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DRAFT BASIC ASSESSMENT REPORT FOR:

UPGRADE OF EXISTING MANTULI TRACK (2.89 KM IN LENGTH) AND GRAVEL ROAD L1970 (1.67KM IN LENGTH) ON RESERVE NO. 18 FARM NUMBER 15838 IN MANTULI, WITHIN WARD 8, NQUTHU LOCAL MUNICIPALITY, UMZINYATHI DISTRICT MUNICIPALITY, KWAZULU-NATAL

DEDTEA File Reference Number: DC24/0001/2018 – KZN/EIA/0000759/2017

Submitted for commenting by stakeholders in terms of the 2014 Environmental Impact Assessment Regulations promulgated in accordance with the National Environmental Management Act 107 of 1998 (Act No. 107 of 1998), as amended.

Submitted on behalf of Nquthu Local Municipality

DOCUMENT INFORMATION

Document Name	Draft Basic Assessment Report
EDTEA File Ref. No.	DC24/0001/2018
NEAS Ref.	KZN/EIA/0000759/2017
Title	UPGRADE OF EXISTING MANTULI TRACK (2.89 KM IN LENGTH) AND GRAVEL ROAD L1970 (1.67KM IN LENGTH) ON RESERVE NO. 18 FARM NUMBER 15838 IN MANTULI, WITHIN WARD 8, NQUTHU LOCAL MUNICIPALITY, UMZINYATHI DISTRICT MUNICIPALITY, KWAZULU-NATAL
Client/Proponent	Nquthu Local Municipality
Project Manager	Anderson Vogt Consulting
Environmental Assessment Practitioner's Organisation	Afzelia Environmental Consultants (Pty) Ltd
Compiled by	Mr Solomon Fataki
Reviewed by	Ms Adrienne Edgson
Issue Date	12/03/2018

REVIEW OF THE DRAFT BASIC ASSESSMENT REPORT

This Draft Basic Assessment Report is available for commenting for a period of **30 days** (excluding public holidays) from. **Monday 12/03/2018 until Monday 16/04/2018.** A copy of the Draft Assessment Report is available at strategic public place within the project area and upon request from Afzelia Environmental Consultants (Pty) Ltd.

The report is available for viewing at the following Public place:

- Mfihlelwane Primary School

Please send your comments and queries before **16/04/2018** to:

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ACRONYMS AND ABBREVIATIONS

BID	Background Information Document
COGTA	Department of Cooperative Governance and Traditional Affairs
DAFF	Department of Agriculture, Forestry and Fisheries
DCP	Dynamic Cone Penetrometer
DEA	Department of Environmental Affairs
DEDTEA	Department of Economic Development, Tourism and Environmental Affairs
DoH	Department of Health
DoL	Department of Labour
DWS	Department of Water and Sanitation
EA	Environmental Authorisation
EAP	Environmental Assessment Practitioner
ECO	Environmental Control officer
EDTEA	Economic Development, Tourism and Environmental Affairs
EIA	Environmental Impact Assessment
EIS	Ecological Impact and Assessment
EKZNW	Ezemvelo KwaZulu-Natal Wildlife
ELA	Environmental Law Association
EMF	Environmental Management Framework
EMPr	Environmental Management Programme
EPWP	Expanded Public Works Program
GG	Government Gazette
GIS	Geographic information System
GN	Government Notice
GNR	Government Notice Regulation
HGM	Hydrogeomorphic Unit
I&AP	Interested and Affected Parties
IAIAsa	International Association for Impact Assessment South Africa
IAP2 SA	International Association for Public Participation Southern Africa
IDP	Integrated Development Plan
KM	Kilometre
KZN	KwaZulu-Natal
LA21	Local Agenda 21
LaRSSA	Land Rehabilitation Society of Southern Africa
MIG	Municipal Infrastructure Grant

NEMA	National Environmental Management Act (107 of 1998)
NFA	National Forest Act
NFEPA	National Freshwater Ecosystem Priority Areas
NWA	National Water Act (No 36 of 1998)
PES	Present Ecological State
PPP	Public Participation Process
SABS	South African Bureau of Standards
SANS	South African National Standards
SAQA	South African Qualifications Authority
SDF	Spatial Development t framework
SIP	Strategic Integrated Projects
SQRs	Sub-Quaternary Reaches
SUDS	Sustainable Urban Drainage Systems
SWA	Sub Water Management Area
SWMP	Storm Water Management Plan
WMA	Water Management Area
WUA	Water Use Authorisation
WUAA	Water Use Authorisation Application

EXECUTIVE SUMMARY

Summary of principal objectives

- The main purpose of this report is to comply with an instruction from DEDTEA Compliance Monitoring & Enforcement component in their email dated 14/09/2017 to undertake an assessment of the current situation (impacts of unlawful commenced construction activity).

- The report is to assist the Department to consider all available information in order to make further decisions regarding this application with respect to the existing impacts and possible further impacts which are likely to occur during the construction activities that will be associated with the completion of the project.

- The report will retrospectively assess the impacts that have occurred and will provide rectification recommendations

- Given that further construction activity is to take place once authorisation has been granted this report will assess the impacts of such activity especially where sensitive areas such as wetlands are to be impacted upon and provide mitigation measures to counter or reduce these probable impacts.

- An environmental management programme (EMPr) will be compiled with this report; the management measures stipulated in the EMPr should, if stringently applied, reduce the impacts of further construction activity

- A site rehabilitation plan must be compiled and implemented to address the negative impacts that have occurred to date and to return the receiving environment to an acceptable level of integrity.

- The report will provide the relevant I&APs with sufficient information to comment on the process and document the public participation process that is being undertaken

Background and Project Description

Afzelia Environmental Consultants (Pty) Ltd was appointed by Anderson Vogt Consulting Engineers on behalf of the (Client) Nquthu Local Municipality to conduct an Environmental Impact Assessment (EIA) in the form a Basic Assessment (BA) and Water Use Authorisation (WUA). The proposed project involves the upgrading of the existing Mantuli track (north-west of the Sibiyela River) from the T-junction with road D1301 and the existing gravel Road L1970 at the South-east side of the Sibiyela River to a formalised gravel road.

*The proposed **Phase 2** of this project, which requires the construction of a new road and culvert that will cross the Sibeyela River, linking the upgraded Road L1970 (south-east of Sibiyela River) with the upgraded existing Mantuli track (north-west of Sibiyela River) and which will transverse channelled valley bottom wetland (HGM 6) and seep wetland (HGM7) that have been given category C and B/C ratings respectively; has not been considered nor is such activity applied for in this application or assessment.*

The project involves the upgrade of the existing Mantuli track from the T-junction with D1301 for a length of 2.89km (north-east of the Sibeyela River) and the upgrade of the existing gravel Road L1970 from the Mfihlelwane Primary School approximately 1.67km in length (South-east side of the Sibiyela River). Both areas of road upgrade involved the widening from 5m to 8.4m with a road reserve of 12m (6m each side) to a Class 4 gravel road according to the Department of Transport gravel road standards. At this juncture in the project there is no feasible and reasonable alternatives for upgrading of the existing track (north-west of the Sibiyela River) from the T-junction with road D1301 and the existing gravel Road L1970 at the South-east side of the Sibiyela River.

The placement of stormwater pipes infrastructure on the upgraded existing Mantuli track will consist of 600 mm and 900mm diameter in size and will occur at twelve (12) different positions. It is proposed as well to place a concrete slab through the wetland seep (HGM1) as a stormwater control measure and to prevent the road from becoming unusable during the rainy season. The placement of stormwater pipe infrastructure on the upgraded existing gravel Road L1970 will consist of 600 mm and 900mm diameter in size and will occur at eight (8) different positions.

The above-mentioned activities have already been undertaken on this site and only final aspects such as formal stormwater control still needs to be put in place. These activities have resulted in severe negative impacts to the receiving natural environment and have given rise for the need of rehabilitation.

The following negative impacts have occurred as a result of the illegal commencement of road construction and upgrade:

- damage to house foundations of older settlement (heritage/historical features);
- impact on vegetation, with smothering effects taking place at the toe of the mitre drains as result of poor attenuation of runoff which negatively impacts on suitable growth conditions;
- sediment deposition (road material) within the wetland systems impacting on the health and functionality of the system as well as the system's ability to provide important ecosystem goods and services; and
- soil erosion.

Legislation and Regulatory Environmental Requirements

The following table provides a summary of the Listed Activities in terms of the EIA Regulations 2014 that are triggered by the project:

Table 1: Summary of the Listed Activities

Government Notice Number	Activity number	Description of each listed activity	Component of project
GNR 327 of 07 April 2017 (Listing Notice 1) read in conjunction with GNR 983 of 04 December 2014	19	The infilling or depositing of any material of more than 10 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10 cubic metres from a watercourse;	Construction activities associated with the road construction and with the establishment of the stormwater pipes, concrete slab structure within the seep wetland systems would result in the disturbance (excavation, removal, moving etc.) of soil, sand, pebbles, rocks and other material which are in excess of 10 cubic meters (refer to the wetland specialist's report).

Due to the project occurring within 500m radius of wetlands, a Water Use Authorisation Application (WUA) must be submitted to the Department of Water and Sanitation (DWS) in terms of Section 21 (c) or (i) in accordance with the National Water Act 1998 (Act No. 36 of 1998) (NWA).

The following table provides a summary of water uses that apply to this upgrade:

Activity Number	Water Use	Description
Section 21 (c) of NWA of 1998	Impeding or diverting the flow of water in a watercourse	• Impeding flow means the temporary or permanent obstruction or hindrance to the flow of water into a watercourse by structures built either fully or partially in or across a watercourse. • Diverting flows means a temporary or permanent structure causing the flow of water to be re-routed in a watercourse for any purpose.
Section (i) of NWA of 1998	Altering the bed and banks of a watercourse or characteristics of a watercourse	• Altering the bed and banks means any change affecting the resource quality of the watercourse (the area within the riparian habitat or 1:100 year floodline, whichever is greatest).

Alternatives

The mentioned activities have already been undertaken on this site and only final aspects such as formal stormwater control still needs to be installed. These activities have resulted in severe negative impacts to the receiving natural environment and have given rise for the need of rehabilitation. At this juncture in the project there is no feasible and reasonable alternatives for upgrading of the existing Mantuli track (north-west of the Sibiyela River) from the T-junction with road D1301 and the existing gravel Road L1970 at the South-east side of the Sibiyela River.

The need for the Project

Nquthu Local Municipality has identified the need to upgrade the existing Mantuli track (north-west of the Sibiyela River) and the existing gravel Road L1970 at the South-east side of the Sibiyela River to be funded using the Municipal Infrastructure Grant (MIG). MIG is aimed at assisting the poor to gain access to infrastructure and to create temporary employment.

Specialist Studies

The following specialist studies were conducted for the proposed project and are included within the Appendices of this Draft Basic Assessment Report (DBAR):

- Wetland assessment and rehabilitation plan;
- Vegetation assessment; and
- Desktop heritage and paleontological assessment.

Public Participation Process

An enquiry as per the National Environmental Management Act (NEMA) (No. 107 of 1998) EIA 2014 Regulations was submitted to DEDTEA on 14/10/2017 for the upgrading of about 1.0 km of the existing gravel Road L1970 at the South-east side of the Sibiyela River; as there was no available funding for specialist studies.

A response to the enquiry was obtained on 27/10/2016 which stated that: “the upgrade of 1.0 km of the existing Road L1970 does not constitute an activity which is identified in terms of sections 24(2) and 24D of NEMA (No. 107 of 1998) and does not require Environmental Authorisation; but does not exempt compliance with other applicable legislation such as the National Water Act (Act 36 of 1998)”.

Afzelia Environmental Consultants in an email dated 07 December 2016 has informed KZN DEDTEA and AMAFA that the existing Mantuli track (north-west of the Sibiyela River) of about 2.8 km in length from the T-junction with road D1301 which required environmental approval, was under illegal construction activities.

A directive in terms of section 28(4) of NEMA (No. 107 of 1998) as amended was issued by DEDTEA to the Nquthu Local Municipality on 12/01/2017 to cease construction activities until the Environmental Authorisation Section receives an assessment of impacts for further decision.

A further meeting was held on site with the KZN DEDTEA on the 11th September 2017 for guidance on this project and at this meeting the degradation caused by the unlawful activity was noted.

After the above-mentioned site visit, DEDTEA held internal discussions between the EIA assessment component and the Compliance Monitoring & Enforcement component, and the Department notified Afzelia Environmental Consultants in an email dated 14 September 2017 that they had dispensed with the need for a Section 24G application (despite the unlawful activity that had already taken place) and instructed Afzelia to undertake a Basic Assessment process.

A pre-application meeting for the Water Use Authorisation Application process was held with the DWS Regional Office on the 21st of September 2017. DWS have also conducted a site visit with Afzelia Environmental Consultants on 25/10/2017 and has expressed their concerns on the impact of the wetland systems as a result of unlawful commencement of activity and stated the need for a Water Use Authorisation in terms of the National Water Act (Act 36 of 1998) and need for the wetland rehabilitation

When it became known that there was unlawful commencement of activity (December 2016), Afzelia Environmental Consultants, notified AMAFA and DEDTEA as per their correspondence dated 07th December 2016**.** AMAFA undertook a site visit thereafter and expressed their concerns on the damage to Heritage Resources in the vicinity of the road upgrade and new alignment and stated rectification of unlawful commencement of activity requirements in their correspondence dated 12th June 2017. A consultation with the local residents was undertaken on 02/12/2017 to address all the concern raised by AMAFA in their correspondence dated 12th June 2017.

A Background Information Document (BID) for the upgrade of the existing track of about 2.8 km in length from the T-junction with road D1301 situated on the North-west side of the Sibiyela River was circulated on 25/10/2016 to all stakeholders, Organ of States and I&APs for comment as part of the initial Public Participation Process.

An advert is beibg placed in local newspapers namely Dundee Courier Newspaper for both English advertisement; IsiZulu advertisement.

The draft BAR is being made available for Authority and public review for a total of 30 legislated days from **12/03/2018 until 16/04/2018** and upon request from the EAP. In order to distribute the information regarding the proposed project to the broader public and to ensure that all potential I&AP's were given the opportunity to comment. A commenting period of 30 days were given with regards to the Draft Basic Assessment process and 60 days for the water use license application processes.
The report is being made available at the following public locations within the study area, which are all readily accessible to I&APs:

- Public Place: Mfihlelwane Primary School.

Environmental Impact Assessment (EIA)

The EIA focuses on the existing environmental impacts that have already occurred as a result of the unlawful commencement of construction activities. Some of these impacts will require extensive rehabilitation.

The EIA focuses as well on the environmental impact that could potentially be caused by the proposed project parameters that are still to be undertaken during the construction and operational phases of the project. Maintenance of infrastructure is addressed as part of the operational phase impact assessment.

Impact assessments has taken account of the interactions between all aspects and associated activities of the project nature, scale and duration of effects on the environment, whether such effects are positive (beneficial) or negative (detrimental).

The Impact Assessment of the project's activities that are still to be undertaken is determined by identifying the environmental aspects and then undertaking an environmental risk assessment to determine the significant environmental impacts. The significant scoring of this environmental impact assessment is focussed only on the construction and operational phase.

Key Concerns

The most significant concerns from a biophysical functioning perspective with respect to the project parameters that are still to be undertaken would be the impacts on flora, loss of protected vegetation composition and protected plant species, lack of habitat connectivity, hydrological impacts, erosion, sedimentation and degradation of wetlands areas, pollution of water resources and soil as well as the proliferation of alien plant species. This will require careful management.

Proposed Monitoring and Auditing

Monitoring and auditing schedules have been proposed in this report for each phase of the development to address how identified impacts and mitigation will be monitored and/or audited by an independent Environmental Control Officer (ECO) with relevant experience and knowledge for vegetation and rehabilitation.

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Appendix E: Public Participation

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Appendix E3: BID for the upgrade of existing Mantuli track (2.89 Km in length)

Appendix E4: Copy of response to the enquiry letter from DEDTEA dated 27/10/2016

Appendix E5: Copy of directive issued by DEDTEA to the Nquthu Local Municipality dated 12/01/2017

Appendix E6: Email dated 14/09/2017 following the Pre-Application Meeting and site inspection with DEDTEA

Appendix E7: Copy of Zulu and English Adverts and Flyers

Appendix E8: Comments from Organs of State and I&APs received after circulation of BID

Appendix E9: Proof of consultation with the local residents to address concern raised by AMAFA

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SECTION A: THE CORE PROJECT TEAM

1. DETAILS OF THE CORE PROJECT TEAM

1.1 Contact Details of the Proponent / Applicant and Project Manager

Table 2: Contact details of Proponent and Project Manager

Proponent	**Nquthu Local Municipality**				
Contact person	Mr Bongi Paul Gumbi (c/o Mr M. Memela)				
Physical address	Lot 83 Mdlalose Street, Nquthu, 3135				
Postal address	Private Bag X 5521, Nquthu, 3135				
Email	bongig@nquthu.gov.za	**Fax**	034 271 6111	**Tel**	034 271 6103
Project Manager	**Anderson Vogt Consulting Engineers**				
Contact person	Mr Siyabonga Mnguni				
Physical address	94 Victoria Street, Dundee, KZN, 3000				
Postal address	P O Box 772, 3000, Dundee				
Email	siyabonga@andersonvogt.co.za	**Fax**	0342124437	**Tel**	034 212-3142

1.2 Name and Contact Details of Environmental Assessment Practitioner (EAP)'s Organisation

Table 3: Contact details of EAP's Organisation

Contact details of the EAP's organisation	
Business Name	Afzelia Environmental Consultants (Pty) Ltd
Physical Address	76 Valley View Road, Morningside, Durban, 4001
Postal Address	PO Box 37069, Overport, Durban, 4067
Telephone	031 303 2835
Fax	086 692 2547
Email	solomon@afzelia.co.za

1.3 Names and details of expertise of the EAP involved in the preparation of the report

Table 4: Contact details of EAPs and their expertise

Name of the EAP	**Education Qualifications**	**Professional Affiliations**	**Experience at Environmental Assessments (yrs)**
Mr Solomon Fataki	BSc. Environmental Management: Botany stream	IAIAsa, IAP2SA	5
Ms Adrienne Edgson (External Reviewer)	SAQA qualifications from Rhodes University: Environmental Risk Assessment, Environmental Law, Environmental Impact Procedures, Coastal & Environmental Services etc	IAIAsa, IAP2SA, ELA, LaRSSA	19

1.4 Names and details of expertise of each specialist that has contributed to the report

Table 5: Contact details of Specialists and their expertise

Name of Specialist	Educations Qualifications	Field of Expertise	Title of Specialist Report/s as attached in the Appendices
Rowena Harrison	MSc Soil Science	Wetland delineation and soil	Wetland Impact Assessment & Rehabilitation Plan and Management
Gavin Anderson	M. Phil (archaeology & social psychology) Science	Iron Age, Stone Age and Rock art	Desktop Heritage Impact Assessment
Ntando Kumalo	BSc (Hon) Forest Resources and Wildlife Management	Botanical Assessments	Vegetation Impact Assessment
Leigh-Ann de Wet (Peer review)	MSc Botany		

SECTION B: ACTIVITY INFORMATION

1. INTRODUCTION

1.1 Activity Background

Afzelia Environmental Consultants (Pty) Ltd was appointed by Anderson Vogt Consulting Engineers on behalf of the (Client) Nquthu Local Municipality to conduct an Environmental Impact Assessment (EIA) in the form a Basic Assessment (BA) and Water Use Authorisation (WUA). The proposed project involves the upgrading of the existing Mantuli track (north-west of the Sibiyela River) from the T-junction with road D1301 and the existing gravel Road L1970 at the South-east side of the Sibiyela River to a formalised gravel road.

