

ENVIRONMENTAL MANAGEMENT PROGRAMME

FOR

**ESKOM FSOU 132KV POWER-LINE CONSTRUCTION
(EASTERN CAPE-FREE-STATE)**

DEA REFERENCE NUMBER: 14/12/16/3/3/1/1847

PREPARED FOR



PREPARED BY



FEBRUARY 2018

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1. INTRODUCTION

ESKOM FSOU has appointed NSVT Consultants as independent environmental assessment practitioners to undertake an Environmental Impact Assessment as well as the Water Use License application process and subsequently to complete the Environmental Management Program (EMPr) for the construction of a power-line with the capacity of 132kV from the Melkspruit substation in the Eastern Cape to the Rouxville substation in the Free-State. The final preferred route layout map for the proposed development is attached hereto as **Appendix A.**

2. DETAILS OF ENVIRONMENTAL ASSESSMENT PRACTITIONER

The curriculum vitae of the EAP is attached hereto as **Appendix B.**

EAP	NSVT Consultants		
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QUALIFICATIONS	B. Sc. (Natural Science) B. Sc. Hons (Wildlife)	EXPERIENCE	15 years working in the environmental management field as an EAP. She has completed environmental impact assessment, basic assessment, drafting of EMPRs and environmental compliance monitoring for various development within the Free State., North West, Northern Cape and Eastern Cape Provinces.
EXPERTISE/ TRAINING	Resources & Sustainability, Physical & Biological Environment and Informatics, 2006 Project Management for Environmental Management, 2006 Social & Economic Sustainability, 2006 Use of Matrices in EIA, 2008 Public Participation Training, 2010 Introduction to Social Impact Assessment, 2011 Integrating HIV/Aids and Gender-related issues into EIA Process, 2013 Integrated Water Resources Management, Water Use Authorisation and Water Use License Application, 2013 One Environmental System-2015	PROFESSIONAL AFFILIATE	
			SACNASP Professional Natural Scientist-4000161/09 Member of International Association for Public Participation Southern Africa Affiliate-2010/ZA/FS/0001) Member of International Association for Impact Assessment SA-2191

3. PROJECT DESCRIPTION

3.1. BACKGROUND INFORMATION

The proposed route for the construction of the new 132kV power-line is situated primarily along the N6 between two towns, namely; Rouxville in the Free-State and Aliwal North in the Eastern Cape. The powerline will run from Melkspruit substation to Rouxville substation, are located on the outskirts of both towns and are approximately 37km apart, the Melkspruit property houses the Aliwal North substation and the Rouxville substation is located on the Dorpsgronden Van Rouxville Farm No. 108 and both properties are on municipal land. The proposed Eskom power-line will distribute a baseline capacity of 66kV but with the future capacity to deliver 132kV to cater for the future population growth of Rouxville and Aliwal North.

Specialist studies which were conducted as part of the Basic Assessment Process for the proposed power-line to determine the most environmentally suitable servitude within which to place the proposed power-line. The following specialist studies were conducted:

- Ecological Impact Assessment
- Aquatic Impact Assessment and Wetland Delineation
- Avifauna Impact Assessment
- Archaeological Impact Assessment
- Paleontological Impact Assessment
- Visual Impact Assessment

3.2 SENSITIVITY OF THE PROPOSED SITE

The proposed site is predominantly used for rearing cattle and as agricultural fields. The Wetland, Avifauna, Ecological and Aquatic specialist studies revealed the following:

- No fatally flawed or high impact features were identified during the survey. The impacts associated with the proposed development can be successfully mitigated;
- Sensitive habitat features were identified during the survey and an ecological sensitivity map compiled by the Ecologist needs to be taken into consideration during the planning phase of the tower positions, which is shown in *Figure 1* below.
- All wetlands and other watercourses have been delineated and designated appropriate conservation buffer zones. All established aquatic habitat must be spanned across to help prevent adverse impacts on these areas. The establishment of tower positions within wetland habitat must be avoided as far as possible and the surface water ecosystem should be adhered to, which are shown in *Figure 2* to *7* below.
- Avifaunal migratory routes and zones have been identified along the powerline route. The fitment of bird flappers must be undertaken in these areas to limit fatalities caused by collisions with the overhead line as shown in *Figure 8* below.

The Ecological Sensitivity Map is shown in *Figure 1* below:

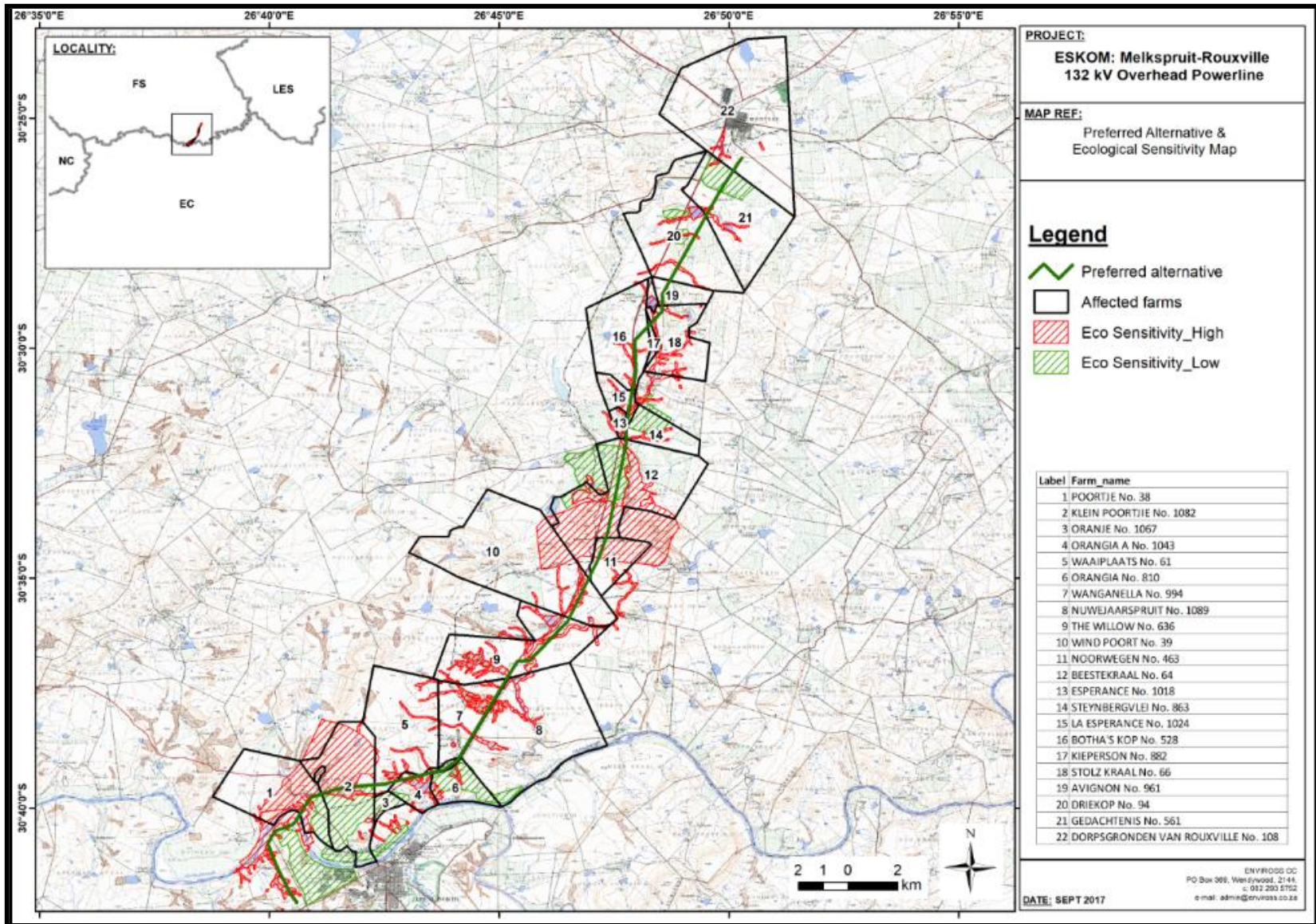


Figure 1: Ecological Sensitivity Map

The maps for delineation of surface water ecosystems are shown in *Figure 2* to *7* below.

