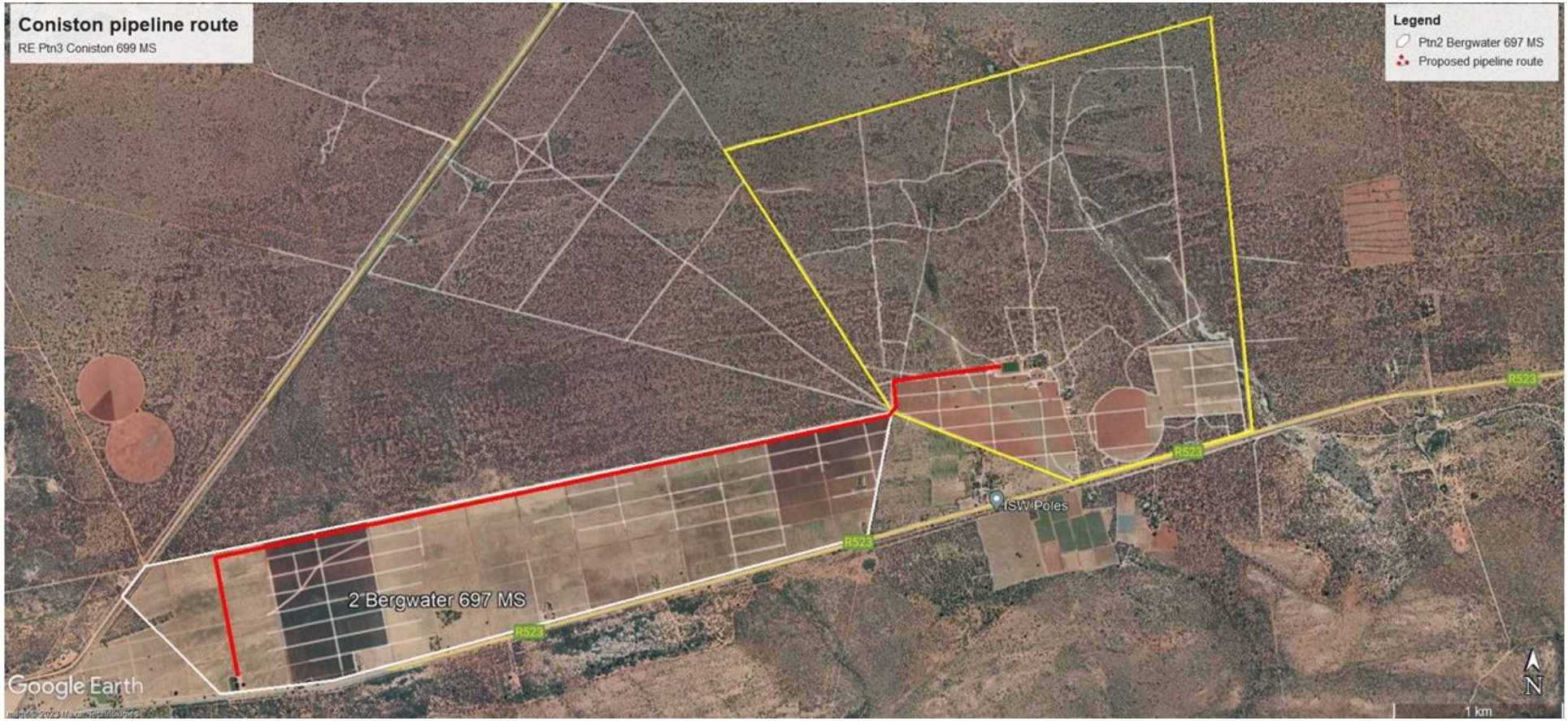


Figure 6. Proposed pipeline route for transfer of water from adjacent farms