According to the original Project Implementation Plan Document for the construction of Mantuli Road in ward 8 Nquthu Municipality (BID No: NQU0080/235/2013) attached as **Appendix D4**, it was proposed to both upgrade an existing "Mantuli track" (2.89km) and gravel Road L1970(1.67km) as phase 1 and required 4.9Km of road upgrade and construct a new road as phase 2 which would have totalled in length 6.6km. The upgrade of the existing Mantuli track (north-west of the Sibiyela River) of about 2.8 km in length from the T-junction with road D1301 to the proposed causeway at Sibiyela River crossing and the upgrade of about 1.67 km of the existing gravel Road L1970 (South-east side of the Sibiyela River) forms part of **phase one** of the project. Subsequent to this, a new road and culvert were proposed to be constructed to link the existing Mantuli track at the North-west side of the Sibiyela River to the existing gravel Road L1970 at the South-east side of the Sibiyela River. This part of the project is **phase two** (Anderson Vogt Consulting, Project Implementation Plan , 2015). Due to financial constraints, the project parameters were reduced to ONLY **phase 1** activities.

*The proposed **Phase 2** of this project, which requires the construction of a new road and culvert that will cross the Sibeyela River, linking the upgraded Road L1970 (south-east of Sibiyela River) with the upgraded existing Mantuli track (north-west of Sibiyela River) and which will transverse channelled valley bottom wetland (HGM 6) and seep wetland (HGM7) that have been given category C and B/C ratings respectively; has not been considered nor is such activity applied for in this application or assessment.*

The terrain of the site along the existing Mantuli track (north-west of the Sibiyela River) comprises side slope of hill/mountain. This section lies in a generally hilly terrain with the average altitude of the work footprint above sea level is approximately 1060 metres (See **photos 1 and 2** on page 3). The terrain of the site along the existing gravel Road L1970 (South-east side of the Sibiyela River) is a plateau (See **photos 3 and 4** on page 3) with gently sloping gradient towards the Nondweni.River which confluences with the Sibiyela approximately 900m from the work servitude.

Photo 1: Existing Mantuli track on hilly terrain

Photo 2: Existing Mantuli track on hilly terrain

Photo 3: Existing gravel Road L1970 on a plateau

Photo 4: Existing gravel Road L1970 on a plateau

Based on desktop analysis, an enquiry as per the National Environmental Management Act (NEMA) (No. 107 of 1998) EIA 2014 Regulations was submitted to EDTEA on 14/10/2017 for the upgrading of about 1.0 km of the existing gravel Road L1970 at the South-east side of the Sibiyela River; as there was no available funding for specialist studies.

A response to the enquiry was obtained on 27/10/2016 (Refer to **Appendix E4**) which stated that: "the upgrade of 1.0 km of the existing Road L1970 does not constitute an activity which is identified in terms of sections 24(2) and 24D of NEMA (No. 107 of 1998) and does not require Environmental Authorisation; but does not exempt compliance with other applicable legislation such as the National Water Act (Act 36 of 1998)".

A Background Information Document (BID) for the upgrade of the existing Mantuli track of about 2.8 km in length from the T-junction with road D1301 situated on the North-west side of the Sibiyela River was circulated on 25/10/2016 to all stakeholders, Organs of State and I&APs for comment as part of the initial Public Participation Process.

However, construction activities commenced at the end of October 2016 as it shows in **photograph 1, 2 and 3** above without the relevant approvals from various Departments and Competent Authorities, in particular on the existing Mantuli track at the North-west side of the Sibiyela River existing Mantuli track from the T-junction with road D1301 as this area of construction activities was not included in the exemption letter by DEDTEA dated 27/10/2016. In addition, activities were carried out by the Contractor, SGM Business Project, without an approved Environmental Management Programme (EMPr), which would have guided the contractor and proponent as to the manner in which such activities should have been

undertaken, thus reducing the negative impacts of road construction which construction is acknowledged as being potentially very damaging to the receiving environment.

The following negative impacts have occurred as a result of the illegal commencement of road construction and upgrade of the existing Mantuli track and gravel road L1970.

- damage to house foundations of older settlement (heritage/historical features) (refer to **photo 5**);
- impact on vegetation, with smothering effects taking place at the toe of the mitre drains as result of poor attenuation of runoff which negatively impacts on suitable growth conditions (refer to **photo 6**);
- sediment deposition (road material) within the wetland systems impacting on the health and functionality of the system as well as the system's ability to provide important ecosystem goods and services; and
- soil erosion.

Photo 5: Old House foundations damaged

Photo 6: impact on vegetation with smothering effects

Photo 3: road material within the wetland systems

Photo 4: soil erosion

A directive in terms of section 28(4) of NEMA (No. 107 of 1998) as amended was issued by EDTEA to the Nquthu Local Municipality on 12/01/2017 (Refer to **Appendix E5**) to cease construction activities until the Environmental Authorisation Section receives an assessment of impacts for further decision.

Following the site visit conducted by Afzelia Environmental Consultants and EDTEA on 11 September 2017 it was noted that no further work has been undertaken since the Department's directive issued on 12/01/2017. After discussions with the Compliance Monitoring & Enforcement component, the Department has decided that Afzelia Environmental Consultants should continue with the Basic Assessment process in respect to the unlawful commencement of construction activity and has surprisingly dispensed with the need for a Section 24G application (Refer to Email dated 14/09/2017 from DEDTEA following the Pre-Application Meeting and site inspection with DEDTEA attached as **Appendix E6**).

Department of Water and Sanitation have also conducted a site visit with Afzelia Environmental Consultants on 25/10/2017 and has expressed their concerns on the impact of the wetland systems as a result of unlawful commencement of activity and stated the need for a Water Use Authorisation in terms of the National Water Act (Act 36 of 1998) and need for the wetland rehabilitation.

AMAFA have also made a follow-up visit to the site and have expressed their concerns on the damage to heritage resources in the vicinity of the site and stated rectification of unlawful commencement of activity requirements on their correspondence dated 12th June 2017 (Refer to **Appendix E8**).

1.2 Purpose of the BA Report

1.2.1 The main purpose of this report:

The purpose of this report is to comply with an instruction from DEDTEA Compliance Monitoring & Enforcement component in their email dated 14/09/2017 to undertake an assessment of the current situation (impacts of unlawful commenced construction activity).

The report is to assist the Department to consider all available information in order to make further decisions regarding this application with respect to the existing impacts and possible further impacts which are likely to occur during the construction activities that will be associated with the completion of the project.

Further, following the site visit conducted by Afzelia Environmental Consultants and EDTEA on 11 September 2017, the Department has dispensed with the need for a Section 24G application.

1.2.2 Report Objectives

- The report will retrospectively assess the impacts that have occurred and will provide rectification recommendations
- Given that further construction activity is to take place once authorisation has been granted this report will assess the impacts of such activity especially where sensitive areas such as wetlands are to be impacted upon and provide mitigation measures to counter or reduce these probable impacts.
- An environmental management programme (EMPr) will be compiled with this report; the management measures stipulated in the EMPr should, if stringently applied, reduce the impacts of further construction activity
- A site rehabilitation plan must be compiled and implemented to address the negative impacts that have occurred to date and to return the receiving environment to an acceptable level of integrity.
- The report will provide the relevant I&APs with sufficient information to comment on the process and document the public participation process that is being undertaken (DEA, 2014)
- The upgrade of the existing Mantuli track (north-west of the Sibiyela River) from the T-junction with road D1301 and the existing gravel Road L1970 at the South-east side of the Sibiyela River to a formalised gravel road is a Listed Activity as stipulated in the EIA Regulations (2014) promulgated in terms of the NEMA, 1998 (Act 107 of 1998) as amended under Government Notice GNR No 327 of 07 April 2017 read in conjunction with GNR No. 982, 983 and 985 of 04 December 2014 (DEA, 2014). The project requires an Environmental Authorisation (EA) in terms of this Act, which should have been granted prior to any construction activities taking place on site.

1.3 Regional Setting and Location of Activity

The upgraded road is situated in the Mantuli rural area in Ward 8 within Nquthu Local Municipality, Umzinyathi District Municipality, KwaZulu Natal. The site falls under the jurisdiction of Molefe Traditional Authority and is located approximately 12 km of the Nquthu town. The upgraded road is situated within the quarter degree squares 2830BB. Refer to **Figure 1/Appendix A.1** for the Aerial Overview of the study area and **Figure 2/Appendix A.2** for the Locality Map. Access to the site is via the Road P36-2 and Road D1301.

The geographical co-ordinates of the upgraded road are shown in **table 5** below:

Table 6: Coordinates of the site

	START POINT		END POINT		LENGTH
	Latitude (S)	Longitude (E)	Latitude (S)	Longitude (E)	
Existing Mantuli track north-west of the Sibiyela River	28° 13’ 31.46”	30° 46’ 11.53”	28° 13' 29.2"	30° 47' 45.0"	2.89 Km
Existing gravel Road L1970 south-east side of the Sibiyela River	28° 14’ 16.19”	30° 48’ 20.66”	28° 13’ 49.8”	30° 48’ 46.3”	1.67 Km

1.4 Property Description

The property affected by the upgraded road is reflected in **Table 6** below.

Table 7: Property associated with the upgraded road in Mantuli

Property Name	Surveyor-General Cadastral Code No.	Diagram Deed Reference	Owner
Reserve No. 18 Farm No. 15838	N0GT00000001583800000	G7638/909	Ingonyama Trust Board

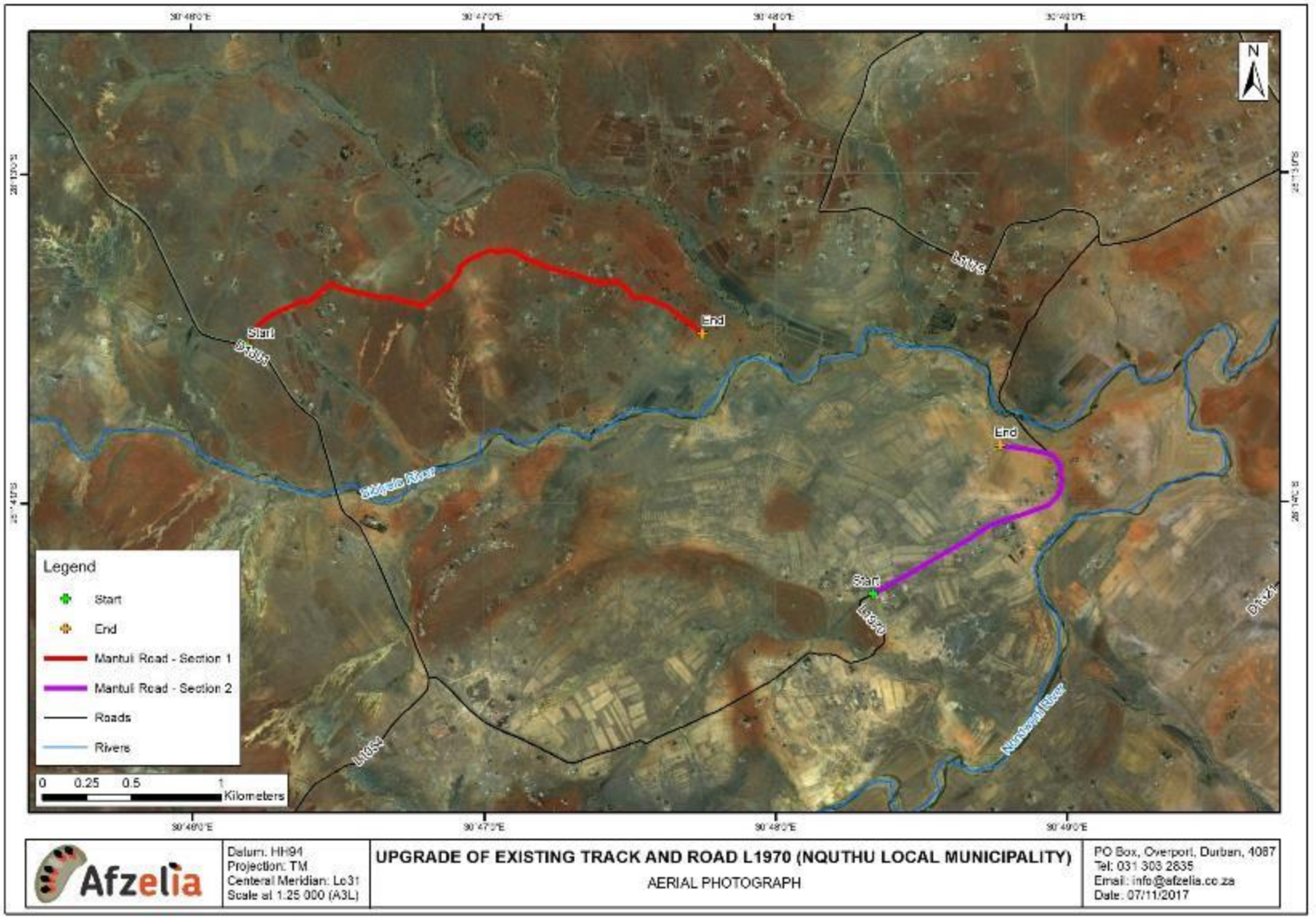

Figure 1: Aerial overview of the study

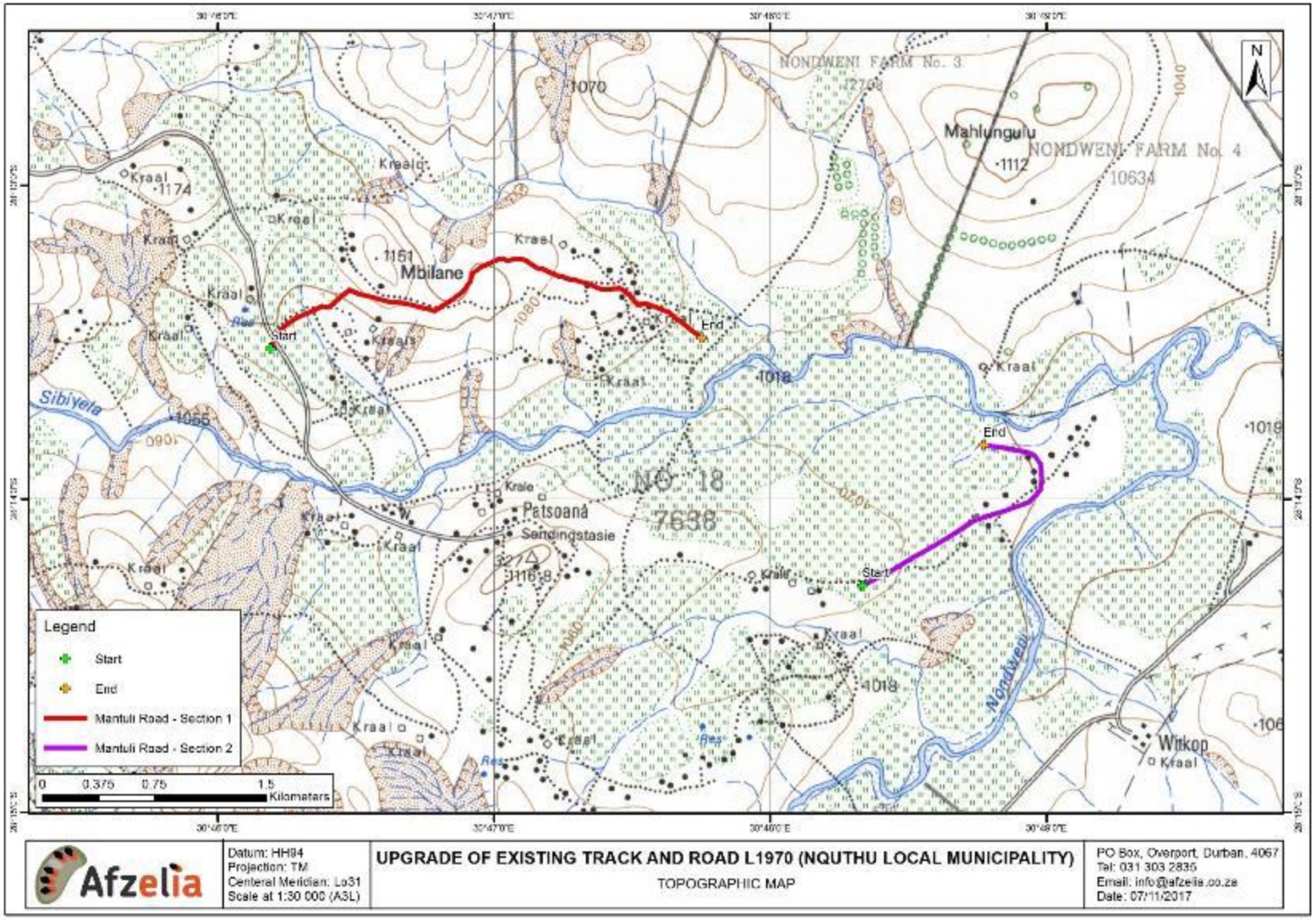

Figure 2: Locality Map

2. CONCEPTUALISATION OF ACTIVITY

2.1 Project Description

2.1.1 Current scenario on site

The appointed contractor SGM Business Project unlawfully commenced construction at the end of October 2016 with the upgrade of the existing Mantuli track from the T-junction with D1301 at approximately GPS coordinates 28°13'31.46"S 30°46'11.53"E for a length of 2.89km (north-east of the Sibeyela River). The existing Mantuli track transverses one seep wetland and terminates at GPS coordinates 28°13'29.2"S 30°47'45.0"E approximately 40m from the channelled valley bottom system and 260m from the Sibiyela river-crossing. This part of the proposed construction activity was not exempted by the DEDTEA in their correspondence dated 27/10/2016.