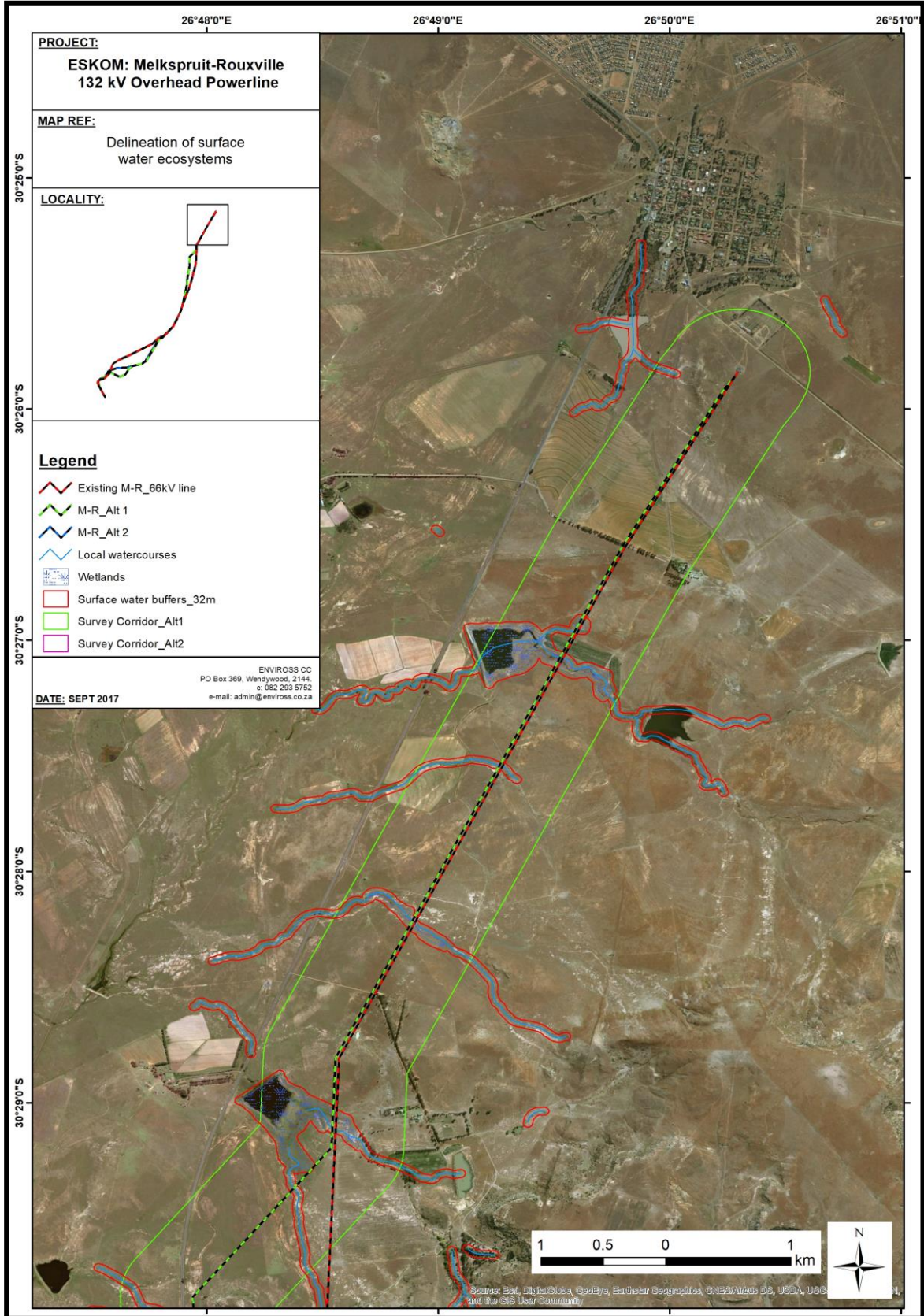


Figure 2: North 1 Surface Delineation Map

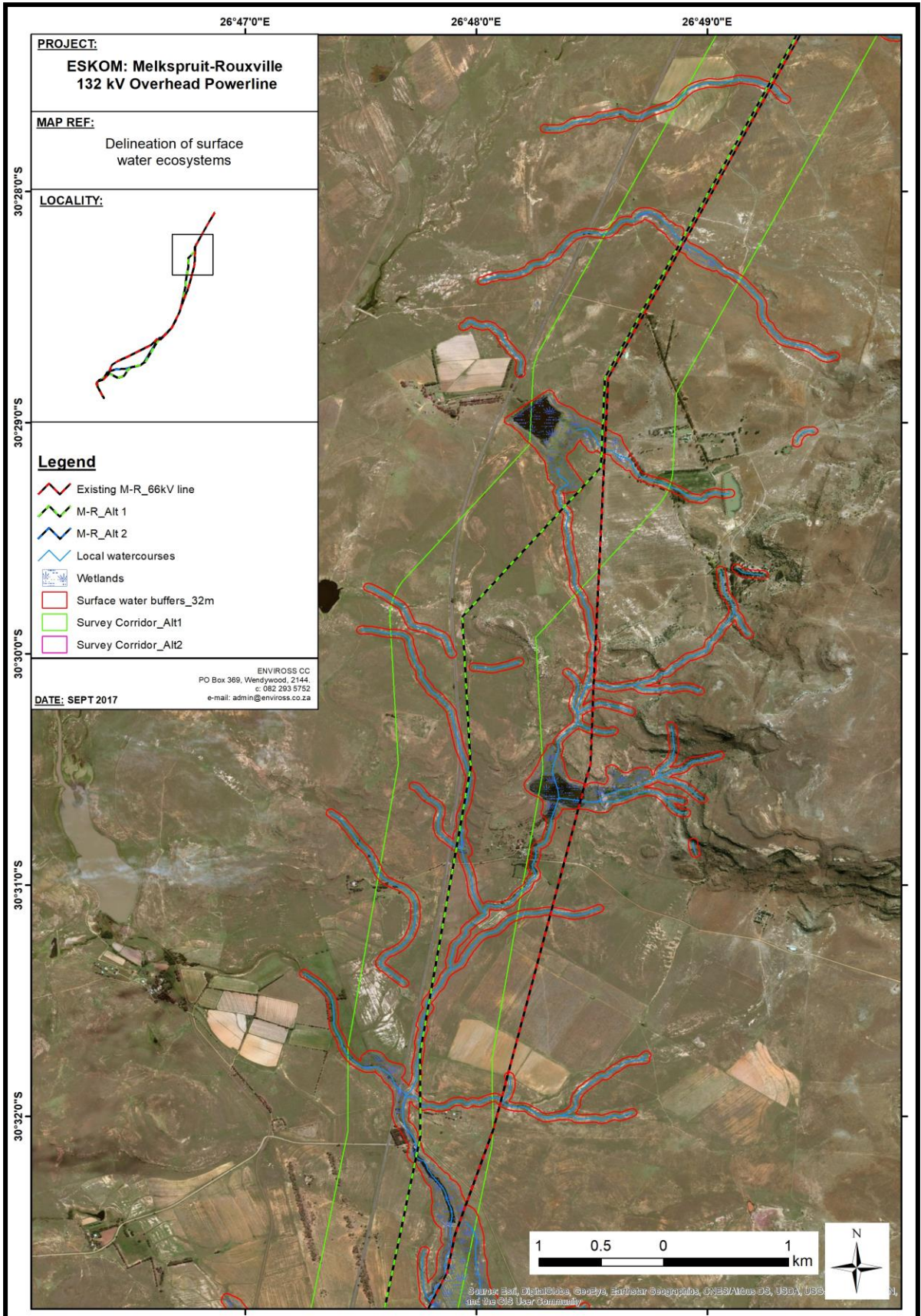


Figure 3: North 2 Surface Water Ecosystem Delineation Map

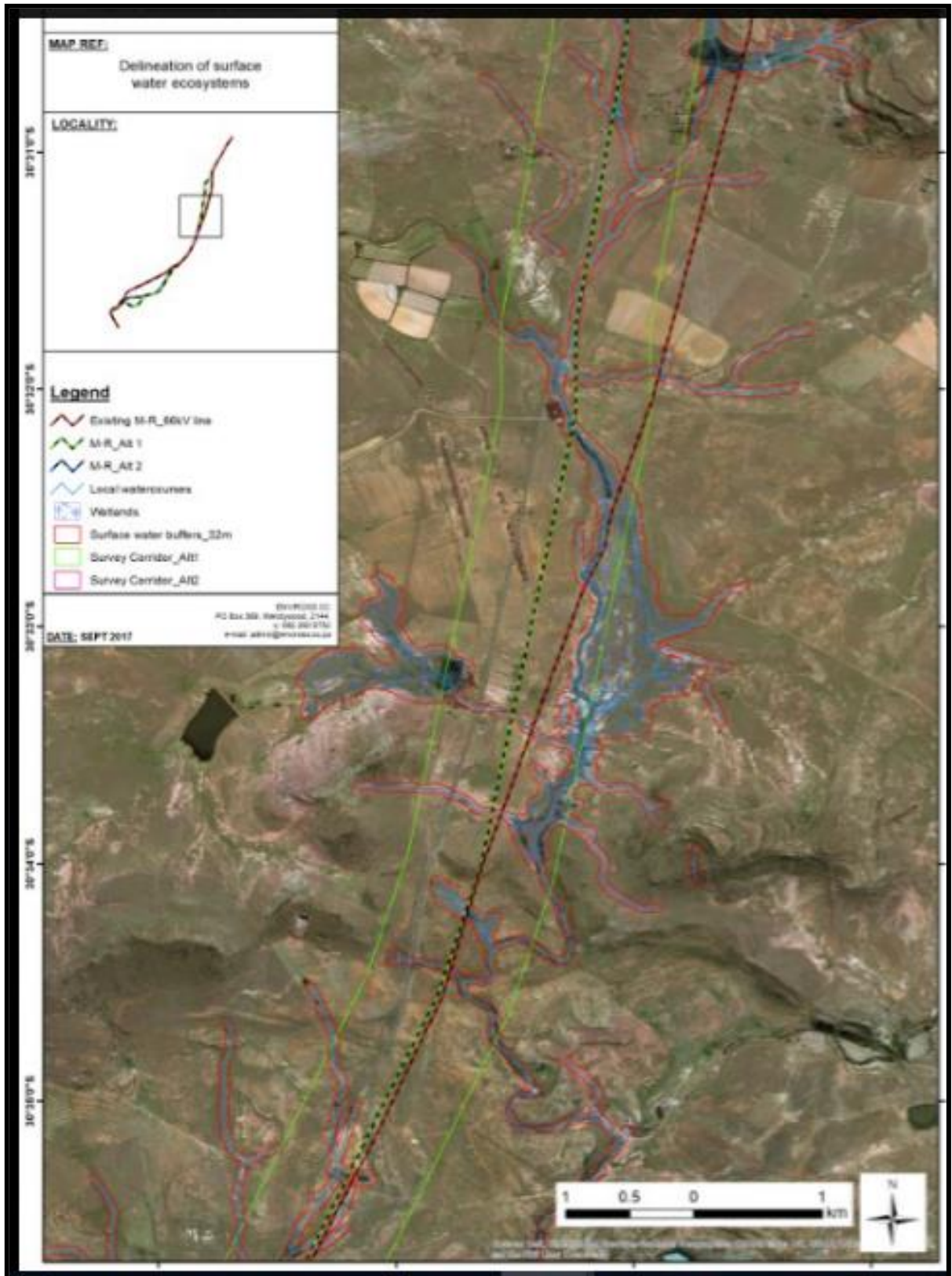


Figure 4: Central 1 Surface Water Ecosystem Delineation Map

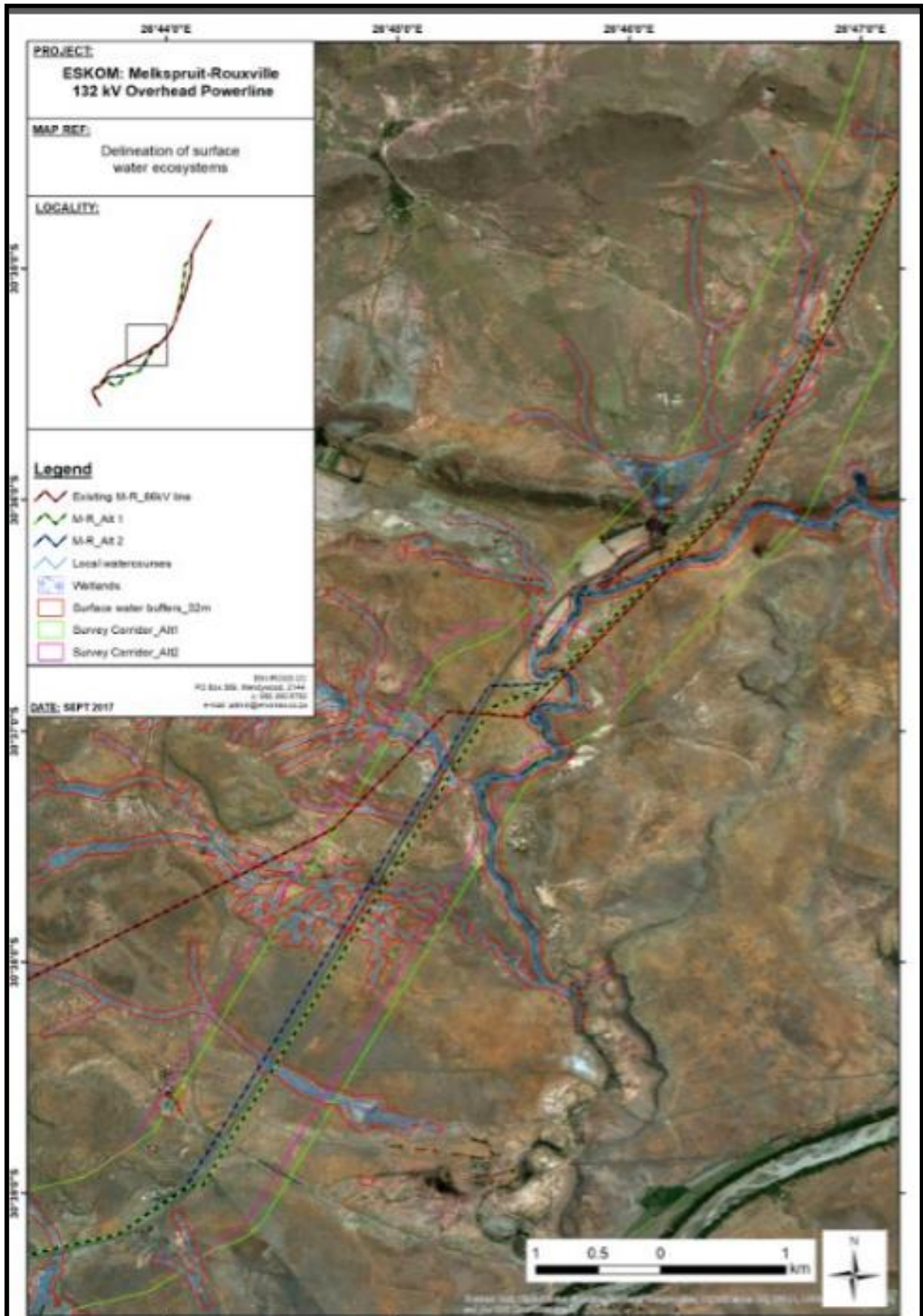


Figure 5: Central 2 Surface Water Ecosystem Delineation Map

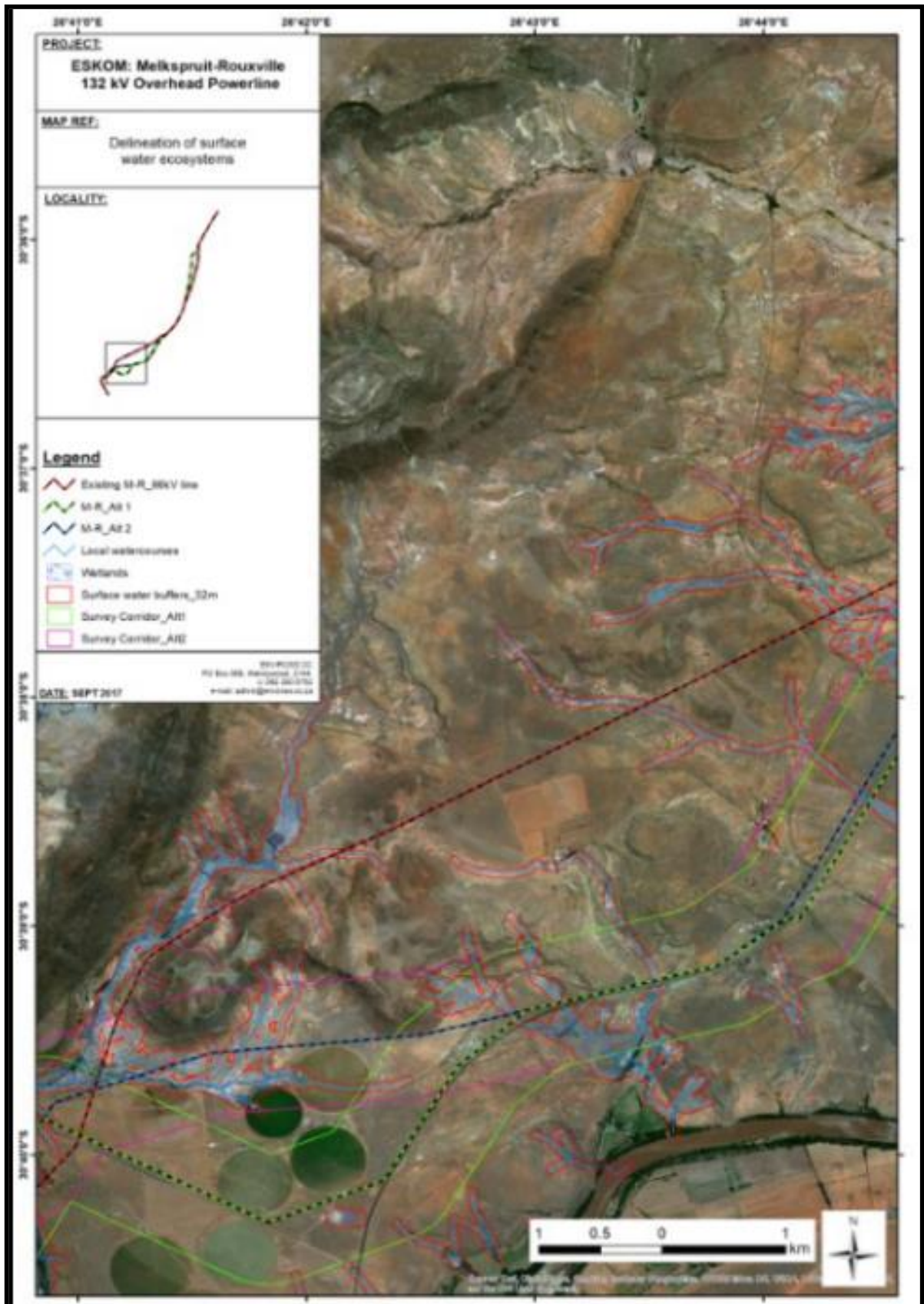


Figure 6: South 1 Surface Water Delineation Map

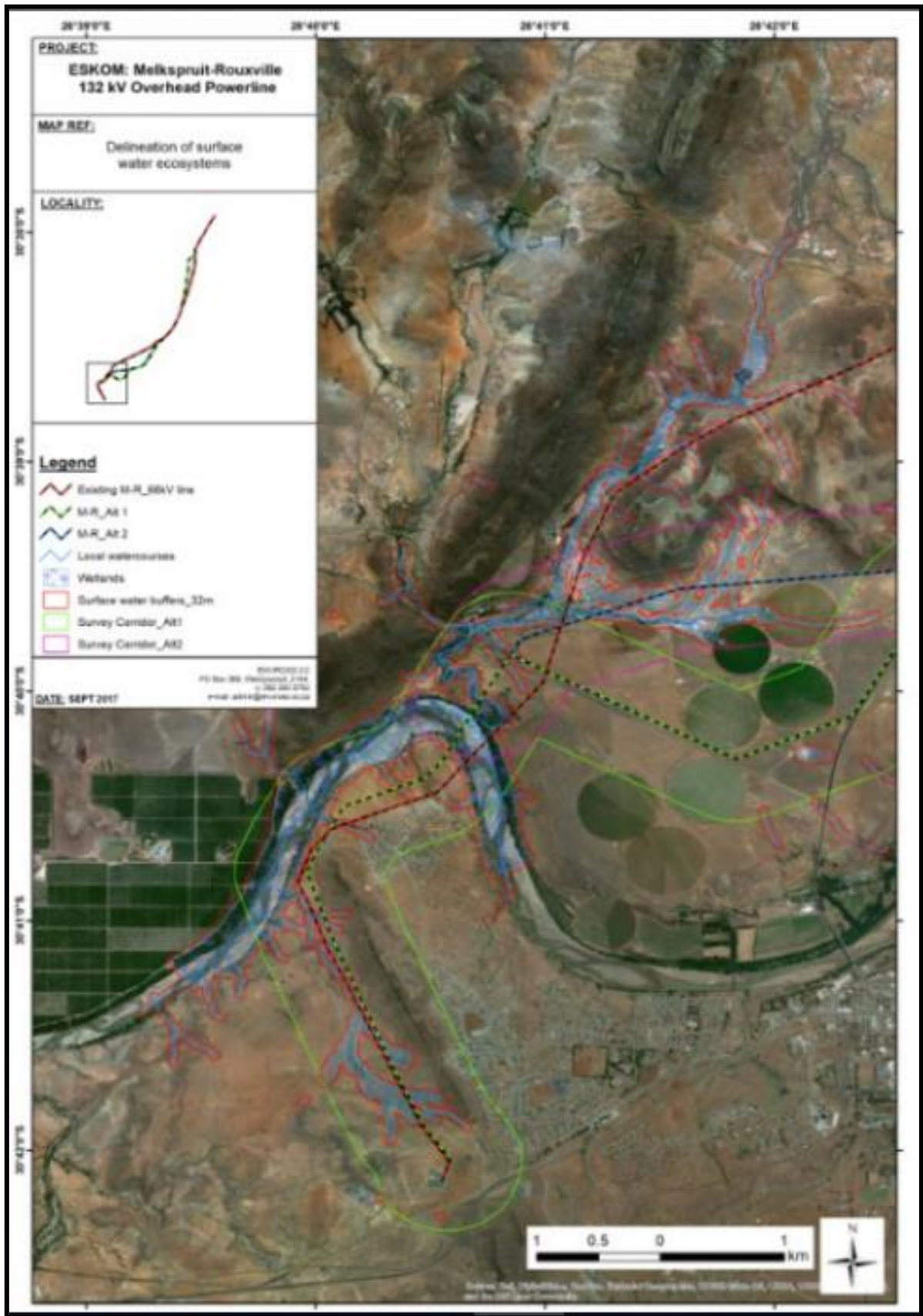


Figure 7: South 2 Surface Water Ecosystem Map

The avi-faunal migratory routes are shown in *Figure 8* below.

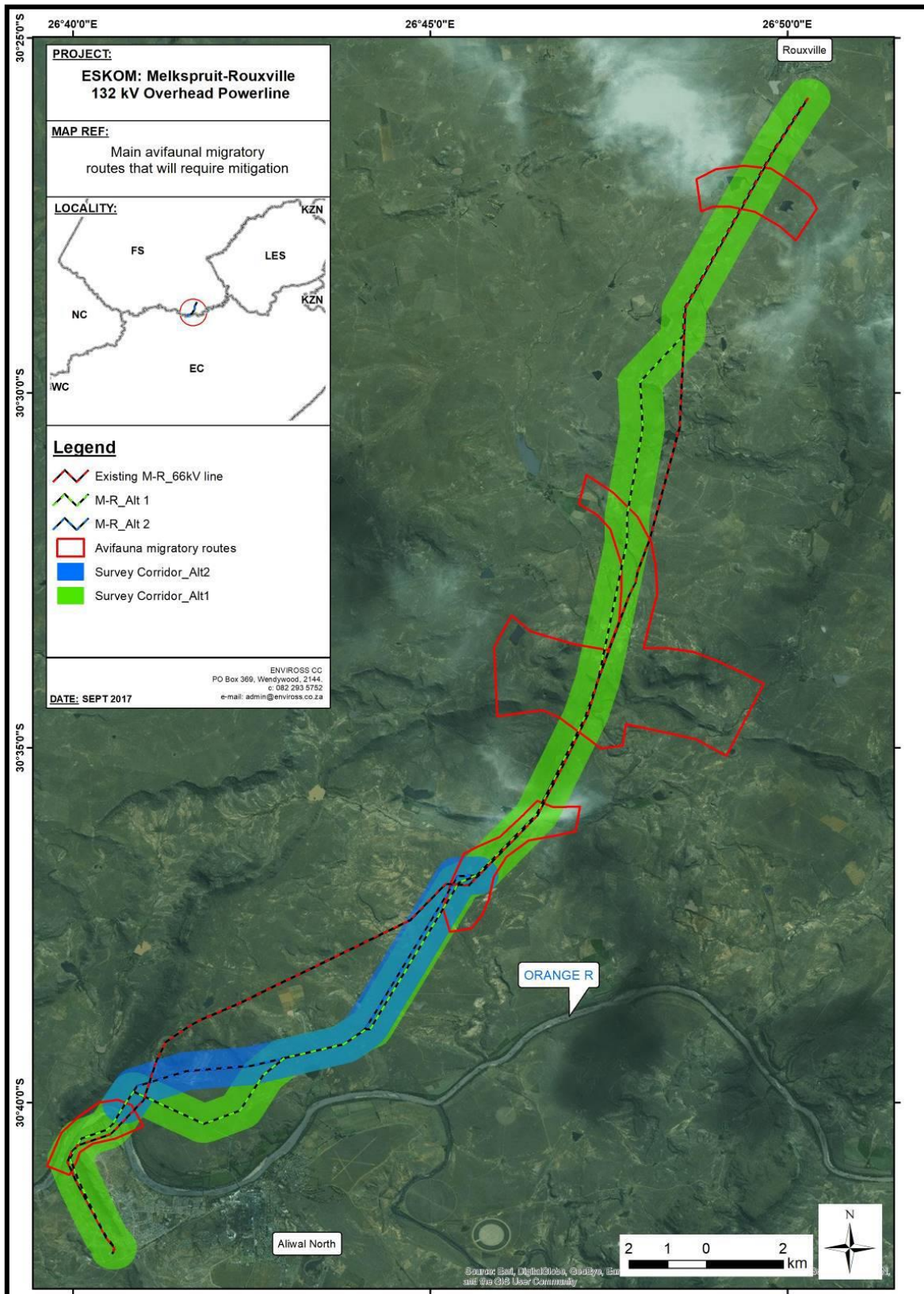


Figure 8: Avi-faunal Migratory Routes

4 CHECKLIST FOR THE PROPOSED PROJECT

1. Give a detailed description of the development:

The development of the proposed power-line is due to the lack of accessibility of the existing 66kV powerline by the Eskom maintenance team and due to its aging infrastructure, the new powerline will be constructed by using steel monopoles for the poles to withstand the weather conditions of the area, in contrast, the existing wooden poles have rot from within and may damage the lines ability to transfer power between the Rouxville and the Melkspruit substations. The new steel monopoles to be erected will be embedded to a depth of three metres for each pole along the proposed route for the 132kV power-line construction to withstand the strong gusts of wind in the vast agricultural landscape. The preferred alternative route shall be closer to the N6 to provide easy access to Eskom FSOU maintenance teams to assess the new power-line and resolve any technical fault that may occur during operation.

2. Give a brief description of the surrounding area:

The surrounding area encompasses multiple man-made wetlands as well as river, streams and dongas. The agricultural land portions along the proposed power-line routes are private property mainly used for agriculture to develop feeds for livestock and vast agricultural fields have been developed by farmers. There are farmers' homestead in the proximity of the powerline in the Free State section and Area 13 in the Eastern Cape Section.