In addition, the upgrading of the existing gravel Road L1970 commenced from the Mfihlelwane Primary School at approximately GPS coordinates 28°14'16.19"S 30°48'20.66"E; and ended at 28°13'49.8"S 30°48'46.3"E. This part of Road L1970 runs through a seep wetland system and it is approximately 1.67km in length (South-east side of the Sibiyela River). However, the distance upgraded was in excess of the 1.0km initially submitted to the DEDTEA in the Afzelia enquiry letter and of the exempted section by the DEDTEA as discussed above under Activity Background section on page 13. **Further, a new alignment was excavated for a distance of approximately 670m, degrading previously undisturbed grasslands which probably had protected plant species growing thereon.**

Both areas of road upgrades involved the widening from 5m to 8.4m with a road reserve of 12m (6m each side) to a Class 4 gravel road according to the Department of Transport gravel road standards.

The project parameters that have already been undertaken (without authorisation) according to the construction method statement (Anderson Vogt Consulting, Construction Method Statement, 2017) attached in **Appendix D5** are as follow:

- Clearing and grubbing;
- Mass earthworks required for the horizontal and vertical realignment such as excavation for structures up to 1,5m deep, levelling, placing and compaction of the basecourse gravel layers;
- Mitre drain used for stormwater runoff control; and
- Stack/storage of stormwater pipes along the road alignment and within the wetland seep. (EAP's observation)

2.1.2 Proposed remaining project parameters

The project parameters that are still to be undertaken are as follow:

- Further pavement layers of gravel material;
- Installation of storm-water drainage pipes and related works (Masonry Wing– and Head walls and concrete slab);
- Finishing off; and
- De-establishment of all facilities and construction plant on completion of the works.
- Extensive rehabilitation of surrounding environment and impacted wetland areas - the latter will need to be undertaken by a wetland rehabilitation specialist.

The road alignment of existing Mantuli track (north-east of the Sibeyela River) transverses a seep wetland with PES score category **C** at the following coordinates:
HGM1 – start: 28°13'25.95"S 30°46'16.63"E; end: 28°13'23.45"S 30°46'24.21"E
It is proposed to place a concrete slab (25x6x0.15) m through this wetland seep at GPS coordinates 28° 13' 24.53"S, 30° 46' 19.29"E as a stormwater control measure according to the Storm Water Management Plan (SWMP) (Anderson Vogt Consulting, SWMP, 2017) attached as **Appendix D6** (Refer to **Figure 3**: Master layout plan on page 23 and **Appendix A3**).

The placement of stormwater pipes infrastructure on the upgraded existing Mantuli track will consist of 600 mm and 900mm diameter in size and will occur at twelve (12) different positions at the following coordinates shown in the **Table 7** below (Anderson Vogt Consulting, SWMP, 2017): (Refer to **Figure 3**: Master layout plan on page 23 and **Appendix A3**).

Table 8: Catchment areas and position of stormwater pipes for the existing Mantuli track

Description	Latitude (S)	Longitude (E)
Pipe 1	28° 13' 31.63"	30° 46' 11.49"
Pipe 2	28° 13' 25.54"	30° 46' 16.72"
Pipe 3	28° 13' 23.21"	30° 46' 22.36"
Pipe 4	28° 13' 21.37"	30° 46' 32.96"
Pipe 5	28° 13' 23.09"	30° 46' 42.55"
Pipe 6	28° 13' 22.17"	30° 46' 51.17"
Pipe 7	28° 13' 15.09"	30° 46' 58.34"
Pipe 8	28° 13' 14.12"	30° 47' 2.52"
Pipe 9	28° 13' 16.42"	30° 47' 11.31"
Pipe 10	28° 13' 18.17"	30° 47' 17.45"
Pipe 11	28° 13' 19.75"	30° 47' 26.73"
Pipe 12	28° 13' 27.75"	30° 47' 41.58"

The road alignment of the existing gravel Road L1970 (south-east side of the Sibiyela River) also occurs through a seep wetland system with PES score category **C** from GPS coordinates 28°14'16.19"S 30°48'20.66"E; and ends at 28°13'49.8"S 30°48'46.3"E.

The placement of stormwater pipes infrastructure on the upgraded existing gravel Road L1970 will consist of 600 mm and 900mm diameter in size and will occur at eight (8) different positions at the following coordinates shown in the **Table 8** below (Anderson Vogt Consulting, SWMP, 2017): (Refer to **Figure 3**: Master layout plan on page 23 and **Appendix A3**).

Table 9: Catchment areas and position of stormwater pipes for the existing Road L1970

Description	Latitude (S)	Longitude (E)
Pipe 1	28° 14' 13.23"	30° 48' 26.81"
Pipe 2	28° 14' 10.19"	30° 48' 32.97"
Pipe 3	28° 14' 6.52"	30° 48' 39.95"
Pipe 4	28° 14' 2.44"	30° 48' 50.11"
Pipe 5	28° 14' 0.17"	30° 48' 56.44"
Pipe 6	28° 13' 52.42"	30° 48' 57.87"
Pipe 7	28° 13' 50.08"	30° 48' 50.6"
Pipe 8	28° 13' 49.73"	30° 48' 47.11"

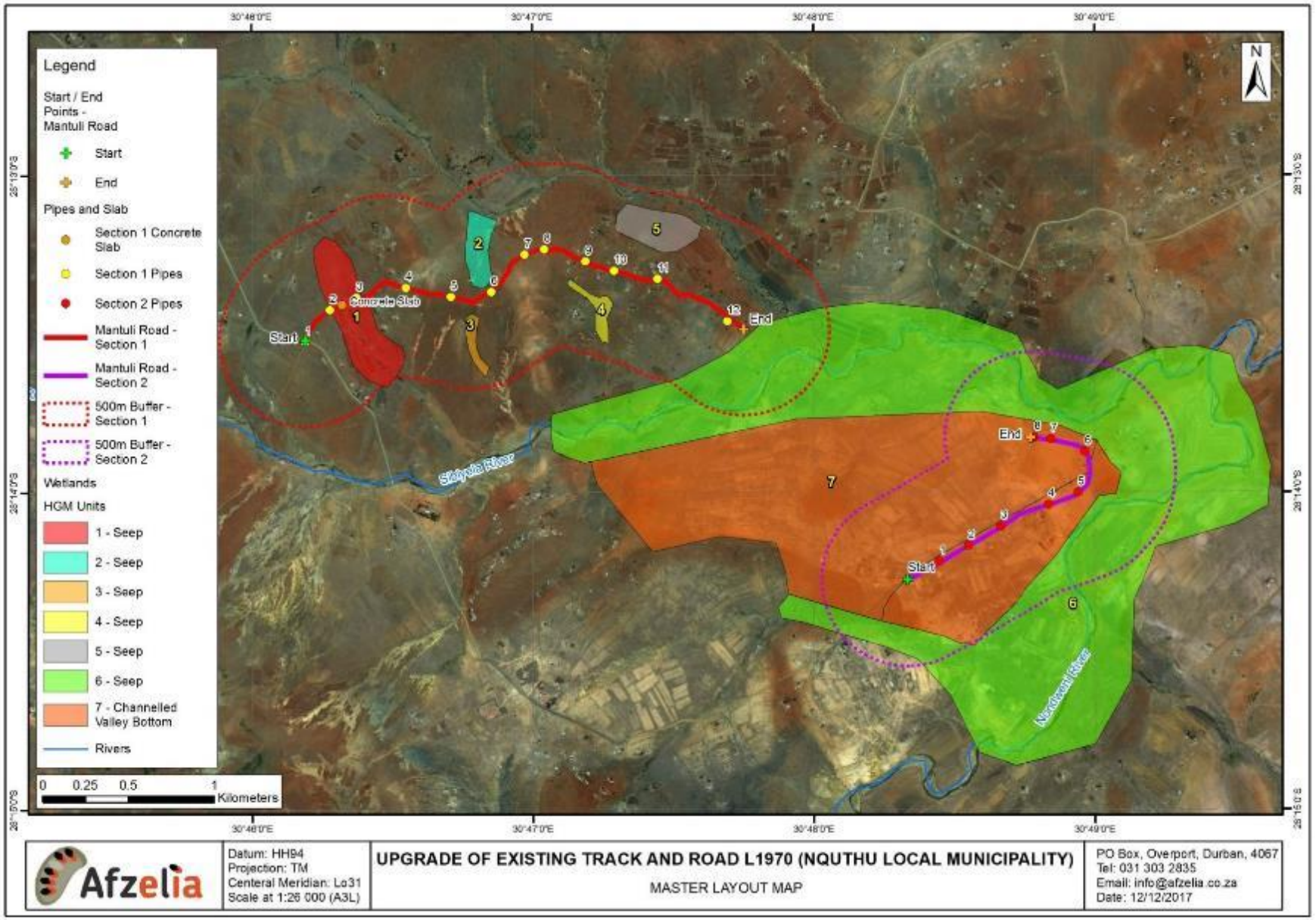

Figure 3: Master Layout Plan

2.2 Analysis of Alternatives

Alternatives are defined in the Regulations as "different means of meeting the general purpose and requirements of the activity which may include alternatives to the property on which or location where the activity is proposed to be undertaken, type of activity to be undertaken, design or layout of the activity, technology to be used in the activity; or operational aspects of the activity and includes the option of not implementing the activity" (DEA, 2014). In terms of the NEMA EIA Regulations (2014) as amended alternatives must be assessed and evaluated by the EAP at a scale and level that enables adequate comparison with the proposed development.

The mentioned activities have already been undertaken on this site and only final aspects such as formal stormwater control still needs to be installed. These activities have resulted in severe negative impacts to the receiving natural environment and have given rise for the need of rehabilitation. At this juncture in the project there is no feasible and reasonable alternatives for upgrading of the existing Mantuli track (north-west of the Sibiyela River) from the T-junction with road D1301 and the existing gravel Road L1970 at the South-east side of the Sibiyela River.

2.3 The Need and Desirability for the Project

Nquthu Local Municipality has identified the need to upgrade the existing Mantuli track (north-west of the Sibiyela River) and the existing gravel Road L1970 at the South-east side of the Sibiyela River to be funded using the Municipal Infrastructure Grant (MIG). MIG is aimed at assisting the poor to gain access to infrastructure and to create temporary employment.

2.4 Activity Life Description and Cost

The minimum construction phase period time was expected to be approximately five (5) months but this is likely to be exceeded. The project cost value was estimated at R4 785 917.30 (Including VAT and Contingencies) (Anderson Vogt Consulting, Project Implementation Plan , 2015).

2.5 Assumptions and Limitations

Assumptions and limitations as addressed in this report for the upgrade of the existing Mantuli track (north-west of the Sibiyela River) and the existing gravel Road L1970 at the South-east side of the Sibiyela River in Mantuli are:

- All information provided by the Project Manager, Anderson Vogt Consulting Engineers, to the EAP was taken to be correct and valid at the time it was provided;
- The EAP does not accept any responsibility in the event that additional information comes to light at a later stage of the process from the Project Manager or Proponent; and
- The scope of work is limited to assessing the existing and potential environmental impacts associated with the upgrading of the road and associated infrastructure, as indicated in the Implementation Plan, Construction Method Statement, and SWMP submitted by Anderson Vogt Consulting Engineers.

In addition to the above, assumptions and limitations were noted by the specialist team, who have clearly stated their own concerns, which are considered as assumptions and limitations, namely:

The wetland specialist (Malachite Specialist Services):

- Wetland boundaries are essentially based on GPS coordinate waypoints taken onsite and the accuracy of the GPS device therefore affects the accuracy of the maps produced. A hand-held Garmin eTrex 30x was used to delineate the wetland boundary and this has an accuracy of 3-6m.; and
- The assessment of the Present Ecological State (PES), the provision of ecosystem goods and services, and the EIS of the identified wetland system was based on a three-day field investigation. this may potentially miss certain ecological information, thus limiting accuracy, detail and confidence (Malachite Specialist Services, Wetland Assessment, 2017).

The Vegetation specialist (Afzelia Environmental Consultants):

- The study focuses only on terrestrial vegetation communities occurring along the road;
- A Garmin Dakota™ 20 GPS with a GPS accuracy that is limited to 3-5m was used to record species of conservation significance and boundaries of distinct habitats, and data was captured on a Geographical Information System (GIS);

- The field assessments which were carried out during late Summer (February 2017) do not address temporal changes related to changes in seasonality;
- Vegetation is dynamic and complex; therefore, some important aspects may have been overlooked; and
- Information relating to the threatened status of species is based on SANBI's online tool, which is assumed to be up to date during the compilation of the vegetation report (Afzelia Environmental Consultants, Vegetation assessment, 2017).

3. ENVIRONMENTAL LEGAL REQUIREMENTS FOR THE PROPOSED PROJECT

3.1 National Environmental Management Act (NEMA) (Act No. 107 of 1998) as amended

The following table provides a summary of the Listed Activities in terms of the EIA Regulations 2014 that are triggered by the project:

Table 10: Summary of the Listed Activities

Government Notice Number	Activity number	Description of each listed activity	Component of project
GNR 327 of 07 April 2017 (Listing Notice 1) read in conjunction with GNR 983 of 04 December 2014	19	The infilling or depositing of any material of more than 10 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10 cubic metres from a watercourse;	Construction activities associated with the road construction and with the establishment of the stormwater pipes, concrete slab structure within the seep wetland systems would result in the disturbance (excavation, removal, moving etc.) of soil, sand, pebbles, rocks and other material which are in excess of 10 cubic meters (refer to the wetland specialist's report).

The abovementioned activity contained in Listing Notice 1 of the EIA Regulations 2014 (GN R. 983, dated 04 December 2014), GNR No 327 of 07 April 2017 read in conjunction with GNR No. 982, 983 and 985 of 04 December 2014 promulgated in terms of the National Environmental Management Act, must be subjected to a Basic Assessment.

3.2 National Water Act (NWA) (Act No. 36 of 1998)

Due to the project occurring within 500m radius of wetlands, a Water Use Authorisation Application (WUA) must be submitted to the Department of Water and Sanitation (DWS) in terms of Section 21 (c) or (i) in accordance with the National Water Act 1998 (Act No. 36 of 1998) (NWA).

The NWA is a legal framework for the effective and sustainable management of water resources in South Africa.

A Water Use Licence/Authorisation is a legislative process governed by the Department of Water and Sanitation (DWS) for the licence/authorisation of all water uses defined in section 21 of the National Water Act, 1998 (Act No 36 of 1998) (NWA).

The following table provides a summary of water uses that apply to this upgrade:

Table 11: Summary of water uses that require a water use licence

Activity Number	Water Use	Description
Section 21 (c) of NWA of 1998	Impeding or diverting the flow of water in a watercourse	• Impeding flow means the temporary or permanent obstruction or hindrance to the flow of water into a watercourse by structures built either fully or partially in or across a watercourse. • Diverting flows means a temporary or permanent structure causing the flow of water to be re-routed in a watercourse for any purpose.
Section (i) of NWA of 1998	Altering the bed and banks of a watercourse or	• Altering the bed and banks means any change affecting the resource quality of the watercourse (the area within

	characteristics of a watercourse	the riparian habitat or 1:100 year floodline, whichever is greatest).

Kwazulu-Natal Heritage Act No. 4 of 2008

The aim of the Kwazulu-Natal Heritage Act No. 4 of 2008 is to provide for the establishment of a statutory body to administer heritage conservation on behalf of the provincial government of KwaZulu-Natal, namely AMAFA aKwaZulu-Natali (AMAFA).

AMAFA was not notified of the proposed upgrade of the existing Mantuli track (north-west of the Sibiyela River) and the existing gravel Road L1970 at the South-east side of the Sibiyela River.

3.3 Other Applicable Legislation and Guidelines Considered

Other legislation that has possible bearing on the Road upgrade in Mantuli is captured in the table below.

Table 12: Legislation related to the upgraded Road in Mantuli

Title of legislation, policy or guideline	Administering authority
National Environmental Management Act of 1998 (Act 107 of 1998) as amended	Department of Economic Development, Tourism and Environmental Affairs (DEDTEA) (Provincial and Local Authority)
Environmental Impact Assessment Regulations 2014, published in Regulation Gazette No. 38282 under GNR 982,983,984 and 985 (4 December 2014), as amended	DEDTEA (Provincial and Local Authority)
South Africa's Constitution (Act 108 of 1996), specifically the Bill of Rights (Chapter 2, Section 24)	The State
National Water Act (Act 36 of 1998)	DWS
Water Service Act of 1997 (Act No. 108 of 1997).	DWS
Hazardous Substances Act of 1973 (Act 15 of 1973)	Department of Health (DoH)
The Occupational Health and Safety Act (Act 85 of 1998)	Department of Labour (DoL)
National Environmental Management: Waste Act (Act 59 of 2008)	National or Provincial Department of Economic Development, Tourism and Environmental Affairs
National Environmental Management: Biodiversity Act, (Act 10 of 2004)	Ezemvelo KwaZulu-Natal Wildlife (EKZNW)
Conservation of Agricultural Resources Act (Act 43 of 1983)	Department of Agriculture, Forestry and Fisheries (DAFF)
National Veld and Forest Fire Act of 1998 (Act No. 101 of 1998).	DAFF
National Environmental Management: Protected Areas Act of 2003 (Act No. 57 of 2003)	EKZNW
Alien and Invasive Species Regulations (2014) in terms of section 97(1) of NEMBA	Department of Environmental Affairs (DEA) & EKZNW
Animals Protection Act of 1962 (Act No. 71 of 1962)	DAFF
Natural Heritage Resources Act of 1999 (Act No. 25 of 1999)	AMAFA aKwaZulu-Natali
Spatial Planning and Land Use Management Act (Act 16 of 2013) (SPLUMA)	National Office of the Department of Rural Development & Land Reform
Minimum requirements for handling, classification and disposal of hazardous waste, second edition, 1998	(DWS)
Minimum requirements for waste disposal by landfill, 2nd addition, 1998.	DWS
KwaZulu-Natal Provincial Roads Act (Act No. 4 of 2001)	KwaZulu-Natal Department of Transport (KZN DOT)
National Road Traffic Act (No. 93 of 1996)	KZN DOT
Road Traffic Act of 1989 (Act No. 29 of 1989)	KZN DOT
Nquthu Local Municipality IDP/SDF 2015/ 2016	Nquthu Local Municipality
Integrated Environmental Management (IEM) Guidelines	DEA (EDTEA)
South African Water Quality Guidelines. Volume 8	DWS

SECTION C: INFORMATION ON ASSESSMENT FACTORS

1. DESCRIPTION OF THE RECEIVING ENVIRONMENT

1.1 Climate and Rainfall

The overall average temperature in the Nquthu area is 16.7ºC. Summers range from warm to hot and temperatures reach an average high temperature of 23.2ºC whereas winters are relatively cool with cold spells and moderate to light frosts. Mist is relatively uncommon, with frost occurring for approximately an average of 15 days per year (Mucina & Rutherford, 2006), (Nquthu Local Municipality, IDP , 2015).