3. Is the project significantly different from the surrounding land use?

No, there are existing power-line development but the 66kV, will be decommissioned when the proposed one is operational.

4. Are any of the following located on the site chosen for the development?

- i. River, stream, dam, wetland – Yes, the powerline crosses over man-made water bodies, seasonal streams and the Orange River
- ii. Open space area – No
- iii. Residential (formal or informal settlement) – Homesteads along the routes exit, primarily situated in the region for farming purposes
- iv. Area of cultural importance, e.g. graveyards, old houses, museum, etc. – The routes proposed do not have any historical importance to them.

5. Will the project be considered a noisy intrusion to the neighbors?

No, the increased noise levels will be during construction and thereafter, it will be general noise levels from the N6 as drivers pass by.

6. Would it be necessary to construct roads to access the proposed site?

No, there are existing access roads to the private properties along the routes to construct the proposed power-line.

5 ENVIRONMENTAL MANAGEMENT PROGRAMME

5.1. INTRODUCTION

The EMPr has been divided into four different phases associated with the proposed development namely the pre-construction planning phase, the construction phase and operational phase. This EMPr will be implemented by Eskom FSOU on approval by the Department of Environmental Affairs (DEA). It must be read in conjunction with the contract documentation to ensure that Eskom FSOU works in an environmentally sensitive manner, thus ensuring the impacts on the environment and neighbouring agricultural properties are kept to a minimum.

5.2 OBJECTIVES OF THE EMPR

The aim of the EMPr is to ensure that impact on the environment due to the proposed development is limited. To achieve this, the EMPr has the following objectives:

- ❑ To identify possible environmental impacts of the proposed activity on the environment and mitigation thereof.
- ❑ To provide information on construction activities associated with the identified environmental issues.
- ❑ To provide guidelines for the Eskom FSOU management of the identified environmental issues.
- ❑ To provide guidelines to the responsible persons from Eskom FSOU to follow appropriate contingency plans in the case of various possible impacts.

5.3 RESPONSIBLE PERSON (S)

The implementation of this EMPr requires the involvement of various role players, each with specific responsibilities to ensure that the development is completed in an environmentally sensitive manner.

The Developer: Eskom Free-State Operation Unit

Responsibility: To implement the final EMPr after approval by DEA before the commencement of the construction phase and ensure the proposed development complies with the NEMA requirements and the Environmental Authorisation.

The Eskom Technical Team: Engineers

Responsibility: To undertake the detailed design for the proposed development and to ensure that necessary permits have been obtained prior to construction.

The Environmental Control Officer:

Responsibility:

- ❑ To ensure that the Eskom FSOU implements the EMPr for the duration of the project from pre-construction to post-construction (decommissioning).
- ❑ To review the method statements with the resident engineer.
- ❑ To maintain a direct open line between the Eskom team, Land owners as well as the Local Municipalities in Rouxville and Aliwal North respectively.
- ❑ To audit the implementation of the EMPr and compliance to the environmental authorisation once a month until project completion.

The Contractor:

Responsibility:

- ❑ To implement the EMPr and keep a copy on-site for the duration of the construction phase, as the obligations imposed by the document are legally binding.
- ❑ To comply with the Environmental Authorisation and undertake construction activities in an environmentally sensitive manner and rehabilitation of the proposed route.
- ❑ To undertake good housekeeping practices during the duration of the project.
- ❑ To ensure that adequate environmental awareness training takes place in the language of the Employees.

Designated Environmental Officer:

Responsibility:

- ❑ To implement the environmental management plan.
- ❑ To maintain records of environmental queries for the duration of the construction.
- ❑ To resolve environmental issues during the construction phase of the project.

The Project Steering Committee (Environmental Forum): A committee that comprises of representatives of the Eskom FSOU, Engineers, Councillors of the Affected Wards and their Ward Committees and Land owners.

Responsibility:

- ❑ To monitor the implementation of the EMPr.
- ❑ To assist in the sourcing of general workers from the local community and surrounding farms.
- ❑ To help ensure participation of local contractors during construction.
- ❑ To assist in resolving social or environmental issues that may arise during construction.

5.4 METHOD STATEMENT

A method statement outlines construction activities to be undertaken with mitigation measures. The contractor must give a written statement to the Eskom FSOU at least two weeks before the activity so that any irregularities can be handled before construction commences and communicated to the workforce. The format of the method statement must clearly indicate the following:

1. Construction and Operational Procedures
2. Materials and Equipment used
3. How and where materials will be stored
4. When actions will be undertaken

Based on the EMPr specifications, the following method statements are required as a minimum:

- Site clearing
- Site layout and establishment
- Handling of accidental spillages of hazardous substances
- Cement mixing
- Waste management procedures
- Wastewater management procedures
- Traffic accommodation
- Fire control and emergency procedures

5.5 ENVIRONMENTAL AWARENESS TRAINING

The Eskom FSOU Employees, workforce of the contractors and sub-contractors involved with the work in the construction phase are to be briefed on their obligation towards environmental protection and methodologies in terms of the EMPr prior to work commencing. The briefing must be done by the designated Environmental Officer prior to construction in the form of an on-site talk (toolbox talks).

The basic rules of conduct, which must be considered for the duration of the project, are tabulated below.

Table 1: Basic conduct rules during construction

Do	Do Not
Use of toilet facilities provided and report	Make open fires for cooking, dedicated areas must be provided.
Clear your work areas of litter and building rubbish at the end of each day	Allow any cement bags or litter to be blown around
Report all leakages and/or spillages	Access the neighboring properties without the owners' consent
Confine work and storage of equipment and comply with all safety procedures	Collect fire wood from the neighboring farms
Provide easily accessible fire extinguisher and in good working condition	Dispose of cigarettes and burning matches randomly
Use areas designated for food preparation	Do not leave food lying around
Only emergency repairs of construction vehicles are allowed on the construction site	Enter any fenced off neighboring areas
Use all safety equipment and comply with all safety procedures	Dump any waste substance into the donga
Prevent excessive dust and noise	Dump any hazardous material into the watercourses.

5.6 RECORD KEEPING

There must be an up to date filing system at the site office for the duration of the project whereby method statements, environmental incidents report, training records, audit reports and public complaints register are kept. It is advised that photographs of the site must be taken pre-, during and post-construction as a visual reference. These records must be kept for a minimum of 2 years after completion of the project.

5.7 PENALTIES

In cases of transgressions and non-compliance regarding the EMPr by the contractor, they must be liable to a penalty fine. The penalty fine could be paid to an organization that works to for the conservation of birds in various ways. Transgressions should be recorded in a dedicated register and be kept at the site office for the duration of the project.

The resident engineer will issue the penalties in terms of the severity of the environment; however, *Table 2* below may be used as a guideline.

Table 2: Penalties for transgressions

TRANSGRESSION	PENALTY
Littering and defecation in the bush	R1000
Concrete mixing on the ground	R2000
Spillages	R1000-R10 000 depending on the magnitude)
Soil erosion	R2000
Veld fires	R5000

The Environmental Management Programme is outlined in *Table 3* below. Adherence to this plan during construction will ensure that the environmental impacts associated with the proposed development will be mitigated, thus promoting sustainable development. The commitment and co-operation of the identified responsible person (s) will ensure effective implementation of the EMPR during pre-construction and post-construction. It is therefore imperative that there be a file dedicated for Environmental Documentation.

Table 3: Environmental Management Programme

ASPECT	POSSIBLE IMPACT	MITIGATION PLAN	RESPONSIBLE PERSON (S)	OBJECTIVES	FREQUENCY
1. PRE-CONSTRUCTION PHASE					
Project Contract and Programme	Adherence to the EMPR	<ul style="list-style-type: none"> ◇ The environmental responsibilities must be formalized, and environmental awareness must be taught to the labourer's in their preferred language as toolbox talks. 	RESIDENT ENGINEERS & CONTRACTOR	Ensure that EMPR is adhered to	<u>Frequency</u> Once off
Location of Camp and Depot	Environmental damage	<ul style="list-style-type: none"> ◇ The camp depot must be in an area where the Rouxville and Aliwal North residents are situated and N6 road users are not disturbed or inconvenienced. ◇ The contractor must provide the Eskom technical team with the layout plan of the camp depot for approval before commencement of the construction phase. The plan must include site offices, temporary fencing boundary, sanitation facilities, waste, stockpiling areas, etc. The parking of vehicles, storage of equipment and materials must strictly be confined to designated areas. ◇ If located on the "virgin" ground, area to be rehabilitated once the project is completed. 	RESIDENT ENGINEERS & CONTRACTOR	Prevent environmental damage and disturbance of neighboring land users	<u>Frequency</u> Once off
MANAGEMENT ACTION		A camp depot must be approved by the Resident Engineer from Eskom. Agreement should be in place between contractor and the landowner prior to commencement of construction phase.			

ASPECT	POSSIBLE IMPACT	MITIGATION PLAN	RESPONSIBLE PERSON (S)	OBJECTIVES	FREQUENCY
Water Supply	Source of water during the construction phase.	<ul style="list-style-type: none"> ◇ Potable water must be available at the camp depot, office site and construction site. ◇ It could be obtained from the Mohokare and Walter Sisulu Local Municipality or landowners with an agreement in place. ◇ No boreholes should be established without DWS approval. ◇ No abstraction of water from the watercourses without DWS approval. 	RESIDENT ENGINEERS, CONTRACTOR & MUNICIPALITY OR ANY SUPPLIER	Prevent borehole establishment without DWS approval and unauthorized water abstraction from the Orange River and water bodies along the servitude.	<u>Frequency</u> Duration of the project
MANAGEMENT ACTION		A written agreement between the contractor and water supplier			
Access Control	Hazards to livestock and stealing of construction materials	<ul style="list-style-type: none"> ◇ A Fence or suitably secure main site office and material storage area must be established. ◇ Unauthorized entry must be prohibited. 	RESIDENT ENGINEERS & CONTRACTOR	Keep the site secure from trespassing or theft and keep the surrounding livestock out.	<u>Frequency</u> Duration of the project
MANAGEMENT ACTION		Site access register and complaints book must be in place.			
Access route	Erosion and dilapidation of the access route	<ul style="list-style-type: none"> ◇ Upgrade the current access roads used during construction to an acceptable condition. ◇ Proper maintenance must be done to ensure the quality of the access road. 	CONTRACTOR, ENVIRONMENTAL COMPLIANCE OFFICER & ENGINEERS	Prevention of dilapidation of existing access routes	<u>Frequency</u> Weekly
MANAGEMENT ACTION		ECO Audit checklist, photographs			

ASPECT	POSSIBLE IMPACT	MITIGATION PLAN	RESPONSIBLE PERSON (S)	OBJECTIVES	FREQUENCY
Power Supply	Safety Impacts	<ul style="list-style-type: none"> ◇ Limit the power supply cables & ensure the safety of the workers and neighboring residents. ◇ All health and safety laws and regulations must be adhered to. ◇ A safety officer must be appointed to undertake safety audits. 	RESIDENT ENGINEERS & CONTRACTOR	Implement safety measures	<u>Frequency</u> Monthly
MANAGEMENT ACTION		Safety Audits Report and Record keeping on site in a safety file.			
Solid Waste	Littering/ Pollution of environment with waste materials	<ul style="list-style-type: none"> ◇ Refuse receptacles with lids must be placed at the camp depot and on the construction sites. ◇ They must be easily accessible. ◇ System for regular waste removal must be set up. ◇ Refuse bins must be clearly marked to avoid mixing of hazardous and general waste. ◇ Letter of agreement or appointment letter between the local municipalities and the locally sourced contractor dealing with hazardous waste must be kept on site always. 	RESIDENT ENGINEERS & CONTRACTOR	Prevent environmental pollution caused by waste materials and visual impact.	<u>Frequency</u> Duration of the Project
MANAGEMENT ACTION		Method Statement for storing, handling, and disposal of waste and Record keeping of all records			
Sewage	Pollution of environment by waste materials	<ul style="list-style-type: none"> ◇ Adequate sanitation facilities e.g. chemical toilets must be provided at the camp depot and construction site. ◇ Defecating in the bush is prohibited ◇ Letter of consent from a registered waste facility to allow the contractor to empty the toilets in their sewer system must be in the environmental document. 	RESIDENT ENGINEERS & CONTRACTOR	Prevent environmental pollution	<u>Frequency</u> Duration of the project

MANAGEMENT ACTION		Record keeping copies of all permits			
Social & Socio-Economic Aspects	Dissatisfaction	<ul style="list-style-type: none"> ◇ A project steering committee (PSC), which comprises of the municipality, Engineers, contractor, Farmers/Beneficiaries and community representatives must be convened and details of the project discussed. ◇ The PSC must meet regularly to address any concerns/ issues from the neighboring land users and employing local laborer's. 	RESIDENT ENGINEERS, CONTRACTOR, COUNCILLORS, LOCAL AUTHORITY & LANDOWNERS	Ensure satisfaction of workers and neighbouring land users	<u>Frequency</u> Monthly
MANAGEMENT ACTION		Contravening of PSC meetings and Records of the Minutes			
Health & Safety	Danger to the workforce, neighboring Dukathole community, especially children and other landusers in the vicinity	<ul style="list-style-type: none"> ◇ The site must be clearly demarcated for safety reasons and non-employees, neighboring community and passerby must not be allowed on the construction site as a precautionary measure. ◇ The Contactor must provide employees with suitable equipment to protect them from hazards being presented and that will allow them to work without risk to the health in a hazardous environment, e.g. hard hats, gloves, boots, etc. ◇ Safety signs complying with SABS and SANS standards must be placed on-site in a manner clearly visible to the public. ◇ Construction methods must adhere to the Occupational Health and Safety Act (Act 85 of 1993). ◇ A safety officer must arrange a safety awareness meeting with the Dukathole and Rouxville community. 	RESIDENT ENGINEERS & CONTRACTOR	To avoid endangering of the people who works on site or live in the vicinity of the construction site.	<u>Frequency</u> Duration of the project
MANAGEMENT ACTION		Risk register must be in place			

2. CONSTRUCTION PHASE					
ASPECT	POSSIBLE IMPACT	MITIGATION PLAN	RESPONSIBLE PERSON	OBJECTIVES	FREQUENCY
Flora	Loss of vegetation	<ul style="list-style-type: none"> ◇ An ecological specialist must be appointed to oversee a search and rescue operation for conservation-worthy indigenous plants prior to vegetation clearance. ◇ The botanical specialist must flag sensitive areas prior to vegetation clearance. ◇ Plant and rescue protection plan attached hereto as Appendix C must be adhered to in the event of identification of red data species. ◇ Topsoil must be reserved and used as a top layer on disturbed areas to enable plant succession. 	CONTRACTOR, ENGINEER & ENVIRONMENTAL COMPLIANCE OFFICER	Prevent impacts on flora and destruction of red Data Species	<u>Frequency</u> Once off
Flora	Loss of vegetation	<ul style="list-style-type: none"> ◇ Mechanical tools must be used for vegetation clearance. ◇ Vegetation clearance must be confined to the development footprint and set out to avoid unnecessary vegetation disturbance. ◇ Rehabilitate denuded areas with appropriate plant species. ◇ All excavations to be backfilled and rehabilitated before construction moves off site. ◇ All declared alien plant species must be effectively cleared. 	CONTRACTOR, ENGINEER & ENVIRONMENTAL COMPLIANCE OFFICER	Prevent impacts on flora and destruction of red Data Species	<u>Frequency</u> Duration of the project

		<ul style="list-style-type: none"> ◇ Outlined Alien Invasive management plan attached hereto as Appendix D must be implemented. 	CONTRACTOR, ENGINEER AND ENVIRONMENTAL COMPLIANCE OFFICER	Prevent impacts on flora and destruction of red Data Species	<u>Frequency</u> Duration of the project
MANAGEMENT ACTION		Adherence to the management plans, ECO audit checklist, Photographs taken before the clearance of the site for erecting steel Monopoles			
Fauna	Disturbance to fauna in the area	<ul style="list-style-type: none"> ◇ Ecological corridors must not be destroyed. ◇ No hunting, snaring, shooting, nest raiding or egg collection by the construction staff must be allowed. ◇ Toolbox talks must include handling of animals. 	CONTRACTOR, ENGINEER AND ENVIRONMENTAL COMPLIANCE OFFICER.	Prevent killings of animals and destruction of areas not included in the development footprint.	<u>Frequency</u> Duration of the contract
Topsoil	Loss of Topsoil	<ul style="list-style-type: none"> ◇ Exposure of bare ground will be minimized. Topsoil stripping must be limited and it must be stored separately from the subsoil, i.e. no mixing of soils. ◇ In situ material must be removed to an average depth of 1000mm. ◇ Cleared and grubbed topsoil must be stockpiled as a top layer of at least 150mm thickness for the backfilling of monopole holes and rehabilitation purposes. ◇ Soil conservation measures such as berms, gabions and mats must be used on-site to help reduce erosion. ◇ Topsoil stockpiles must be kept free of weeds and litter free. 	CONTRACTOR, ENGINEER AND ENVIRONMENTAL COMPLIANCE OFFICER	Conserve and protect topsoil from erosion and deterioration	<u>Frequency</u> Weekly
MANAGEMENT ACTION		ECO audit checklist, photographs			

ASPECT	POSSIBLE IMPACT	MITIGATION PLAN	RESPONSIBLE PERSON	OBJECTIVES	FREQUENCY
Topography	Disturbing the natural topography	<ul style="list-style-type: none"> ◇ The natural ground levels within the servitude are to be retained. ◇ The soil dumps and other working areas must be rounded-off to ensure the disturbed area(s) blend in with the natural environment and the possibility of erosion is minimized. ◇ All the excavations for the steel monopoles must be backfilled to avoid being used as illegal dumping sites. ◇ Rehabilitation by covering the disturbed areas must hasten the succession process and minimize potential erosion. 	ENGINEER, CONTRACTOR AND ENVIRONMENTAL COMPLIANCE OFFICER	Minimize the disturbance of topography	<u>Frequency</u> Duration of the project
MANAGEMENT OUTCOME		ECO audit checklist			
Air Quality	Nuisance reduction and in visibility	<ul style="list-style-type: none"> ◇ Occasional wetting of the access routes and construction site must be done by means of a water tanker to keep the dust levels low and vehicles must be driven at 40km/h maximum speed. 	CONTRACTOR, ENGINEER AND ENVIRONMENTAL COMPLIANCE OFFICER	To minimize the generation of dust from excavation work and associated visual impacts	<u>Frequency</u> Twice a day
Water Quality	Impact of watercourses due to accidental spillages and poorly serviced equipment during construction	<ul style="list-style-type: none"> ◇ No fuel to be stored at or near rivers of riparian zones; Equipment to be properly maintained and serviced; ◇ Fuel storage and pump areas to be bunded to avoid accidental leakage; ◇ Accidental spills must be reported and cleaned immediately. Contaminated soils must be removed and disposed of at a registered disposal site; 	CONTRACTOR, ENGINEER AND ENVIRONMENTAL COMPLIANCE OFFICER	To protect watercourses along the preferred route	<u>Frequency</u> Duration of the project
MANAGEMENT OUTCOME		ECO Audit Report, Safety Audit report and Complaints Register			