The climate of the Nquthu area is characterised by a bimodal rainfall pattern with limited rainfall events in the winter months. The mean annual precipitation is approximately 665mm, with the bulk of the rainfall occurring between November and March (summer months) (Malachite Specialist Services, Wetland Assessment, 2017). The winter months of June and July receive an average of 2.6 rain days and precipitation in summer is generally in the form of thunderstorms. The mean annual evaporation ranges from 1 706 –1 918 mm with an overall average of 1830 mm (Nquthu Local Municipality, IDP , 2015).

1.2 Topography, Geology and Soil

The surrounding topography is characterised by rolling to moderately broken terrain with slopes ranging from 5 % to 12 %. The terrain of the work footprint along the existing gravel Road L1970 (South-east side of the Sibiyela River) undulating from a virtually flat plateau to gentle slopes of approximately 1:20 – 1:25. This road lies predominantly with a wetland hillslope seep (See site **photographs 5-8** below and Wetland delineation map – page 44).

Photo 5: Existing Mantuli track

Photo 6: Existing Mantuli track

Photo 7: Existing gravel Road L1970

Photo 8: Existing gravel Road L1970

The area contains a diverse arrangement of Karoo Supergroup rocks, namely: Dwyka, Ecca and Beaufort Groups and marginally also Jurassic dolerite intrusions. Yellow-brown soils over plinthic subsoil and shallow duplex soils are also prevalent.

Red-black soils are derived from dolerites and indicated a resistance to erosion. Soil forms associated with geological unit includes Mispah, Glenrosa and Swartland duplex Soils. (Mucina & Rutherford, 2006) (Malachite Specialist Services, Wetland Assessment, 2017).

The high intensity rainfall conditions are conducive to high levels of surface runoff and subsequent erosion where soils are shallow, occur on steep slopes or are overgrazed. Erosion is prevalent in this area due to a combination of these factors and a lack of adequate stormwater control (Malachite Specialist Services, Wetland Assessment, 2017).

1.3 Vegetation and Biodiversity

The road footprint is located within a region classified broadly as a Grassland biome, and more specifically as a KwaZulu-Natal Highland Thornveld vegetation unit. The conservation status is classified as least threatened, having a conservation target of 23 %. However, only a very small part of this vegetation unit is legally conserved in Spioenkop, Weenen, Ntinini, Wagendrift, Moor Park and Tugela Drift Nature Reserves. Refer to **Figure 4: Vegetation Map** on page 29 and **Appendix A4.**

Sensitivity of the area was assessed through the interrogation of biodiversity databases. This indicated that the majority of the proposed route is situated in an area that has not been classified in terms of biodiversity significance. Further to this, the vegetation composition of the study site has been classified Least Threatened (Malachite Specialist Services, Wetland Assessment, 2017). Refer to **Figure 5: Threatened Ecosystem Map / NFEPA Map** on page 30 and **Appendix A4.**

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1.4 Watercourses and Catchment Characteristics

The project area falls within the quaternary catchment W21E which is part of the Buffalo Sub Water Management Area (SWA) and further falls within Usutu to Mhlatuze Water Management Area (WMA). Quaternary catchments are subdivided into Sub-Quaternary Reaches (SQRs). The SQR in closest proximity to the proposed site is W21E-02912. Refer to **Figure 6 for the W21E Quaternary Catchment Features Map** on page 31. The W21E-02912 SQR is associated with a **moderate** ecological sensitivity status. The major rivers within the W21E quaternary catchment are the Ngwebini, Nondweni and Vuwankala Rivers. The Nondweni River is the main watercourse within the larger study area and flows along the eastern boundary of both alignments. Both road alignments do not intercept the Sibiyela River which is draining in an easterly direction (Malachite Specialist Services, Wetland Assessment, 2017).

An examination of the National Freshwater Ecosystem Priority Areas (NFEPA) database was undertaken. The site is situated within a River NFEPA sub-quaternary catchment. Three NFEPA wetlands were identified within a 500m buffer around the route for the upgraded Road (Refer to **Figure 5: Threatened Ecosystem Map / NFEPA Map** on page 30). These wetlands have all been categorised as channelled valley bottom wetland systems. They have been classified as NFEPA wetlands due to their natural condition with PES scores ranging from **A** and **B** to **C**. Furthermore, the study site is situated within the Sub-Escarpment Grassland Group 2 wetland ecosystem type. This ecosystem type is considered **Least Threatened** (Malachite Specialist Services, Wetland Assessment, 2017).

However, the most significant concerns from a biological functioning perspective would be the impacts on water resources; water pollution, faunal impacts, loss of protected vegetation composition and protected plant species, as well as the encroachment of alien plant species and lack of habitat connectivity. The maintenance of landscape connectivity and ecological corridors are of paramount importance for the persistence of functioning ecological systems (Malachite Specialist Services, Wetland Assessment, 2017)

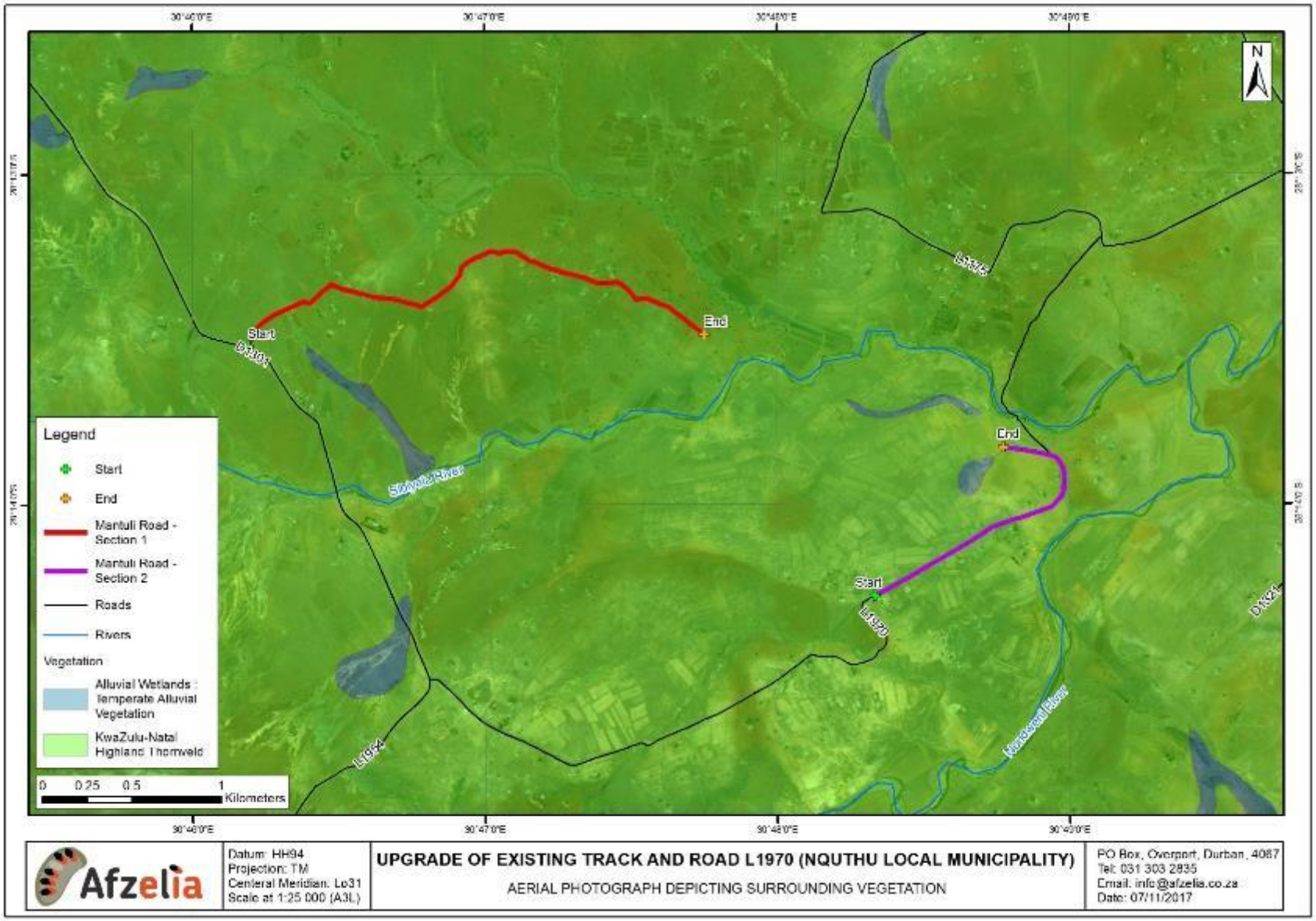


Figure 4: Vegetation map

Figure 5: Threatened Ecosystem Map / NFEPA Map

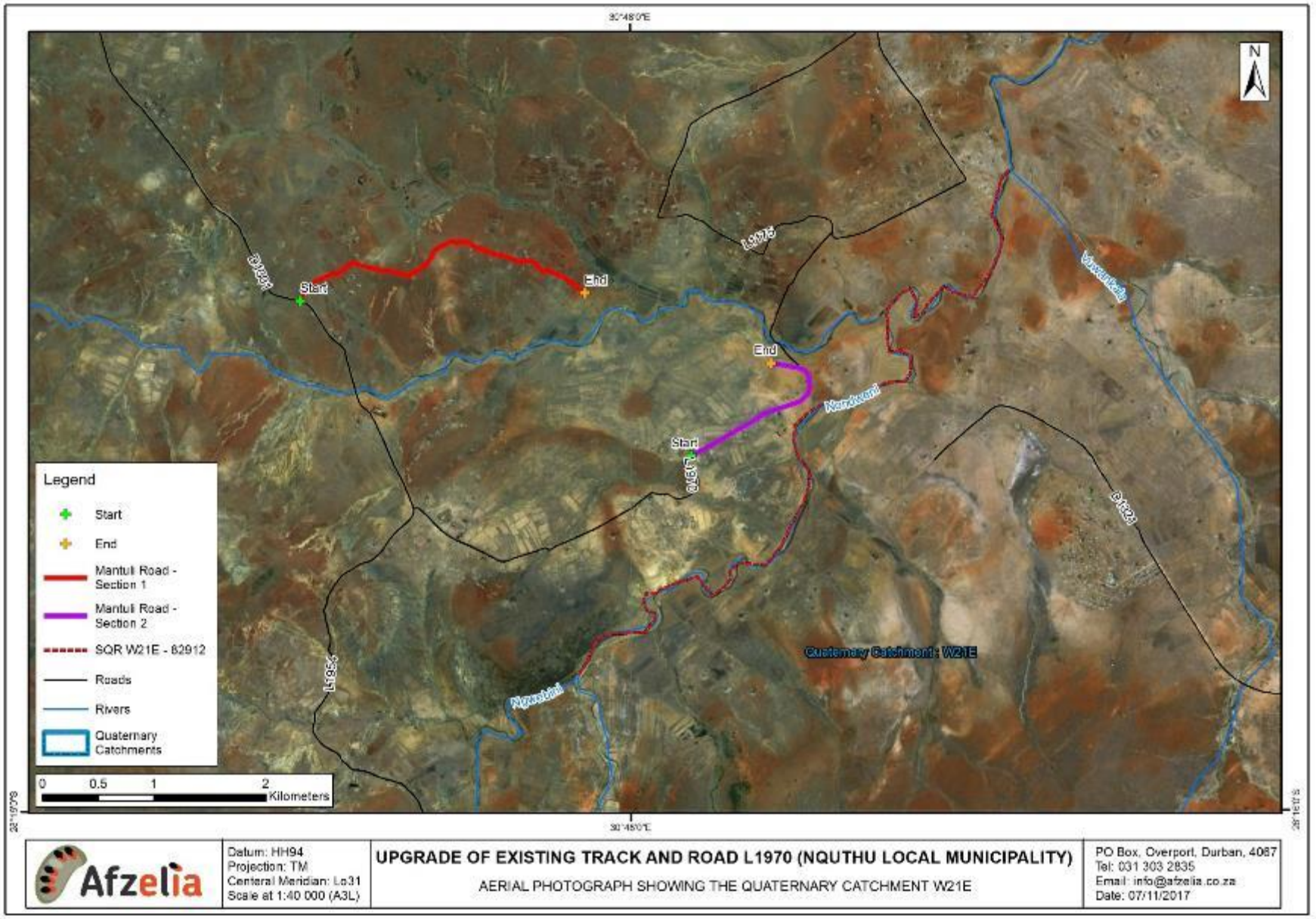


Figure 6: W21E Quaternary Catchment Features Map

2. SOCIO-ECONOMIC ASPECT OF THE RECEIVING ENVIRONMENT

2.1 Current Land Use / Character of Surrounding Area

The dominant land use surrounding the upgraded Road area in Mantuli is generally associated with transformation through rural residential housing, rural road networks, subsistence farming, livestock farming and grazing. Nquthu Local Municipality is largely rural with extensive low-density rural settlements being a major feature. Land use in Nquthu is mainly dryland subsistence agriculture, where local people keep livestock and cultivate crops such as maize and beans (Nquthu Local Municipality, IDP , 2015)

The upgrading of the existing gravel Road L1970 commenced directly from the Mfihlelwane Primary School (Refer to **photograph 9** below). Residents near the upgraded road site have been affected by the increase in dust, mud and noise levels; visual impacts, and construction related traffic delays during the construction phase. The anticipated positive impacts of the activities during both its construction and operational phase are concomitantly temporary employment opportunities and eventually improved access, reduced travel time.

The existing gravel Road L1970 (South-east side of the Sibiyela River) and the existing Mantuli track (north-west of the Sibiyela River) are both utilised by motor vehicles and pedestrians. Both road alignments do not intercept the Sibiyela River that flows in an easterly direction and confluences further downstream with the Nondweni River (Refer to **photograph 10** below). The proposed **Phase 2** of this project which requires the construction of a new road and culvert that will cross the Sibeyela River, linking the upgraded Road L1970 (south-east of Sibiyela River) with the upgraded exiting Mantuli track (north-west of Sibiyela River); has not been considered nor is such activity applied for in this application or assessment.

Photo 9: Mfihlelwane Primary School

Photo 10: The Sibiyela River

The wetland survey conducted by Malachite Specialist Services (Pty) Ltd has identified seven (7) HGM units within the study site. The upgraded existing Mantuli Mantuli track (north-west of the Sibiyela River) transverses one seep wetland being HGM1 (refer wetland delineation map on page 44) and terminates approximately 40m from the channelled valley bottom system and 260m from the Sibiyela river-crossing. There is occasional flooding occurring where the road traverses HGM1 and it is proposed to place a concrete slab over this section of the road (Refer to **photograph 11** below). Some of the wetlands occur within a 500m buffer from the upgraded existing Mantuli Mantuli track (Refer to **photograph 12** below); these being HGM 2,3,4 & 5.

The upgraded Road L1970 (South-east side of the Sibiyela River) has been constructed within the HGM 7 hillslope seep wetland. The distance upgraded was in excess of the 1.0km initially exempted by the DEDTEA which resulted in a section of new road approximately 670m being constructed (excavation) in the channelled valley bottom wetland system (towards the Sibiyela River) resulting in the deposition of road material degrading this wetland system (Refer to **photograph 13 and 14** below). This has had a direct negative impact on the health and functionality of the system as well as the system's ability to provide important ecosystem goods and services. Please refer as well to **Figure 3 Master Layout Plan** on page 22.

Section 4 findings of the specialist under point 4.3 Wetland Assessment of this report provides detailed information on the general condition of these wetlands. The upgraded road has already impacted on these wetlands systems and will have further direct impact on these wetlands systems by the installation of stormwater pipes and concrete slab. There will be an increase in stormwater flow velocity off the hardened surface at the discharge point.

Photo 11: Road is traversing the seep wetland

Photo 12: wetlands within a 500m from the existing Mantuli track

Photo 13: Section of the Road L1970 constructed in the channelled wetland system

Photo 14: Road material within the seep wetland system

The upgrading of the existing Mantuli track ((north-west side of the Sibiyela River) and Road L1970 (South-east side of the Sibiyela River) has resulted in the clearance of vegetation including plants of conservation significance being destroyed or smothered. In addition, compaction associated with vehicular traffic has occurred resulting in increased surface stormwater flow causing erosion channels. Moreover, sediment deposition associated with this erosion has resulted at the foot of the storm water mitre drains, and this has led to the smothering of indigenous grasses and subsequently creating a new raised micro topography which is devoid of vegetation due to poor control of runoff (Refer to **photograph 15 to 18** below).

Photo 15: View of impacts on vegetation from mitre drain

Photo 16: View of clearance of vegetation for road reserve

Photo 17: Plants of conservation significance being smothered **Photo 18**: ***Crinum*** **shoots that have been smothered**

There are several old stone house foundations along the upgraded existing Mantuli track (north-west of the Sibiyela River) site. The construction activities have already caused damage to one of the old house foundations and half of another (Refer to **photograph 19 to 20** below). Two graveyards were noted near the existing Mantuli track (Refer to **Figure 7:** View of graveyard and old house foundations near the road). One graveyard was situated on the left side approximately 100m away from the roadway and the other one on the right side approximately 80m away from the roadway (Refer to **photograph 21 to 22** below). Both graveyards will not be affected the construction activities. **Section 4** findings of the specialist under point 4.1.1 Heritage Survey of this report provides detailed information of the heritage assessment.