ASPECT	POSSIBLE IMPACT	MITIGATION PLAN	RESPONSIBLE PERSON (S)	OBJECTIVES	FREQUENCY
MANAGEMENT OUTCOME		ECO Audit Report, Safety Audit report and Complaints Register			
Noise	Nuisance	<ul style="list-style-type: none"> ◇ Construction must be limited to normal contractors' working days and working hours. ◇ Ensure that employees and staff conduct themselves in an acceptable manner while on site, both during work hours and after hours. ◇ Limit working hours of noisy equipment to daylight hours, ◇ Fit silencers to the noisier construction equipment. 	CONTRACTOR, ENGINEER AND ENVIRONMENTAL COMPLIANCE OFFICER	To avoid excessive noise generation from site operations	<u>Frequency</u> Duration of Construction
Solid Waste	Littering/ Pollution	<ul style="list-style-type: none"> ◇ All waste must be appropriately separated, contained and disposed of and be removed from the site to Mohokare or Walter Sisulu Local Municipality solid waste site during the construction period. ◇ Reduction, reuse and recycling of waste must be introduced. ◇ Illegal dumping must be forbidden. ◇ Toolbox talks must include a component of waste management. ◇ No dumping of builders' rubble or other materials within the newly proposed servitude area ◇ Good housekeeping practices. 	CONTRACTOR, ENGINEER AND ENVIRONMENTAL COMPLIANCE OFFICER	Provide facilities for appropriate collection and disposal of solid waste and sewage	<u>Frequency</u> Weekly

Sewerage	Pollution of the receiving environment.	<ul style="list-style-type: none"> ◇ Adequate sanitation facilities <i>i.e.</i>, 15 employees per facility must be provided. ◇ The toilets must be located at least 50m from the construction site. ◇ They must be kept clean and hygienic regularly to ensure that they are usable. ◇ Effluent must not be discharged into the natural environment and defecating in the bush is prohibited. 	CONTRACTOR, ENGINEER AND ENVIRONMENTAL COMPLIANCE OFFICER	Provide facilities for sanitation	<u>Frequency</u> Weekly
Cement mixing	Pollution of soils, surface and groundwater	<ul style="list-style-type: none"> ◇ Mixing of cement must be done at specifically selected areas for the steel monopoles on mortar boards or similar structures to contain surface run-off. ◇ Cleaning of cement mixing equipment must be done on proper cleaning trays. ◇ No cement or cement containers must be left lying around. 	CONTRACTOR, ENGINEER AND ENVIRONMENTAL COMPLIANCE OFFICER	Avoid polluting the topsoil soil and water bodies around the designated servitude.	<u>Frequency</u> Duration of project
Water Supply	Source of potable water during the construction phase.	<ul style="list-style-type: none"> ◇ Potable water must be made available at the camp site and construction site in clearly marked containers. 	CONTRACTOR, ENGINEER AND ENVIRONMENTAL COMPLIANCE OFFICER	Water supply must be made available from the local Municipalities	<u>Frequency</u> Daily
Power Supply	Safety Impacts	<ul style="list-style-type: none"> ◇ Limit the power supply cables & ensure the safety of the workers. ◇ All health and safety laws and regulations must be adhered to. ◇ No stockpiling of construction 	CONTRACTOR, ENGINEER AND ENVIRONMENTAL COMPLIANCE OFFICER	Avoid health and safety impacts	<u>Frequency</u> Daily

		<p>material within the existing Eskom servitude.</p> <ul style="list-style-type: none"> ◇ Ground clearance must be maintained as it is within the servitude. 			
Energy Efficiency	Conserving of fossil fuels	<ul style="list-style-type: none"> ◇ Manual labor must be used as much as is feasible in order to conserve fossil fuels. 	CONTRACTOR, ENGINEER AND ENVIRONMENTAL COMPLIANCE OFFICER	Conserving fossil fuels by using manual labor.	<u>Frequency</u> Daily
Storm water	Contamination of storm water	<ul style="list-style-type: none"> ◇ Storm water must be diverted away from the construction works. ◇ Storm water control works must be constructed, operated and maintained in a sustainable manner throughout the project. ◇ Construct and operate the necessary collection facilities and stormwater management systems such as diversion berms, ditches, drains, oil separation sumps, and gross waterways etc. to prevent contamination of water. ◇ Storm water leaving the construction site must not be contaminated by any substance produced, stored, dumped or spilt on site. ◇ No contaminated water must be allowed to flow freely into the drainage channels. 	CONTRACTOR, ENGINEER AND ENVIRONMENTAL COMPLIANCE OFFICER	Avoid contamination of stormwater	<u>Frequency</u> Duration of project

ASPECT	POSSIBLE IMPACT	MITIGATION PLAN	RESPONSIBLE PERSON (S)	OBJECTIVES	MONITORING ACTION AND FREQUENCY
Soil erosion	Erosion	<ul style="list-style-type: none"> ◇ Exposure of bare ground must be minimized, and topsoil stripping limited to the development footprint, excluding open spaces and this must be cordoned off. ◇ Ensure correct drainage of areas. ◇ No stockpiling must be allowed within the protective buffer zone of drainage lines and seasonal streams. ◇ All the areas disturbed during construction work need to be landscaped to a condition like the pre-construction condition and this must be done before the replacing of topsoil. ◇ Make use of geotextiles within disturbed areas of steeper topography to help prevent erosion caused by runoff. ◇ Avoid steep-cut banks of watercourses or drainage lines ◇ Correct site reinstatement and landscaping following any disturbances will help prevent channel and gully formation. ◇ The erosion management plan attached hereto as Appendix E, must be adhered to. 	CONTRACTOR, ENGINEER AND ENVIRONMENTAL COMPLIANCE OFFICER	Prevent soil Erosion	<u>Frequency</u> Weekly
Traffic Impact	Safety/ Impacts Traffic	<ul style="list-style-type: none"> ◇ Vehicle speed on the site must be limited speed to 40km/h. ◇ Only drivers with valid licenses 	CONTRACTOR, ENGINEER AND ENVIRONMENTAL	Minimize the disruption to road users	<u>frequency</u> Duration of the project

		<p>must be allowed to drive on the site.</p> <ul style="list-style-type: none"> ◇ In the event of abnormal vehicles, a permit must be obtained from the local Department of Traffic. 	COMPLIANCE OFFICER		
Fire Hazard	Risk of veld fires	<ul style="list-style-type: none"> ◇ No open fires are permitted on the construction site, except under strictly controlled conditions subject to the National Veld and Forest Act, (Act No. 101 of 1998). ◇ The workforce must be informed and advised on the associated risks, dangers and damage of property caused by accidental fires and how to prevent them. ◇ Fire extinguishers must be made available at the construction site, and the laborers must be informed of their location and trained to use them. ◇ Restrict smoking activities to demarcated smoking activities. 	CONTRACTOR, ENGINEER AND ENVIRONMENTAL COMPLIANCE OFFICER	Prevent veld fires.	<u>Frequency</u> Daily
Vehicle Servicing Areas	Pollution	<ul style="list-style-type: none"> ◇ Vehicle servicing must be done at the identified camp depot on impermeable surfaces to minimize the likelihood of petrochemical spills on the soil. In the case of accidents, polluted soil must be appropriately treated or 	CONTRACTOR, ENGINEER AND ENVIRONMENTAL COMPLIANCE OFFICER	Prevent soil Erosion	<u>Frequency</u> Daily

		<p>taken away to an appropriate disposal site.</p> <ul style="list-style-type: none"> ◇ Used spares must be collected and disposed of in the correct manner. Oils must be drained into a suitable container, transferred to a larger storage container, and then supplied to oil recycling companies. ◇ Oil must under no circumstances be disposed off into the sewer lines, stormwater system, stream, or the ground. 			
<p>Areas of Paleontological, Cultural and/or Historical Importance</p>	<p>Disturbance of important scientific artefacts</p>	<ul style="list-style-type: none"> ◇ Should fossil remains be discovered, these must not be disturbed further and SAHRA must be consulted for guidance on how to deal with the remains. ◇ Must any human skeletal remains be found during excavations, work must stop in the area. The findings must be reported immediately to SAHRA. ◇ Heritage protocol for incidental finds outlined in the AIA report must be followed. 	<p>CONTRACTOR, ENGINEER AND ENVIRONMENTAL COMPLIANCE OFFICER</p>	<p>Prevent disturbance of scientific artefacts.</p>	<p><u>Frequency</u> Duration of the Contract</p>