Photo 19: View of old house foundations

Photo 20: View of damaged old house foundations

Photo 21: View of graveyard 100m away from the roadway

Photo 22: View of graveyard 80m away from the roadway

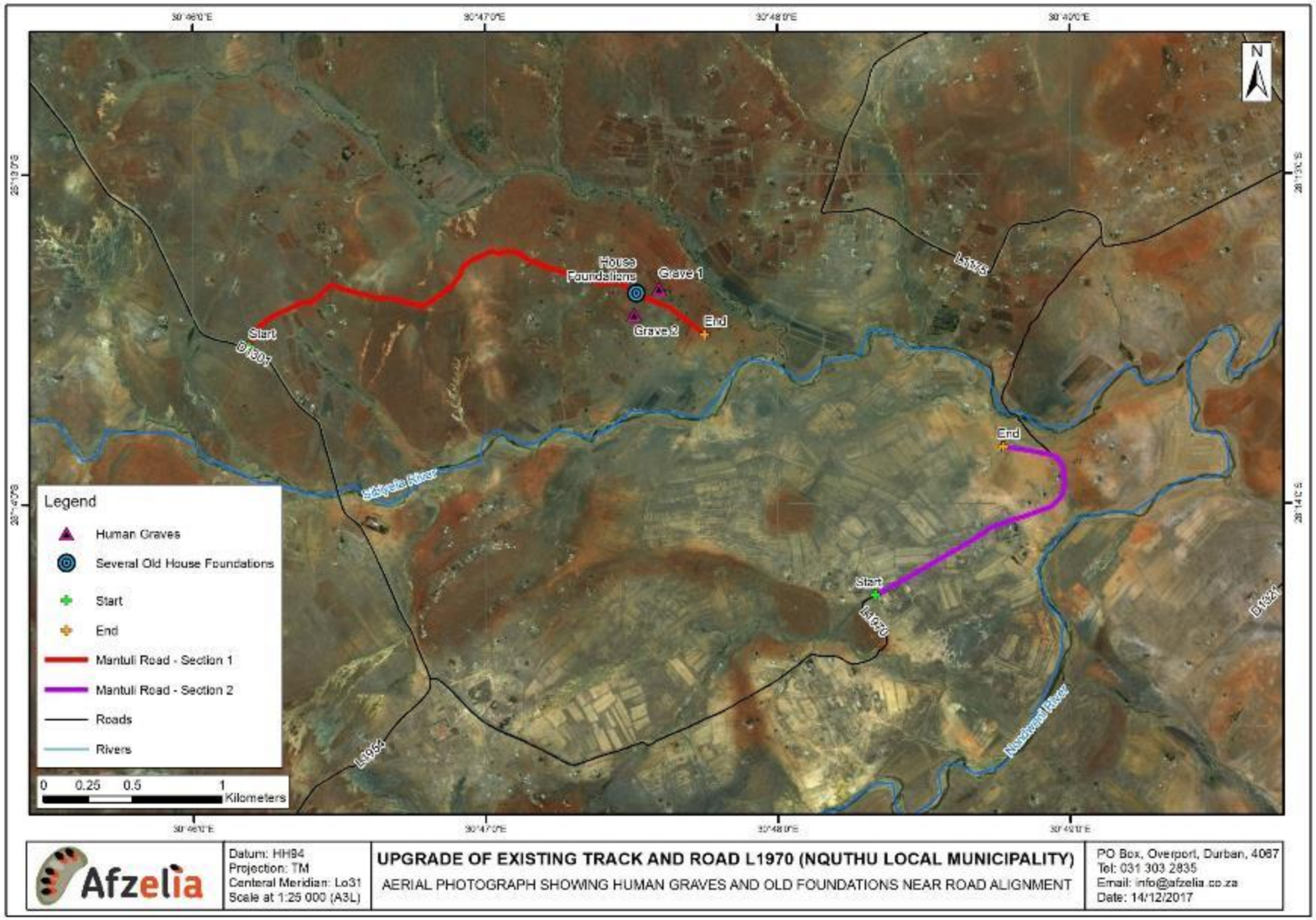


Figure 7: View of graveyards and old house foundation near the road

3. Waste, Effluent, Emission, Stormwater and Noise Management

3.1 Dust Emissions

There has been and will continue to be increased dust levels as a result of construction activities which will continue to cause nuisance on the surrounding. However, this is expected to be within acceptable limits and measures to reduce dust will be contained in the EMPr attached in **Appendix F** and must be adhered to. Dust suppression must be used by dampening with water or spraying from a water tanker to control the amount of dust created and released into the atmosphere and working environment. Potable or treated water must not be used for dust suppression.

3.2 Noise Consideration

Noise levels in the area have been and will continue to be increased during the construction phase due to the operation of heavy machinery, by the use of construction equipment and the movement of large trucks transporting concrete, rock, sand and gravel to the site. However, measures to reduce noise are contained in the EMPr; attached in **Appendix F** and relevant legislation guideline levels as per SANS 10103 regarding noise levels must be adhered to. The measurement and assessment of environmental noise with respect to annoyance and speech communication is found in the **table 14** below:

Table 13: Rural noise level limits as per SANS 10103: 2008

	OUTDOORS		INDOORS	
RURAL	**DAY**	**NIGHT**	**DAY**	**NIGHT**
	45 dB(A)	35 dB(A)	35 dB(A)	25 B(A)

3.3 Solid Waste Management

The different types of waste which could have been generated during the unlawful construction activities and will be generated when construction re-commences (if approved) may include:

- Solid waste – e.g. Plastics, metal, wood, stone, construction rubble, concrete, unused stormwater pipes and general domestic waste.
- Chemical waste – e.g. Petrochemicals, resins, paints and herbicides
- Sewage and waste water:
    - Chemical toilets have the potential to contaminate the environment if not appropriately managed. Portable chemical toilets must be provided along the working route and within the construction camp site. An independent registered chemical waste company, such as Justloo or SANITECH is to be used to service and remove waste from chemical toilets at least weekly from site. Certificates of service must be retained as proof.
    - Wastewater from construction activities may be contaminated and can result in the pollution of the surrounding environment. This would mainly relate to storm water potentially contained within bunded areas where spillages may have occurred. Contaminated water associated with construction activities must be contained in separate bunded areas and must not be allowed to enter into the natural drainage system.

Facilities for solid waste collection are to be provided by the appointed contractor on site. The construction solid waste must be collected in skips placed within the construction camp. Solid waste containers must be made available where and when required along the construction front, and these must be taken to the construction camp at the end of each day. These are to be at least 200 litre drums and clearly identified as the point for waste disposal. These waste receptacles with suitable covers or lid must be provided and conveniently placed to prevent wind-blown rubbish and scavenging by people and animals. All the waste receptacles must be removed from the site for disposal at a commercial facility licensed for this purpose.
Under no circumstances is waste to be buried or burnt.

Solid waste, hazardous waste and wastewater must be disposed of at a nearest licensed and operational municipal landfill site or municipal waste stream collection areas. The nearest landfill that accepts both hazardous and non-hazardous (domestic) waste is Nqutu Disposal Site or Nondweni Disposal Site. Any hazardous waste must be separated from the non-hazardous

waste before being disposed of. Waybills for all such disposal are to be kept by the Contractor on site for record purpose and review. Solid Waste Management has been addressed adequately in the EMPr attached in **Appendix F**.

The following recommendations are made to reduce the amount of waste needing disposal:

1. Existing road surfaces must be re-milled and reused as much as possible.
2. materials such as unused stormwater pipes to be returned to Nquthu Local Municipality prior to completion of construction activities.
3. Excess old road material must be offered to the Local Authorities for them to reuse where needed.
4. Materials sourced from the site (top soil) must be used for the site rehabilitation and landscaping post construction.
5. Recycling must be undertaken where possible to reduce the amount of waste sent to the landfill site.

PLEASE NOTE: NO SPOIL SITES ARE TO BE USED FOR THE DISPOSAL OF WASTE MATERIAL OR EXCESS MATERIAL GENERATED BY THIS PROJECT

3.4 Storm-water Management Plan (SWMP)

The SWMP report prepared by Anderson Vogt Consulting provides details of a generic analysis that addresses possible scenarios to ensure that adequate drainage measures are implemented to promote the dissipation of storm-water run-off during and after construction.

The design methodology used for the SWMP is in accordance with The South African National Roads Agency SOC Limited (SANRAL) Drainage Manual 6th Edition. The storm-water design volumes calculated were in accordance with the KZN: DOT standard specifications, KZN: DOT Drainage manual and KZN: DOT standard drawings. The Rational Method was used to calculate the flood peaks for the storm-water design for the individual catchment areas affected by the proposed project. The road is classified as a Local Access Road, R (Rural) as Road category, Road class 4 and the Design Return Period of 1:10 years was used (Anderson Vogt Consulting, SWMP, 2017).

According to the engineering report generated by Anderson Vogt Consulting, the areas affected by the proposed project range from hilly slopes over the existing Mantuli track (north-west of the Sibiyela River) section to a gentle slope over the existing Road L1970 (South-east side of the Sibiyela River) section. This had an influence on the design approach. The road alignment was designed and graded to avoid a concentration of water flow along the road. Where the flow concentration is unavoidable, measures have been incorporated in the storm-water system at suitable points along the road. Mitre drains have been constructed to collect and channel the storm-water to selected discharge localities. From these, storm-water will be discharged directly onto the adjacent grassland[1] (Anderson Vogt Consulting, SWMP, 2017).

Poor storm-water management can result in the storm-water becoming contaminated as well causing erosion, pollution and flooding. Suitable erosion control measures must be implemented at storm-water discharge points, exposed areas and high embankments. These measures may include the following options (Anderson Vogt Consulting, SWMP, 2017):

- Sand bags on trenches (trench breakers).
- Bunds or grips adjacent to watercourses.
- Technologies similar to Soil Saver on embankments.
- Planting of indigenous vegetation on embankments.
- Minimising the areas of clearing and grubbing of vegetation within the road reserve.
- Erosion protection in the form of grass will be provided at the associated inlet and outlet structures.
- Over-wetting, saturation and unnecessary runoff during dust control, curing and irrigation activities will be avoided.
- Sandbag berms will be placed at regular intervals on all steep slopes and on the trench line before and after backfilling in order to minimise erosion and the discharge of contaminated storm water runoff into watercourses.

[1] Specific erosion control measures have not been stipulated by the engineers in their report

- Landscaping and the planting of indigenous grass will be carried out along the footprint of the development to ensure the stabilisation of the watercourses and embankments.
- If there is a scour risk or risks that potholes may form on the existing alignment, this can be managed by using suitable gravel to temporarily repair the scouring or potholes.

The proposed upgrade has not the potential to increase the storm-water runoff significantly as only a single existing gravel Mantuli track will be upgraded. Adequate attenuation of flood runoff will be provided. The design of the storm-water management system addresses the flooding issue and ensures that the post-development flood risks will not be greater than the pre-development flood risks (Anderson Vogt Consulting, SWMP, 2017).

The rainwater catchment area of concern for the upgrade of the existing Mantuli track (north-west of the Sibiyela River) and the existing Road L1970 (South-east side of the Sibiyela River) in Mantuli is divided into eighteen (18) catchment areas. The schedule of the catchment areas is listed in **Table 7 and 8:** Schedules of catchment areas and position of stormwater pipes for the existing Mantuli track and Road L1970 on **page 20** and **21** of this report. Stormwater pipes sizes of 600 mm and 900mm diameter will be used with headwalls (Anderson Vogt Consulting, SWMP, 2017).

According to the Nquthu Local Municipality's Integrated Development Plan (IDP) (2015/16), areas of environmental concern requiring management; include r areas prone to soil erosion, watercourses especially wetlands. In addition, according to the uMzinyathi District Municipality's Draft 2014/15 IDP Review, land degradation, soil erosion and water sources have been identified as key environmental issues within Nquthu Local Municipality.

Comment received from the DAFF– Directorate: Land Use and Soil Management attached in **Appendix E8** states clearly that the soil in the area is highly erodible judging from the scars and dongas on the cultivated field and from the side of the roads. It is highly recommended that all drains are constructed in a way that will not lead to any form of erosion.

The Department of Rural Development: Land Use and Regulatory Unit in their comment attached in **Appendix E8** highlight that the land where the upgraded road is occurring is vulnerable to erosive degradation in slope areas, therefore every effort must be made to limit degradation.

The most common soil conservation measure to decrease the rate of soil erosion through overland flow is to increase the rate of infiltration. This may be achieved either by increasing vegetation cover or by means of slowing the velocity of overland flow through stone lined pitching, retention ponds, infiltration trenches or vegetated swales.

4. FINDINGS OF THE SPECIALIST ASSESSMENT

In order to comply with the requirements of a Basic Assessment as per the EIA 2014 Regulation, specialists were appointed to undertake the necessary assessments. Specialists were consulted during the completion of this section. The full reports are attached in **Appendix D**.

4.1 Heritage and Palaeontological Assessment

4.1.1 Heritage Impact Assessment

A heritage survey was undertaken by Umlando: Archaeological Surveys and Heritage Management during December 2016 and the full report is attached in **Appendix D3.** The main findings of this report and recommendations have been summarised below:

The desktop study consisted of analysing various maps for evidence of prior habitation in the study area, as well as for previous archaeological surveys. The archaeological database indicates that there are archaeological sites in the general area (Refer to **Figure 8:** Location of known heritage sites near the study area below). These sites include Middle and Late Stone Age and Late Iron Age sites. Two sites occur nearby the study area: 2830BB 035 and 2830BB 036. These are sites noted by Prof. M Hall in 1979 from the 1970 orthophotos (Natal Museum Site Records). The sites are stone walled settlements (Umlando, Heritage assessment , 2016).

A field survey revealed that the site consists of several stone house foundations and a rectangular kraal over a 50m radius (Refer to **Figure 9:** Location of recorded sites and features below). There is a cemetery further down the hill. MANT367 as shown in **Figure 9** relates to some site from the 1968 topographical survey. House foundations are important in that they may have human and/or stillborn burials underneath them. The upgraded existing Mantuli track (north-west of the Sibiyela River) has removed at least one of the house foundations and damaged the half of another. The settlement is of medium significance until social consultation has occurred to determine the occurrence of graves (Umlando, Heritage assessment , 2016).

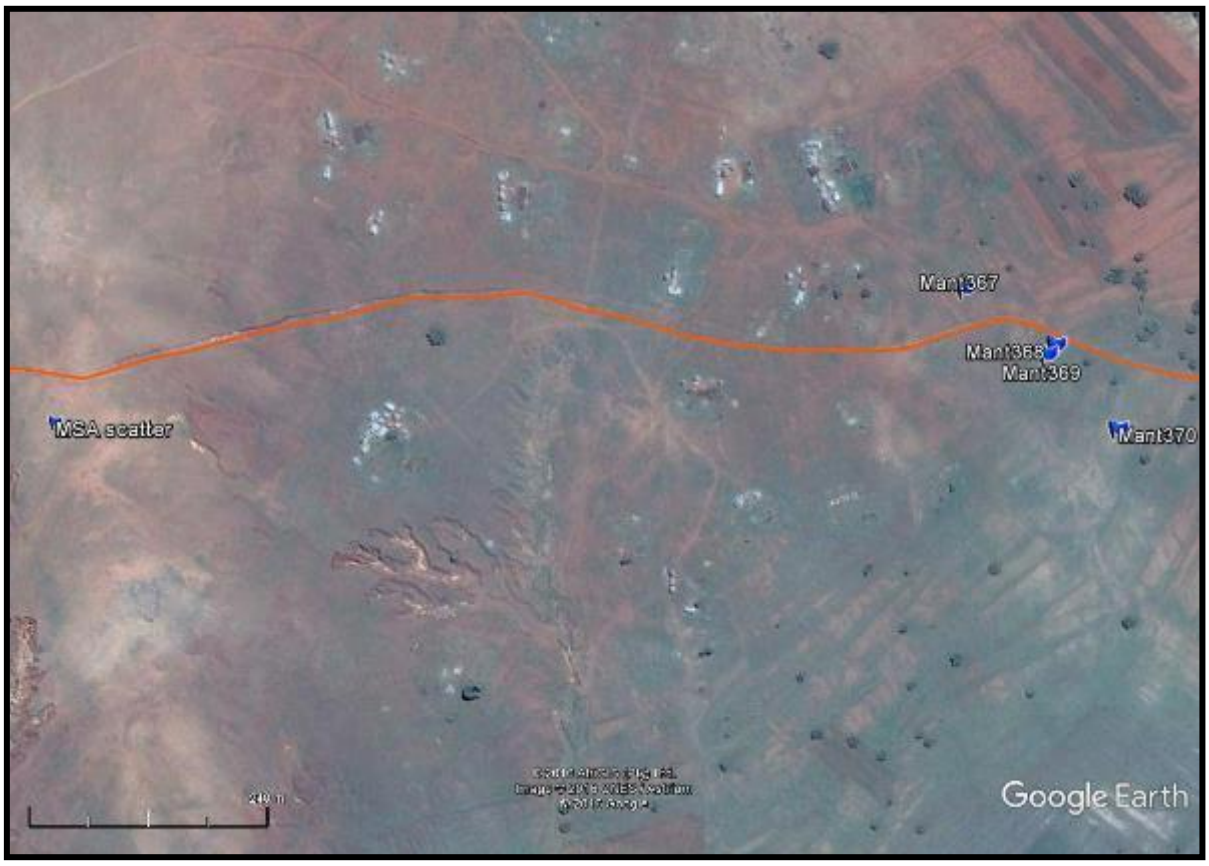
The road upgrade has impacted on two stone cairns that could probably be graves. MANT368 MANT367 as shown in **Figure 9** is a stone cairn that has had road rubble pushed up against it. It occurs on the side of the road and will be affected if any further earthmoving or drainage lines occurs. MANT369 MANT367 as shown in **Figure 9** occurs approximately 10m southwest of MANT368. This feature could also be a grave. A water diversion has been graded into the site and it has damaged part of this feature (Umlando, Heritage assessment , 2016).

Mitigation: A social impact assessment consisting of community participation regarding these houses and to determine living descendants related to the grave, should have occurred. This would determine if any graves were associated with the house foundations. The foundations should have been mapped. The graves need to be clearly demarcated with a 5m buffer (Umlando, Heritage assessment , 2016). These mitigations must still occur.

A public consultation process has been conducted with the local residents to determine the occurrence of graves near the road. Please refer to **Section D** Public Participation Process **point 6** Comments and Response Report (Issues Trail) on **page 47 to 62** of this report. **Table 14**: Interest and Affected Parties Issues and Concerns provide detail information on how concerns raised by AMFA has been addressed.

Source: Umlando: Archaeological Surveys and Heritage Management - heritage survey, 2016

Figure 8: Location of known Heritage sites near the study area



Source: Umlando: Archaeological Surveys and Heritage Management - heritage survey, 2016

Figure 9: Location of recorded sites and features

4.1.2 Desktop Assessment Palaeontological Impact Assessment (PIA)

Dr. Gideon Groenewald undertook a desktop PIA on behalf of Umlando: Archaeological Surveys and Heritage Management in December 2016 and the full report is attached in **Appendix D3.** The main findings of this report and recommendations have been summarised below:

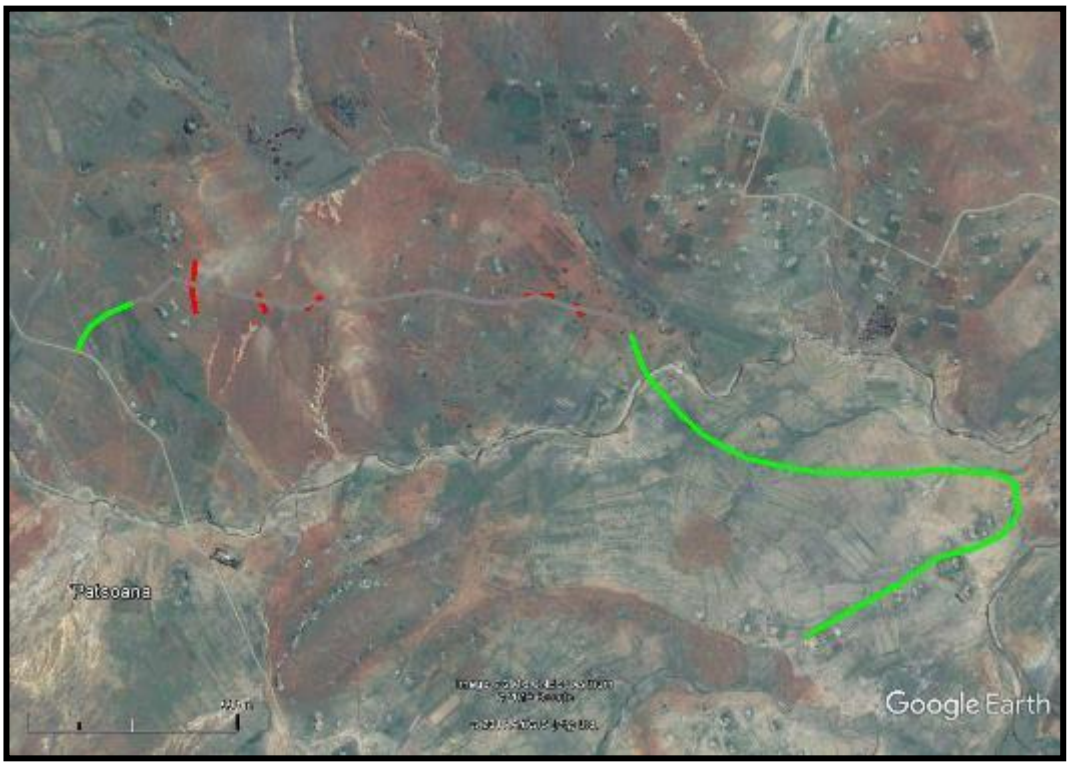
The site is underlain by Swazian aged volcanic and sedimentary rocks of the Nondweni Group, Carboniferous to Permian aged sedimentary rocks of the Dwyka Group and Permian aged Dolerite of the Karoo Supergroup. Exposure of bedrock during excavation might however result in the exposure of significant plant and trace fossils in the shale as well as possible invertebrate fossils in the Dwyka Group (Umlando, Heritage assessment , 2016).

No significant fossils are expected before deep excavation (>1.5m) are done into the sediments of the Dwyka Group and if fossils are recorded it will contribute significantly to our knowledge of the Palaeontological Heritage of KwaZulu-Natal. The chances of recording significant fossils has a Moderate Significance and it is recommended that a suitably qualified Palaeontologist inspects the excavated material for trace fossils as these opportunities to see deeply excavated rocks of the Dwyka Group are very rare (Refer to **Figure 10:** Location of sensitive paleontological areas below) (Umlando, Heritage assessment , 2016).

It is unlikely that the road upgrade will remove more than 1.5m of surface deposit. However, any culverts and stormwater drains might require further palaeontological assessments. If any excavations are deeper than 1.5m, then a palaeontological assessment will be required on site (Umlando, Heritage assessment , 2016).

Significant Primary Groundwater Aquifers are associated with the alluvium on site and design of all water distribution and treatment works for potential polluted water must ensure that no polluted water reach these important National Heritage Sites. It is recommended that the EAP and ECO must be informed of the fact that a Moderate Palaeontological Sensitivity is allocated to the Dwyka Group rocks in the study area. Fossils may be observed during construction and the HIA specialist and Palaeontologist must be informed when these rocks are exposed to take immediate and appropriate action to preserve the fossils. The recommendations for mitigation for prevention of groundwater pollution as discussed in the Groundwater Impact

Assessment Report must be adhered to. These recommendations must be included in the EMPr of this project (Umlando, Heritage assessment , 2016).



Source: Umlando: Archaeological Surveys and Heritage Management - heritage survey, 2016

Figure 10: Location of sensitive paleontological areas

4.2 Vegetation Assessment

Afzelia Environmental Consultants (Pty) Ltd undertook the vegetation assessment for this project on the 08-10 February 2017 and the full report has been included in **Appendix D2.** The main findings of this specialist report are based on a single field survey and have been summarised below (Afzelia Environmental Consultants, Vegetation assessment, 2017):

- The vegetation communities, associated with the terrestrial area were found to be **critically threatened** as a result of encroachment by human related activities. Edge effects such as, extensive livestock grazing, creation of informal access routes; construction of road networks and crop cultivation are posing a threat to the indigenous vegetation.
- The dominant vegetation type associated with the study site at a broad-spatial scale is **Highveld Thornveld Vegetation**. At fine-spatial scale, very good and poor-quality grasslands with a mosaic of individual acacia trees that are sparsely distributed along gently slopes characterise the study site.
- The dominant grass species along the upgraded 2.8km Mantuli track and the L1970 road are of poor quality and include *inter alia*: *Cynodon dactylon*, *Melinis repens* and *Sporobolus Africanus* (dominant*)*
- The dominant grass species along the proposed link road are of good quality.
- Due to human induced transformation associated with the area, the vegetation communities associated with the upgraded 2.8km Mantuli track and the L1970 road comprise of a sub-climax stage vegetation community of weak perennials and *Increaser ii* grass species (approximately 60% of grass composition.
- Alien plant species identified include *inter alia*, *Agave Americana*; *Antemis cotula*; *Argemone ochroleuca subsp. Ochroleuca and Bidens pilosa**
- Plants of conservation significance within the road reserve and adjacent grasslands include *inter alia*; *Aloe gestheri; hypoxis hemerocallidea; Ledebouria ovatifolia* and *crinum spps.* Should further disturbances on the conservation significant plant be anticipated, plant permits (please refer to Section 4 of the vegetation report) must be obtained from Ezemvelo KZN Wildlife (eKZNw) in accordance with National and Provincial Legislation.
- The ecological sensitivity of the area is classified provincially as Least Threatened at a broad-spatial scale.

- The overall vegetation community, with regards to the disturbed footprint associated with Phase 1, is of **moderate** ecological functionality and integrity as it has been significantly transformed and is not indicative of the benchmark floral composition of the bio-region.
- Exceptions regarding ecological sensitivity should be made with regards to the proposed link road (Phase 2) and its associated riparian zone, these units are rated as having **High sensitivity**. *(EAP Note: This section of road is not under consideration within the scope of this assessment)*
- At a broader spatial scale, progressive bush encroachment, urban sprawl and low-scale agricultural practises are a potential threat to the integrity of vegetation units associated with the area. At fine spatial scale, overgrazing and establishment of road networks are directly transforming the indigenous vegetation.
- Phase 1 of the project has resulted in significant direct and cumulative impacts on the vegetation.
- Phase 2 is considered least desirable (a No-Go), as there is an existing road network (D1301) that is already in use which can be easily upgraded to accommodate increased traffic flow. The continued potential loss of indigenous vegetation will detrimentally impact on the connectivity; integrity and functionality of healthy ecosystems which are providing vital eco-services

The following recommendations are proposed (Afzelia Environmental Consultants, Vegetation assessment, 2017):

1. The upgrading of existing road networks in lieu of undertaking Phase 2 must be thoroughly considered as an avoidance measure to prevent further intrusion onto pristine indigenous vegetation.
2. The existing storm water drains must be formalised to effectively attenuate storm water flows and mitigate against soil erosion currently taking place as a result of poorly constructed off-chutes. Erosion control measures such as bioengineering techniques must be implemented in areas sensitive to erosion such as edges of slopes, exposed soil, etc. These measures *include but are not limited to* - the use of fascine works, earth diversion berms, hessian sheets, Bio jute and ecologs, as well as the replacement of indigenous vegetation.
3. An invasive alien eradication programme must be implemented throughout the duration of the project to prevent the introduction and spread of these species as per the legislative requirements specified under the Conservation of Agricultural Resources Act, 1983 amended in 2001 and the National Environmental Management: Biodiversity Act 2004 (Act No, 10 of 2004).
4. Further loss of indigenous tree species must not occur;
5. In the likelihood of Phase 2 being authorised (not recommended), Plant Permits from eKZNw for *Hypoxis hemerocallidea, Ledebouria ovatifolia; and Crinum* must be obtained prior to any activities being carried out. And all conservation-important species identified must be translocated onsite.
6. Should the protected *Aloe gerstneri* located next to the upgraded Mantuli track be disturbed, a Threatened or Protected species (ToPs) plant permit from *Ezemvelo* KwaZulu-Natal Wildlife (EKZNw) must be obtained in accordance with the National Environmental Management Biodiversity Act (NEMBA) (Act 10 of 2004)
7. Disturbed areas must be rehabilitated immediately after construction by planting appropriate indigenous grass species, rehabilitated areas must be monitored to ensure the re-establishment of the re-vegetated areas and to ensure a ground cover of 85%.
8. To protect the riparian vegetation associated with the wetland/s onsite, a competent wetland specialist must be appointed to delineate wetlands associated with the study site. Recommendations made by the wetland specialist must be strictly adhered to; and
9. A competent Independent Environmental Control Officer (IECO) must be present onsite to monitor the clearing of vegetation prior to the commencement of any activity.

4.3 Wetland Assessment

A Wetland Impact Assessment was undertaken by Malachite Specialist Services (Pty) Ltd during February 2017 to identify and delineate any wetland areas within a 500m boundary surrounding the existing road alignment; to assess all the wetland indicators and determine the Present Ecological State (PES) or health of the wetland, the wetland's ability to provide goods and services (Eco-Services) and the Ecological Importance and Sensitivity (EIS) of the wetlands, as well as to identify current and possible negative impacts, and to recommend mitigation measures to lessen the impact of the proposed project on wetlands delineated within the study area and the implementation of suitable rehabilitation measures. The full report has been included in **Appendix D1.** The main findings of this wetland report have been summarised below:

The wetland assessment initially involved desktop investigations for the presence of wetland and watercourse systems within a 500m buffer around the existing Mantuli track ((north-west side of the Sibiyela River) and Road L1970 (South-east side of the

Sibiyela River) as well as the proposed new route. The field investigation identified the presence of seven wetland systems within the study site. These wetland systems were classified as: a single channelled valley bottom system; as well as six seeps (Malachite Specialist Services, Wetland Assessment, 2017).

The PES obtained ranged from **largely natural**, **moderately modified**, **largely modified** and **seriously modified** (**PES Category B/C, C, D** and **E** respectively). Changes within the micro-catchments associated with each HGM unit have led to a general decline in the health of the wetland systems. These modifications stem from the use of the area for agricultural purposes as well as infrastructural (roads) development and rural residential houses. HGM 6 and 7 as shown in **Figure**, delineated as a channelled valley bottom and seep system respectively, were categorised as **largely natural** to **moderately modified** (**PES B/C** and **C**).

These wetland systems will be affected by the construction of the new road, linking the existing Mantuli track ((north-west side of the Sibiyela River) to Road L1970 (South-east side of the Sibiyela River). Portions of both wetland systems have been historically cultivated, however, the field investigation revealed that the through succession growth, the area has remediated to a more natural state. The wetland systems consist of secondary succession grasslands with large stands of hydrophytic vegetation which occur throughout the different zones of saturation. *(EAP Note: This section of road is not under consideration within the scope of this assessment)*

Part of the new extension of Road L1970 (South-east side of the Sibiyela River). has already been constructed in the channelled valley bottom system resulting in the deposition of road material within the wetland system. This has had a direct negative impact on the health and functionality of the system as well as the system's ability to provide important ecosystem goods and services.

Ecosystem goods and services were calculated for all HGM units. Despite the modifications to the systems, these wetlands have retained their functional integrity and provide a number of ecosystem goods and services to their catchments. HGM unit 6 received a **low and moderate score** for cultural significance and recreation as the channel is utilised by the local community for fishing and washing of clothes and a number of grave sites were noted within the HGM unit. The EIS for the wetland systems ranged from **low** through to **high**. The seep systems (HGM units 1 to 5) are located within a largely disturbed area adjacent to the existing road. This disturbance resulted from the utilisation of the area for livestock grazing and subsistence agriculture.

The higher basal cover and extent of open water within the channelled valley bottom wetland system (HGM 6) provides greater habitat for faunal and floral species, thus increasing the ecological importance and sensitivity of this system. The channelled valley bottom system provides an important ecological corridor and provides suitable refugia for faunal species within the catchment. This is also true for HGM 7.

The upgrade of the existing Mantuli track ((north-west side of the Sibiyela River) and Road L1970 (South-east side of the Sibiyela River) which includes the widening of the road will lead to negative impacts on the associated wetland systems. Negative impacts identified during the upgrade of the existing roads are associated with

- soil erosion and sedimentation of the wetland systems,
- pollution of the wetlands and soil as a result of construction and operational activities; and
- the continued spread of alien invasive species as a result of the disturbance.

It is recommended that the existing road network within the greater area be upgraded, particularly with regard to stormwater control and these roads continued to be utilised. Furthermore, rehabilitation measures to remediate the disturbed portions of HGM 6 and HGM7 where L1970 has been unlawfully extended towards the Sibiyela River must be undertaken. This portion must be ripped and returned to the pre-existing slope and condition. In addition existing soil erosion and gully formation which has occurred as a result of the construction activities must be remediated by the planting of hydrophytic and terrestrial species along the construction footprint to increase basal cover and stop the movement of sediment and the formation of erosion gullies; and the removal of invasive alien species which have encroached into the area as a result of the construction activities.

The construction of the new road through the channelled valley bottom and seep system (HGM 6 and HGM 7); will lead to a complete loss of two largely natural, healthy, functionally important and ecologically sensitive wetland systems. This is a fatal flaw as it cannot be mitigated

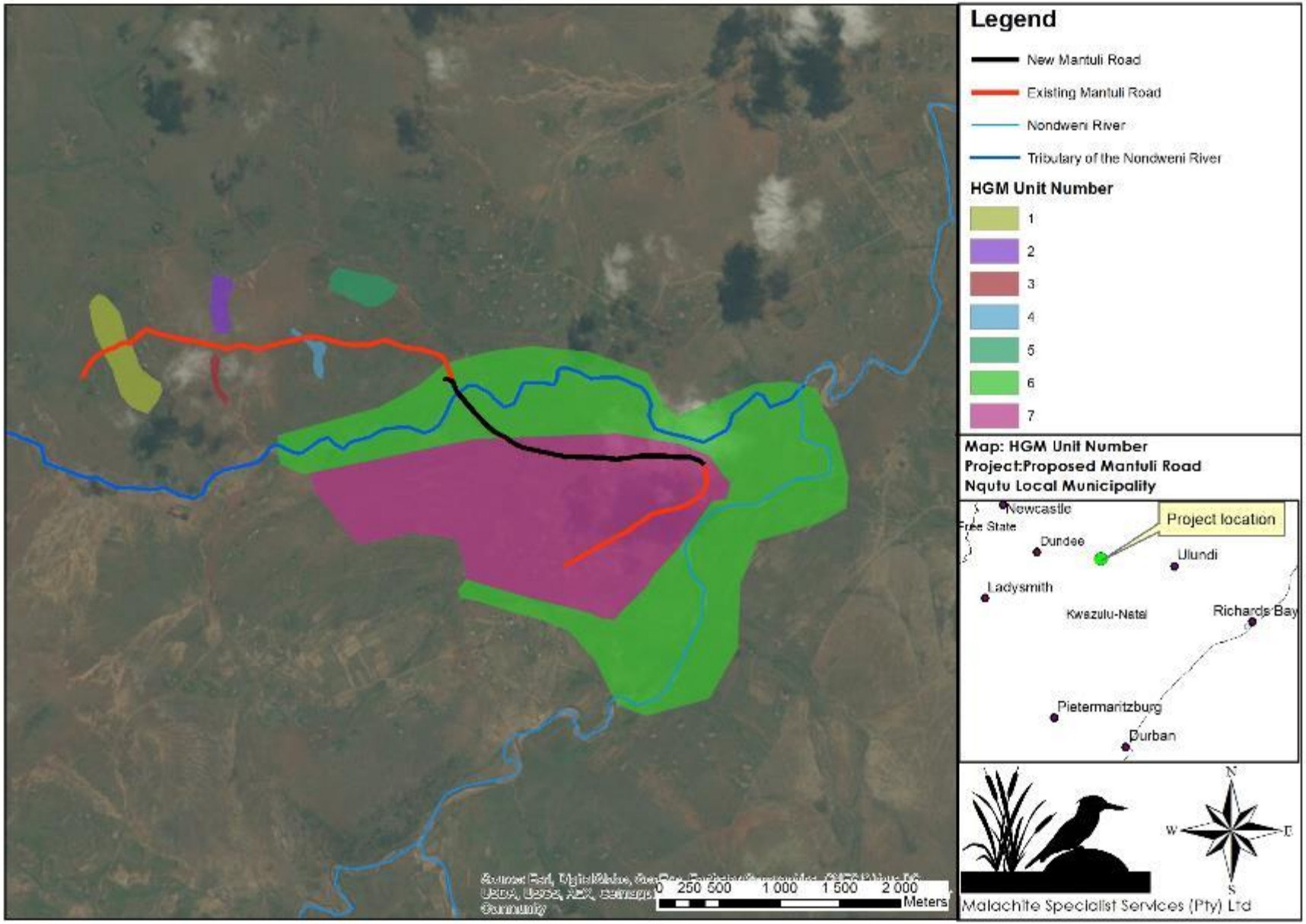


Figure 11: Wetland map

4.4 Rehabilitation Plan

Erosion

The rills[2] must be remediated through the small-scale re-profiling of the construction footprint topography and the filling in of these rills with sediment from the surrounding area. This deposition must be carefully compacted whilst in a moist state. The topsoil to be stripped during the future installation of stormwater pipes must be used for this remediation by spreading it as evenly as possible over the sloped area. Vegetation suitable to the site must be planted as soon as the topsoil has been spread. An increase in basal cover along the road will aid in the reduction of sediment movement and the subsequent formation of further erosion gullies and rills (Malachite Specialist Services, Wetland Assessment, 2017).

Replanting of Vegetation

The disturbed area around the wetlands must be re-planted with hydrophytic vegetation. Hydrophytic vegetation [3]will further increase the health of the vegetation dynamics of the system and reduce the impact of the encroachment of alien invasive species. Due to the valuable role of vegetation in wetland systems, the revegetation process encompasses a vital process governing wetland rehabilitation. (Malachite Specialist Services, Wetland Assessment, 2017). A comprehensive wetland rehabilitation programme must be compiled by a wetland specialist who must also supervise the implementation of the programme

Before embarking on planting, the area must be adequately prepared. This will include the use of organic fertilisers, which must be incorporated into the topsoil, the selection and collection of appropriate species (i.e. using a combination of hydrophytic vegetation and species adapted to drier conditions depending on the zone of saturation disturbed), and the use of structures that can be placed within the disturbed areas to support vegetation growth. These include but are not limited to fibre rolls, fibre netting, sand bags or fibre bags, mattresses and fibre mats, and stone packs.