ASPECT	POSSIBLE IMPACT	MITIGATION PLAN	RESPONSIBLE PERSON	OBJECTIVES	MONITORING ACTIONS AND FREQUENCY
3. Post Construction Phase					
Aesthetic view of the area	Aesthetic pollution	<ul style="list-style-type: none"> ◇ The site must be kept clear of litter and all waste must be removed and disposed of at the Mohokare or Walter Sisulu local Municipality landfill site. ◇ All stockpiles must be handled as directed by the engineers. ◇ Soil heaps must be flattened to match the adjacent ground and to help prevent soil erosion and encourage natural revegetation. ◇ All excavations must be backfilled, levelled and compacted. ◇ All surfaces hardened due to construction must be ripped and material imported thereto removed. ◇ The original site topography must be restored as much as possible. ◇ All disturbed areas must be re-vegetated with indigenous grass to encourage ecological succession. Topsoil must be kept on areas designated for stockpiling. ◇ A re-vegetation and habitat 	CONTRACTOR, ENGINEER AND ENVIRONMENTAL COMPLIANCE OFFICER	Prevent pollution	<u>Frequency</u> Monthly

		<p>rehabilitation plan attached hereto as Appendix F must be adhered to on completion of the construction phase.</p> <ul style="list-style-type: none">◇ A final audit must be completed before the contractor may leave the site to determine whether all requirements were met.◇ A meeting must be held between the various stakeholders to ensure that the site has been restored to a satisfactory condition.◇ The contractor must rehabilitate the site when construction is completed, thus a detailed rehabilitation plan must be provided by the contractor.			
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ASPECT	POSSIBLE IMPACT	MITIGATION PLAN	RESPONSIBLE PERSON	OBJECTIVES	FREQUENCY
4. OPERATION PHASE					
Power Supply	Illegal connection to power line	◇ Eskom is to include the new powerline into the grid when construction work is complete. Subsequent to this, the decommissioning phase will commence for the old powerline. Regular monitoring of the powerline to ensure there are no illegal connections to the grid.	ESKOM FSOU	Power supply security	<u>Frequency</u> To be determined by the line manager
Fauna	Destruction of the biodiversity Prevent unnecessary habitat destruction and displacement of animals	◇ Applicable control mechanisms in the operational procedures as outlined in Eskom's Land and Biodiversity Standards contained in Appendix G should be adhered to.		Prevent unnecessary damage to biodiversity.	<u>Frequency</u> To be determined by line manager
Alien Invasive Vegetation	Displacement of indigenous plants due to alien infestation/invasion.			Prevent unnecessary dissemination of alien invasive species	<u>Frequency</u> To be determined by line manager

6 AUDIT AND MONITORING

Compliance monitoring provides useful information for gauging environmental performance throughout the duration of the project. The information obtained can be used to gauge how effective the mitigation plans in the EMPr are and determine whether the corrective actions undertaken are adequate and whether some modifications are required. The resident engineer (project manager) must monitor the overall aspects of the project, e.g. labor issues and complaints raised by the local farming community, so they can be addressed in conjunction with the Project Steering Committee (PSC). A designated Environmental officer must be on site for the duration of the project to ensure that the conditions of the Environmental Authorization and EMPr are adhered to. The ECO must monitor construction activities at least once a month and the monthly reports must be compiled and presented to the PSC for discussion if needs be. It is highlighted that regular meetings between the resident engineer, site manager and ECO must be held to ensure effective implementation of the EMPr.

APPENDIX A
PREFERRED ROUTE LAYOUT MAP

Melkspruit-Rouville Preferred 132Kv Powerline

Legend

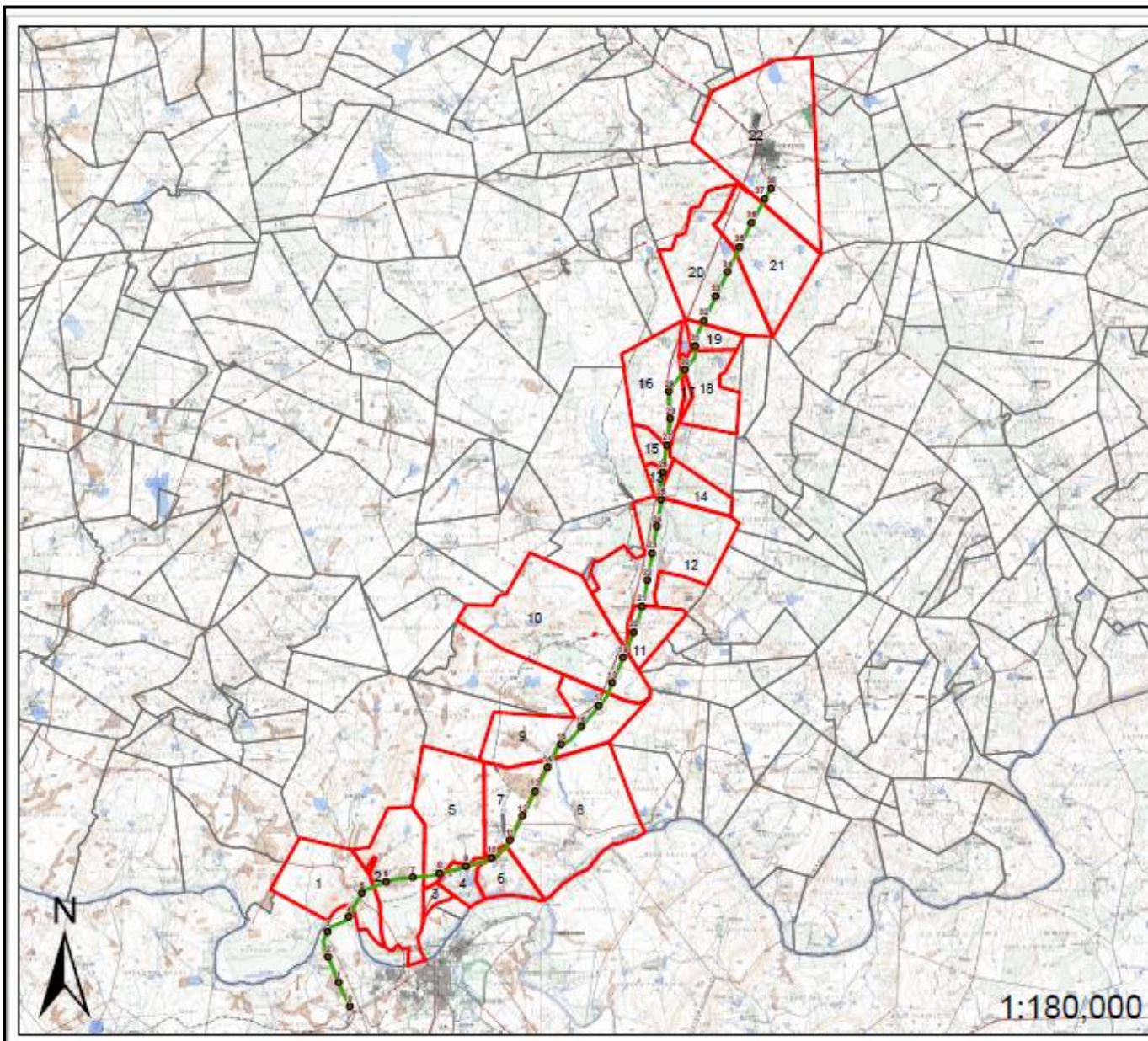
- 1 km interval points
- Proposed Melkspruit-Rouville Route
- ▭ Affected Farms
- ▭ Farms

Farm Name	No
POORTJE No. 38	1
KLEIN POORTJE No. 1062	2
ORANJE No. 1067	3
ORANJA A No. 1043	4
WAAIPLAATS No. 61	5
ORANJA No. 810	6
WANGANELLA No. 994	7
NUWEJAARSPRUIT No. 1069	8
THE WILLOW No. 636	9
WIND POORT No. 38	10
NOORVEGEN No. 483	11
BEESTEKRAAL No. 64	12
ESPERANCE No. 1018	13
STEYBERGSVLEI No. 883	14
LA ESPERANCE No. 1024	15
BOTHA'S KOP No. 528	16
KIPPERSOL No. 882	17
STOLZ KRAAL No. 66	18
AVIGNON No. 981	19
DREKOP No. 94	20
GEDACHTENS No. 561	21
DORPSGRONDEN VAN ROUVILLE No. 108	22

Design: K.G. Gobolawamang

Drawn: K.G. Gobolawamang

Date: October 2017



APPENDIX B
CV OF THE ENVIRONMENTAL ASSESSMENT PRACTITIONER

APPENDIX C
PLANT RESCUE AND PROTECTION PLAN

APPENDIX D
ALIEN INVASIVE MANAGEMENT PLAN

APPENDIX E
EROSION MANAGEMENT PLAN

APPENDIX F
VEGETATION AND HABITAT REHABILITATION PLAN

APPENDIX G
ESKOM'S LAND AND BIODIVERSITY STANDARDS