The use of the dense hydrophytic vegetation within HGM 6 can be utilised for the planting of vegetation within the disturbed areas along the road. Transplantation of plants from one part of an undisturbed wetland into another (the reinstatement area) can often prove far more successful in terms of survival rates, and this will be the preferred method for reinstatement, bolstered with the original seedbank within the topsoil. Sourcing of wetland plants for transplanting must be scattered so as to limit impact on the source areas. Compaction wherever it has occurred must be reversed by loosening the soil to its original texture and restoring the natural soil profile of the affected area (Malachite Specialist Services, Wetland Assessment, 2017).
The rehabilitation process must be conducted with an experienced wetland specialist on site to guide this process (Malachite Specialist Services, Wetland Assessment, 2017)

It is important to monitor the planted vegetation to ensure the growth of these species. Regular inspections of the replanted areas must be carried out by either the Contractor's Environmental Representative and/ or ECO to monitor the progress of the reinstatement and to determine if further action is required.

Invasive Alien Plant Species Management Plan

The clearing of emergent invasive alien plant species must be undertaken. These were particularly noted along the disturbed areas as a result of the construction of the existing track ((north-west side of the Sibiyela River) within HGM 6. The removal of alien invasive vegetation must occur prior to the re-vegetation of disturbed areas.

The following alien invasive plant species were identified within the disturbed area of HGM 6 during the February 2017 field investigation: *Ageratum conyzoides* (Invading Ageratum), *Bidens pilosa* (Blackjacks), *Argemone ochroleuca* subsp. *ochroleuca* (White flowered Mexican Poppy), and *Tagetes minuta* (Khaki Weed).

[2] A rill is a shallow channel in some soil, created by the erosion of flowing water. When rills get large enough that they cannot easily be removed, they're known as gullies.
[3] Wetland plants.

The control needed to eradicate the specific species is provided in detail in the EMPr attached in **Appendix F**.

SECTION D: PUBLIC PARTICIPATION PROCESS

1. OVERVIEW

The Environmental Impact Assessment Regulations (2014 –as amended in 2017) under the National Environmental Management Act, 1998 (Act No. 107 of 1998 -as amended); require that a public participation process must be conducted as part of the basic assessment process. Public participation is currently being carried out in accordance with Section 24 (J), (O) of the National Environmental Management Act as amended in the EIA regulations, 2014.

The primary objectives of the public participation process are to:

- Inform and notify potentially Interested and Affected Parties (I&APs) of the proposed application (explain steps that were taken to achieve this);
- Initiate or promote meaningful and timeous participation of I&APs by providing proof that notice boards, advertisements and notices notifying potentially interested and affected parties of the proposed application have been displayed, placed or given;
- Maintain a list of all persons, organisation and organs of state that register as interested and affected parties in relation to the application;
- Identify issues and concerns of key stakeholders and I&APs with regards to the application for the proposed project;
- Provide a summary of the issues raised by interested and affected parties, the date of receipt of and the response of the EAP to those issues; and
- Provide responses to I&AP queries.

2. AUTHORITY CONSULTATION

KZN DEDTEA Directorate: Environmental Services, North Region

The competent authority which is the KZN DEDTEA - Environmental Impact Assessment (Umzinyathi District) is required to provide an environmental authorisation (either positive or negative) for the project.

An enquiry as per the National Environmental Management Act (NEMA) (No. 107 of 1998) EIA 2014 Regulations was submitted to DEDTEA on 14/10/2017 for the upgrading of about 1.0 km of the existing gravel Road L1970 at the South-east side of the Sibiyela River; as there was no available funding for specialist studies. (Refer to the enquiry attached as **Appendix E2)**

A response to the enquiry was obtained on 27/10/2016 (Refer to **Appendix E4**) which stated that: "the upgrade of 1.0 km of the existing Road L1970 does not constitute an activity which is identified in terms of sections 24(2) and 24D of NEMA (No. 107 of 1998) and does not require Environmental Authorisation; but does not exempt compliance with other applicable legislation such as the National Water Act (Act 36 of 1998)".

Afzelia Environmental Consultants in an email dated 07 December 2016 has informed KZN DEDTEA and AMAFA that the existing Mantuli track (north-west of the Sibiyela River) of about 2.8 km in length from the T-junction with road D1301 which required environmental approval, was under illegal construction activities (Refer to **Appendix E12**).

A directive in terms of section 28(4) of NEMA (No. 107 of 1998) as amended was issued by EDTEA to the Nquthu Local Municipality on 12/01/2017 (Refer to **Appendix E5**) to cease construction activities until the Environmental Authorisation Section receives an assessment of impacts for further decision.

A further meeting was held on site with the KZN DEDTEA on the 11th September 2017 for guidance on this project and at this meeting the degradation caused by the unlawful activity was noted. A copy of the correspondence regarding the meeting is attached in **Appendix E6.**

After the above-mentioned site visit, EDTEA held internal discussions between the EIA assessment component and the Compliance Monitoring & Enforcement component, and the Department notified Afzelia Environmental Consultants in an email dated 14 September 2017 that they had dispensed with the need for a Section 24G application (despite the unlawful activity that had already taken place) and instructed Afzelia to undertake a Basic Assessment process.

Department of Water and Sanitation (DWS)

A pre-application meeting for the Water Use Authorisation Application process was held with the DWS Regional Office on the 21st of September 2017. The pre-application meeting's minutes/notes and attendance register are attached in **Appendix E11.** DWS have also conducted a site visit with Afzelia Environmental Consultants on 25/10/2017 and has expressed their concerns on the impact of the wetland systems as a result of unlawful commencement of activity and stated the need for a Water Use Authorisation in terms of the National Water Act (Act 36 of 1998) and need for the wetland rehabilitation

AMAFA.

When it became known that there was unlawful commencement of activity (December 2016), Afzelia Environmental Consultants, notified AMAFA and DEDTEA as per their correspondence dated 07th December 2016 attached in **Appendix E12.** AMAFA undertook a site visit thereafter and expressed their concerns on the damage to Heritage Resources in the vicinity of the road upgrade and new alignment and stated rectification of unlawful commencement of activity requirements in their correspondence dated 12th June 2017 attached in **Appendix E8**. A consultation with the local residents was undertaken on 02/12/2017 to address all the concern raised by AMAFA in their correspondence dated 12th June 2017. Refer to the Comments and Responses Report table on page 48 to 62 of this report.

The Heritage Impact Assessment Study, Background Information Document (BID) and DBAR were uploaded into the AMAFA website on the purpose of this application for comment in terms of section 38(8) of the National heritage legislation and NEMA.

3. IDENTIFICATION OF INTERESTED AND AFFECTED PARTIES

Afzelia Environmental Consultants (Pty) Ltd has developed an initial I&AP's database comprising of key stakeholders, I&AP's and Organ of States. This database has been maintained and updated throughout duration of the public participation process of the project. **Table 13** below lists all the key stakeholders, I&AP's and Organ of States identified.

Table 14: Key stakeholders identified with respect to the PPP

NAME	ORGANISATION
Mavis Padayachee	KwaZulu Natal Department of Economic Development, Tourism & Environmental Affairs
Gerald Willis-Smith	KwaZulu Natal Department of Economic Development, Tourism & Environmental Affairs
P. Mans	Department of Agriculture and Rural Development
Ms N. Sontangane	Department of Agriculture, Forestry & Fisheries
Kwazi Hlongwane	Department of Agriculture, Forestry & Fisheries – Directorate: Land Use and Soil Management
Bernadet Pawandiwa	AMAFA AkwaZulu Natali
Mr A Blackmore	Ezemvelo KZN Wildlife
Zwelakhe Khanyile	Department of Water and Sanitation
Michelle Smidt	KZN Department of Transport
Suewellan Ellis	Ingonyama Trust Board
Bongi Paul Gumbi	Nquthu Local Municipality – Municipal Manager
Siyabonga Zama	Nquthu Local Municipality - Departments Planning and Economic Development
W.J.M Mngomezulu	Umzinyathi District Municipality
Molefe	Molefe Traditional Tribal Authority
S.M Buthelezi	Ward 8 - Councillor

4. PUBLIC NOTICES / SITE NOTICES, ADVERTISEMENTS AND BID

Interested and Affected Parties (I&AP's) were notified of the project through the following ways:

- Fixing a notice board at a place conspicuous to and accessible by the public the route of Road D1301 and Road L1970 in Mantuli;
- Written notice has been given to I&AP's, property owners, persons in control of and occupiers of land adjacent to the proposed site, municipal councillors, municipality, applicable government departments. This has been done through email and hand delivered notices;
- Placing of an English and isiZulu newspaper advertisements in local newspapers.

The notices put up and information given out include the following information:

- Details of the proposed application / project;
- What procedure is being undertaken, i.e. Basic Assessment and Water Use Authorisation;
- The nature and location of the proposed activity;
- Where further information on the application can be obtained; and
- Contact details for the person whom represents the Applicant/Proponent.

A Background Information Document (BID) for the upgrade of the existing track of about 2.8 km in length from the T-junction with road D1301 situated on the North-west side of the Sibiyela River was circulated on 25/10/2016 to all stakeholders, Organ of States and I&APs for comment as part of the initial Public Participation Process.

An advert was placed in local newspapers namely Dundee Courier Newspaper for both English advertisement; IsiZulu advertisement.

5. PUBLIC AND AUTHORITY REVIEW OF THE DRAFT BASIC ASSESSMENT REPORT

The draft BAR is being made available for Authority and public review for a total of 30 legislated days from **12/03/2018 until 16/04/2018** and upon request from the EAP. In order to distribute the information regarding the proposed project to the broader public and to ensure that all potential I&AP's were given the opportunity to comment. A commenting period of 30 days were given with regards to the Draft Basic Assessment process and 60 days for the water use license application processes.

The report is being made available at the following public locations within the study area, which are all readily accessible to I&APs:

- Public Place: Mfihlelwane Primary School.

6. COMMENTS AND RESPONSE REPORT (ISSUES TRAIL)

The purpose of this Comments and Responses Report is to record comments received from Organs of State and Interested and Affected Parties (I&APs) during the public participation process undertaken for the proposed project. See **table 14** below and **Appendix E10**:

Table 15: Interest and Affected Parties Issues and Concerns

Method of response - = Letter/Fax = E-mail = Public meeting

NO.	ISSUE	NAME	METHOD & DATE	COMMENT	RESPONSE
COMMENTS RECEIVED DURING THE CIRCULATION OF THE BACKGROUND INFORMATION DOCUMENT					
1	Impact on natural forests, indigenous and protected trees.	**Ms N. Sontangane** *Department of Agriculture, Forestry & Fisheries*	29/11/2016	With regards to the BID received on 03rd November 2016, majority proposed new road alignment follows an existing track. Although the area is dominated by grassland, there are indigenous trees found within the development footprint, but the nature of this vegetation assessment is currently unclear. Therefore, the Department requests that a vegetation assessment is conducted for the proposed site. This study will assist in determining the impact that the development may have on indigenous trees and / or protected trees species in terms of the National Forest Act (NFA). Further comments will be provided upon receipt and review of the BAR.	A terrestrial and riparian vegetation assessment study has been conducted for the proposed site and a list of indigenous trees has been included into the EMPr for the rehabilitation phase. Noted.
2	Impact on indigenous vegetation, agriculture resources and general environmental issues during construction phase.	**P. Mans** *Department of Agriculture and Rural Development*	13/12/2016	**1. Comments** 1.1 An inspection was conducted to the road site on the 12 of December 2016. 1.2 According to the Department of Agriculture Land Categories map 2012 it was determined that the site is located on a category E land i.e. Mixed agricultural Land. This land is regarded as land with limited to very low potential for agricultural production. However, such land can help support the economic viability of adjoining land parcels in terms of development projects such as the proposed road to create access and other useful economic services to communities in the surrounding area. 1.3 The land may be vulnerable to erosive degradation in steep areas therefore; every effort should be	Noted. Noted. Issues on erosion control have been addressed adequately in the DBAR and

NO.	ISSUE	NAME	METHOD & DATE	COMMENT	RESPONSE
COMMENTS RECEIVED DURING THE CIRCULATION OF THE BACKGROUND INFORMATION DOCUMENT					
				made to limit degradation of the natural agricultural resources in accordance with CARA (43 OF 1983). **2. Recommendation** This office has **no objection** to the proposed Upgrade of the Mantuli road in ward 8 of the Nquthu Local Municipality.	comprehensive EMPr attached in **Appendix F**. Noted.
3	Water use management and other environmental issues	**Ms Antonia Steenkamp** *Department of Water and Sanitation*	06/12/2016	**1) Water Uses and Water Use Authorisations** 1.1 It is not indicated in the Background Information Document, hereinafter referred to as the BID, where water will be obtained for proposed upgrade of Mantuli Road, hereinafter referred to as Development. The Applicant is therefore required to provide this Department with these details in the Draft Basic Assessment Report, hereinafter referred as the BAR. It is important to note that a water use authorisation is required in the event that water will be abstracted from a water resource, in terms of Section 21 (a) of the National Water Act, 1998 (Act No. 36 of 1998), hereinafter referred to as the NWA, i.e. **"taking water from a water resource".** 1.2 It is indicated on page 10 of the BID that the Development will involve the infilling or depositing of ~~any~~ material of more than 5 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 5 cubic metres (m²) from a watercourse As such, the Applicant must note that the Development constitutes as a Section 21(i) water use, i.e. altering the bed, banks, course or characteristics of a watercourse" and must be authorised by this Department, under the provisions of the NWA.	The appointed contractor, SGM Business Projects, illegally commenced construction and was abstracting water from the Sibeyela River until construction activities was stopped. An application for water use authorisation in terms of Section 21 (a) of the NWA will be submitted to DWS for the project. An application for water use authorisation in terms of Section 21 (c) and (i) of the NWA will be submitted to DWS for the project.

NO.	ISSUE	NAME	METHOD & DATE	COMMENT	RESPONSE
COMMENTS RECEIVED DURING THE CIRCULATION OF THE BACKGROUND INFORMATION DOCUMENT					
				1.3 The river, stream and associated buffers must be treated as sensitive environment areas and therefore caution must be exercised near the watercourses.	The proposed Phase 2 of this project which requires the construction of a new road and culvert that will cross the Sibeyela River, linking the upgraded Road L1970 (south-east of Sibiyela River) with the upgraded exiting track (north-west of Sibiyela River) and which will transverse channelled valley bottom wetland (HGM 6) and seep wetland (HGM7) **has not been considered nor is such activity applied for in this application.**
				1.4 It is indicated on page 10 of the BID that the Development occurs within 500m radius of a National Freshwater Ecosystem Priority Areas (NFEPA) wetland. As such, the Applicant must note that any activity within a 500m radius from the boundary of a wetland requires a water use authorisation in terms of Section 21(c) and (i) of the NWA, i.e. "impending or diverting the flow of water in a watercourse" respectively and must be authorised by the Department, under the provisions of the NWA. A Wetland Delineation study must be conducted for all wetlands occurring on site, according to this Department's guideline titled, "A Practical Field Procedure for Identification and Delineation of Wetlands and Riparian Areas", (DWAF, 2005). Therefore, this Department acknowledges and emphasises the commitment on pages 12 and 13 of the BID that a Wetland Delineation and Functionality Assessment, and a Wetland Rehabilitation Plan will be two of the Environmental Specialist Studies undertaken during the Basic Assessment Process.	An application for water use authorisation in terms of Section 21 (c) and (i) of the NWA will be submitted to DWS for the project. A wetland delineation and functional assessment study including, and a Wetland Rehabilitation has been conducted for the proposed site and it is attached in **Appendix D1.** The channelled valley bottom wetland and hillslope seepage wetlands identified within a 500m radius of the site have been delineated
				1.5 It is the responsibility of the Applicant to identify all water uses applicable to the Development in terms of	A pre-application meeting was held with DWS on the 21st of September 2017 to

NO.	ISSUE	NAME	METHOD & DATE	COMMENT	RESPONSE
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				Section 21 of the NWA and to ensure that all applicable water uses are authorised as such. The Applicant must consult with this Department if clarity is required with regards to water uses and water use authorisations.	discuss the requirements for a Water Use Authorisation for the project. In addition, DWS have also conducted a site visit with Afzelia Environmental Consultants on 25/10/2017
				1.6 As the Development currently proposes to engage in two water uses that require authorisation in terms of the NWA (Section 21 (c) and (i), the Applicant should note that as per Government Notice No. 509 dated 26 August 2016 in Government Gazette No. 40229: "A person who lawfully has access to land on which the use of water takes place; may on that property or land, use water in terms of section 21 (c) or (i) of the Act if it has a low risk class as determined through the Risk Matrix".	A wetland delineation and functional assessment study including a Risk Matrix has been conducted for the proposed site and it is attached in **Appendix D1.**
				1.7 It is required that the following documents and associated spread sheets be used during the assessment of risk and mitigation of risks: **a)** A Practical Field Procedure for Delineation of Wetlands and Riparian Areas (2005); **b)** The Risk Matrix **c)** Guideline: Assessment of Activities or Developments affecting wetlands; and **d)** Guideline for the determination of buffer zones for rivers, wetlands and estuaries. These are all available on the Department's website: www.dws.gov.za , under water use authorisation in terms of Section 21 (c) or (i) of the Act. Please note that the Risk Assessment must be conducted by a suitable qualified SACNASP Professional Member.	This has been adhered to. The Risk Assessment has been conducted by a suitable qualified SACNASP Professional Member.
				1.8 Subject to the provisions of the General Authorisation, a person who uses water as contemplated in the General Authorisation must submit the relevant registration forms to the responsible authority. Upon	Noted.

NO.	ISSUE	NAME	METHOD & DATE	COMMENT	RESPONSE
COMMENTS RECEIVED DURING THE CIRCULATION OF THE BACKGROUND INFORMATION DOCUMENT					
				completion of registration, the responsible authority will provide a certificate of registration to the water user within 3 working days of the submission. On written receipt of a registration from the Department, the person will be regarded as a registered water user and can only then commence with the water use as contemplated in the General Authorisation. The registration forms can be obtained from the Department's website: www.dws.co.za 1.9 Please note that no person may use water unless permitted under the NWA. Should you engage in any water use activity without the necessary water use authorisation, it will be regarded as an unlawful water use. You will thus be guilty of an offence and liable for a fine or imprisonment as stipulated in Section 151 of the NWA. **2) Solid Waste Management** 2.1 The requirements of this Department with respect to solid waste be strictly enforced and complied with. 2.2 All waste material generated must be disposed of at a permitted landfill site that is authorised to accept such waste. Safe disposal certificates must be kept on record and service level agreements of this must be made available to this Department when required. 2.3 Contaminated soil or other hazardous material must be disposed of at a permitted hazardous landfill site that is authorized to accept the said material. Safe disposal certificates must be kept on record and	A directive in terms of section 28(4) of NEMA (No. 107 of 1998) as amended was issued by DEDTEA to the Applicant on 12/01/2017 (Refer to **Appendix E5**) to cease construction activities until all the Authorisations are obtained for the project. DWS are still to decide on the unlawfulness of this project in terms of their legislation and competency All issues on solid waste management have been addressed in the DBAR and comprehensive EMPr attached in **Appendix F**.

NO.	ISSUE	NAME	METHOD & DATE	COMMENT	RESPONSE
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				service level agreements of this must be made available to this Department when required. 2.4 Such waste must be placed, and skips stored in a designated storage/ collection area prior to being safely disposed of and must not cause any surface and ground water pollution or pose any health hazards. 2.5 The recycling of suitable material is encouraged by this Department, provided that it is properly managed. **3) Sewage and Wastewater Management** 3.1 Washing, refuelling, maintaining of vehicles or the transfer of hazardous substances must be conducted within a bunded area. All drainage arising from the bunded area must be treated as a water containing waste and disposed of safely. 3.2 The use of any ablution facilities must not cause any pollution to water sources or pose a health hazard. In addition, these toilets must not be situated within 100m from a watercourse or within the 1:100 year floodline (whichever is the greatest). Furthermore, no form of secondary pollution should arise from the disposal of refuse or sewage from the toilets. Any pollution problems arising from the above are to be addressed immediately by the Applicant. 3.3 The following is applicable should small volumes of wastewater be generated during the construction phase: ➢ Water containing waste must not be discharged into the natural environment; and ➢ Measures to contain the water containing waste and safely dispose thereof must be implemented.	All issues on sewage and wastewater management have been addressed in the DBAR and comprehensive EMPr attached in **Appendix F**.

NO.	ISSUE	NAME	METHOD & DATE	COMMENT	RESPONSE
COMMENTS RECEIVED DURING THE CIRCULATION OF THE BACKGROUND INFORMATION DOCUMENT					
				4) Stormwater Management 4.1 It is imperative that there is proper management of storm water at the site. A stormwater management plan must therefore be drawn up and adhered to. 4.2 The Engineer or Contractor must ensure that only clean stormwater runoff enters the environment. 4.3 Drainage must be controlled to ensure that runoff from the area does not culminate in off-site pollution, flooding or result in any damage to properties downstream of any stormwater discharge point(s). **5) Erosion Control** 5.1 Erosion control measures must be put in place to minimise erosion along the proposed construction areas at all times. Extra precautions must be taken in areas where the soils are deemed highly erodible and areas prone to erosion. 5.2 Where the land has been disturbed during construction it must be re-habilitated and re-vegetated back to an acceptable state after construction. 5.3 Stockpiling of soil or any other materials used during the construction phase must not be allowed on or near steep slopes, near a watercourse or water body. This is to prevent pollution or the impediment of surface run-off. The Applicant must control and establish suitable mitigation measures to prevent the erosion of stockpiles. **6) Spillages Management**	A Stormwater Management Plan has been drawn up by the Project Manager/Engineer in the DBAR. However, the implementation of Sustainable Urban Drainage Systems (SUDS) techniques which have been advocated by Afzelia Environmental Consultants and have been incorporated in the EMPr have not been adopted by the engineers All issues on erosion control and rehabilitation have been addressed in the DBAR and comprehensive EMPr attached in **Appendix F**.

NO.	ISSUE	NAME	METHOD & DATE	COMMENT	RESPONSE
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				6.1 There must be no unacceptable impact on the quality of both surface and groundwater in the area. If pollution of any surface or groundwater occurs, it must be immediately reported to this Department and the appropriate mitigation measures must be employed. In addition, should the proposed development impact on any groundwater and/or surface water users, then water of equal quality and quantity must be provided to the affected users. 6.2 Storage of material, chemicals, fuels etc. must not pose a risk to the surrounding environment, and this includes surface and groundwater. Temporary bunds must also be constructed around chemical or fuel storage areas to contain possible spillages. Such storage areas must be located outside the 1:100 year flood-line of the water source and must be fenced to prevent unauthorized access into the area. 6.3 It is important that any significant spillage of chemicals, fuels, etc. during the construction phase and/or operational phase is reported to this Office and other relevant authorities. In the event of a spill, the following steps can be taken: ➢ Stop the source of the spill ➢ Contain the spill ➢ All significant spills must be reported to this Department and other relevant authorities; ➢ Remove the spilled product for treatment and authorised disposal; ➢ Determine if there is any soil, groundwater or other environmental impact; ➢ If necessary, remedial action must be taken in consultation with this Department and ➢ Incident must be documented	Mitigation measures have been stated in the DBAR and comprehensive EMPr that should prevent this from happening. A contingency plan has been drawn up in the EMPr to address spillage issues. However, should this occur, the Proponent is responsible for implementing an emergency an emergency contingency plan

NO.	ISSUE	NAME	METHOD & DATE	COMMENT	RESPONSE
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				7) General 7.1 No form of secondary pollution should arise from the disposal of sewage and refuse. The contractor must be clearly briefed on the method of disposal of such waste and compliance must be ensured or monitored. Any pollution problems arising from the above Development is to be addressed immediately by the Applicant. 7.2 A draft Environmental Management Programme Report, stipulating the individual responsibilities and conditions during each phase of the Development needs to be compiled and submitted to this Office as part of the BAR. 7.3 This Office reserves the right to inspect the site without prior notice in order to ensure that its requirements, as mentioned above, are adhered to. Should any problems be noted, measures must be undertaken immediately to rectify the situation. 7.4 This Department reserves the right to revise or withdraw these comments and request further information from the Applicant should any other information that contradicts the above come to light. 7.5 Notwithstanding the above, the responsibility rests with the Applicant to identify all sources or potential sources of pollution from his undertaking and to take appropriate measures to prevent any pollution of the environment. Failure to comply with the requirements of the NWA could lead to legal action being instituted against the Applicant.	All general environmental management aspects with regards to pollution during construction phase have been addressed in the DBAR and comprehensive EMPr This has been adhered to. All general environmental management aspects during construction phase have been addressed in the DBAR and comprehensive EMPr
4	Impact on soil, agriculture resources and general environmental issues.	**Kwazi Hlongwane**		1. The soil in the area highly erodible judging from the scars and donga erosion on the cultivated field and from the side of the roads. This therefore means it is	All issues on erosion control have been addressed in the DBAR and

NO.	ISSUE	NAME	METHOD & DATE	COMMENT	RESPONSE
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		Department of Agriculture, Forestry and Fisheries	06/02/2017	highly recommended that all drains are constructed in a way that will not lead to any form of erosion. 2. Any form of soil disturbance may lead to the spreading of declared weeds and invader plants hence it is important that the applicant establish and implement the control plan. 3. Rehabilitation of borrow pit sites is very importance should there be any established.	comprehensive EMPr attached in **Appendix F**. However, the implementation of Sustainable Urban Drainage Systems (SUDS) techniques which have been advocated by Afzelia Environmental Consultants and have been incorporated in the EMPr have not been adopted by the engineers An alien invasive management programme has been incorporated into EMPr and must be implemented throughout the construction and rehabilitation phases of the project. Afzelia have not addressed the issue of the use of borrow pit sites in this application and have no knowledge of such pits.
5	Impacts on biodiversity	**Mr A. Blackmore** *Ezemvelo KZN Wildlife*	25/11/2016	Ezemvelo will not be providing comment on this application, but trust that all significant biodiversity related concerns have been clearly identified and made known in this assessment together with appropriate measures to safeguard the ecological integrity (viz. avoid, mitigate and thereafter ameliorate) of the developable area. Please be advised that the potential impacts upon biodiversity will be evaluated by the Competent Authority who may, upon receipt, refer the application this organization for evaluation and advice prior to making a decision. In such case, the environmental principles prescribed in the National Environmental Management Act 107 of 1998, the objectives of the National Environmental Management Biodiversity Act 10 of 2004 and best practice will be applied.	Noted. All biodiversity related concerns have been effectively addressed in the DBAR. All measures to minimise or avoid potential impacts on biodiversity have been included in the comprehensive EMPr attached in **Appendix F.** Noted. This has been adhered to.

NO.	ISSUE	NAME	METHOD & DATE	COMMENT	RESPONSE
COMMENTS RECEIVED DURING THE CIRCULATION OF THE BACKGROUND INFORMATION DOCUMENT					
6	Impacts on heritage resource in terms of KZN Heritage Act no. 4 (2008) and the National Heritage Resources Act No 25 of 1999	**Bernadet Pawandiwa** *AMAFA/Heritage KwaZulu Natal*	 05/05/2017	Thank you for notifying AMAFA about the illegal or unlawful commencement of the MaNtuli Road Upgrade and the resultant damage to sites in the vicinity of the upgrade. This implies that the activity was in contravention of the main objectives of the KwaZulu- Natal Heritage Act (Act No. 4 of 2008) read in conjunction with the National Heritage Resources Act (Act 25 of 1999) that seeks to provide for conservation, protection and administration of both the physical and the living or intangible Heritage Resources of the province of KwaZulu Natal. The developer contravened the heritage legislation in two main ways; firstly by commencing work on a development site without notifying Amafa as required in terms of Section 38(1) of the National Heritage Resources Act (No 25, 1999) as well as requirements of the National Environmental Management Act (NEMA) and secondly by disturbing, damaging or altering a site or cultural landscape thereby compromising heritage resources without approval/ a permit/ mitigation procedures from Amafa Heritage KwaZulu-Natal, as required by both the National Heritage Resources Act (No 25, 1999) and KwaZulu Natal Heritage Act (No 4, 2008). **RECOMMENDATIONS:** The developer is required to: 1. Create a case on the SAHRIS facility and upload all relevant documents. 2. Complete Form J" Application In Terms of the KwaZulu-Natal Heritage Act (4 of 2008) for the condonation/approval/rectification of the unlawful commencement or continuation of work on, or damage of, protected heritage resources" for rectification of unlawful commencement of activity.	Noted. Noted. This has been adhered to. This has been adhered to.

NO.	ISSUE	NAME	METHOD & DATE	COMMENT	RESPONSE
COMMENTS RECEIVED DURING THE CIRCULATION OF THE BACKGROUND INFORMATION DOCUMENT					
				3. Appoint a Heritage Practitioner with experience in handling matters of archaeological, historical and living heritage nature for the following purposes: • To map out/record all sensitive zones in terms of heritage legislation including abandoned homesteads and graves in the vicinity. • To conduct a public participation process regarding the history of occupation of the area in order to ensure that graves and other tangible and intangible aspects are not compromised including worship/sacred sites and sources of herbs. • Provide mitigation plans for any adverse effects during and after completion of the project. • Table all heritage resources identified. This should show Heritage resource type, description, location, significance and reasons for this rating. • All the above should be applied for the ENTIRE footprint of the road upgrade extending beyond 50m on either side of the road. **TERMS AND CONDITIONS** 1. This letter does not exonerate the applicant from obtaining local authority approval or any other necessary approval for proposed work. 2. If any heritage resources, including graves or human remains, are encountered they must be reported to AMAFA immediately. 3. AMAFA reserves the right to request additional information as required.	Heritage Impact Assessment was conducted in December 2016 and the report is attached in **Appendix D3.** All heritage resources identified, and mitigation plans are contained in HIA report attached in **Appendix D3.** A consultation with the local residents was undertaken on 02/12/2017 to address all the concern raised by AMAFA. Elders of the surrounding communities and the Ward Councillor during the interview stated that: "there are no graves within the upgraded and extended footprint of the existing track in Mantuli". it was ascertained during public consultation that no complaint about ruined structures or graveyard damage due to the illegal construction activities of the road, has ever been voiced. Two separate graveyards were identified by family members; both are approximately 100m away from the upgraded road and can be clearly seen, as concrete slabs or stone piles define the graves. (Refer to Figure 7 on page 34 and photo 21 and 22 on page 33. Noted

NO.	ISSUE	NAME	METHOD & DATE	COMMENT	RESPONSE
COMMENTS RECEIVED DURING THE CIRCULATION OF THE BACKGROUND INFORMATION DOCUMENT					
7	Registration as an I&AP and landowner consultation	**Dr FB Madlopha** *Ingonyama Trust*	05/01/2017	Your correspondence regarding the above mentioned was received by the Ingoanyama Trust Board (ITB) on the 18th November 2016 and has reference. An extension of time to comment on the application was approved by you on the 30th November 2016. Kindly note that the project site is situated on land owned by the Ingonyama Trust. In all proposed developments the authority of first instance is and should be the land owner. The land owner should be consulted in the planning stage of the project in order to deal with all administrative issues pertaining to the land in question. Regarding the proposed road upgrade **ITB does not have any record of a land owner's notification of the project.** It has been determined that there are a number of households adjacent to the road proposed for upgrading, important to note is that these households have existing rights to portions of the land that has been proposed as the project site. The widening of the road may affect such rights therefore it is **imperative that the project owner consults with the affected households.** It is also noted that the consultant intends to apply for a Water Use License please note that a land owner's notification needs to be submitted to ITB first before an application is submitted to the Department of Water and Sanitation.	Noted. The Molefe Traditional Council was consulted on 26/10/2017 and was notified about the project. The land owner consent form is attached in **Appendix E12**. A consultation with the local residents and ward councillor was undertaken on 02/12/2017 It was stated by those interviewed, that there was public consultation involving all the communities before deciding on the route for the upgraded and extended Mantuli Road; therefore, everyone knew where the road would be and no-one expressed any concerns about house units, graveyards ruins or subsistence farming lands being affected. No record of this process has been made available to Afzelia This has been adhered to.

NO.	ISSUE	NAME	METHOD & DATE	COMMENT	RESPONSE
COMMENTS RECEIVED DURING THE CIRCULATION OF THE BACKGROUND INFORMATION DOCUMENT					
				As part of the board's processes in managing land under its ownership it is mandatory that services such as roads have a valid servitude agreement in place with the board. According to our records there is no existing servitude agreement in place between the Board and the municipality. Please note that this agreement needs to be in place.	A road servitude agreement is in the process following the illegal commencement of activities. Whilst Afzelia will manage this process, information regarding servitude agreement must be provided by Nquthu Municipality.

SECTION E: IMPACT ASSESSMENT AND MITIGATION

1. OVERVIEW

This section focuses on the existing environmental impacts that have already occurred as a result of the unlawful commencement of construction activities. Some of these impacts will require extensive rehabilitation.

This section focuses as well on the environmental impact that could potentially be caused by the proposed project parameters that are still to be undertaken during the construction and operational phases of the project. Maintenance of infrastructure is addressed as part of the operational phase impact assessment.

Impact assessments must take account of the interactions between all aspects and associated activities of the project nature, scale and duration of effects on the environment, whether such effects are positive (beneficial) or negative (detrimental).

The Impact Assessment of the project's activities that are still to be undertaken is determined by identifying the environmental aspects and then undertaking an environmental risk assessment to determine the significant environmental impacts. The significant scoring of this environmental impact assessment is focussed only on the construction and operational phase.

2. IMPACT ASSESSMENT METHODOLOGY USED FOR THE RISK ASSESSMENT

The potential environmental impacts associated with the project's activities that are still to be undertaken, have been evaluated according to the description of the scoring process outlined below.

2.1 Calculation and interpretation of the overall significance of impacts and mitigation

The significance score assesses and predicts the significance of environmental impacts through the evaluation of the following factors; probability of the impact; duration of the impact; extent of the impact; and magnitude of the impact. The significance of environmental impacts is then assessed taking into account any proposed mitigations. The significance of the impact **"without mitigation"** is the prime determinant of the nature and degree of mitigation required[4]. Each of the below impact factors have been used to assess each potential impact using ranking scales.

Significance Scoring is calculated based on the following formula:

Significance Scoring (SS) = (Magnitude + Duration + Scale) x Probability

The significance of the impact is calculated according **table 15** below.

Table 16: Significance ratings used for each potential impact

Probability	***Duration***
1 - very improbable	1 – Immediate (very short term)
2 - improbable	2 - Short Term (0-5 years)
3 - probable	3 - Medium Term (5-15 years)
4 - highly probable	4 - Long Term (>15 years) (ceases with operation life)
5 - definite	5 – Permanent / Unknown

[4] Impact scores given "with mitigation" are based on the assumption that the mitigation measures recommended in this assessment are implemented correctly and rehabilitation of the site is undertaken. Failure to implement mitigation measures during and after construction will keep the impact at an unacceptably high level.

Scale / Extent	*Magnitude*
1 - limited to the site only (Site)	2 – Minor
2 - limited to the local area (Local)	4 – Low
3 - limited to the region (Regional)	6 – Moderate
4 - National	8 – High
5 - International	10 – Very high / Don't know

The interpretation of the overall significance of impacts is presented in **table 16** and **17** below.

Table 17: Significance rating of negative impact results.

Low significance (<30 significance points)	Low environmental significance	Impacts with real little effect and which should not have an influence on or require modification of the project design.
Medium significance (31-59 significance Points)	Moderate environmental significance	An impact or benefit which is sufficiently important to require management and which could have an influence on the decision unless mitigated.
High significance (>60 significance points)	High environmental significance	An impact which could influence the decision about whether or not to proceed with the project regardless of any possible mitigation.

Table 18: Significance rating of positive impact results

Low significance (<30 significance points)	Low environmental significance	Impacts with real little positive effect and which should not have an influence on or require modification of the project design.
Medium significance (31-59 significance Points)	Moderate environmental significance	A positive impact or benefit which is sufficiently important to which could have an influence on the decision taking into consideration set mitigation measures.
High significance (>60 significance points)	High environmental significance	A positive impact which could influence the decision in a positive way about whether to proceed with the project regardless taking into consideration set mitigation measures.

2.2 Precautionary Principle

The significance scoring follows the Precautionary Principle. The Precautionary Principle is based on the following statement: *When the information available to an evaluator is uncertain as to whether or not the impact of a proposed development on the environment will be adverse, the evaluator must accept as a matter of precaution, that the impact will be detrimental. It is a test to determine the acceptability of a proposed development. It enables the evaluator to determine whether enough information is available to ensure that a reliable decision can be made.*

In addition, the Proponent is obliged to adhere to the requirements of Section 28 of the NEMA (Duty of Care and Remediation of Environmental Damage) which states that:

Duty of care and remediation of environmental damage: "(1) Every person who causes has caused or may cause significant pollution or degradation of the environment must take reasonable measures to prevent such pollution or degradation from

occurring, continuing or recurring, or, in so far as such harm to the environment is authorised by law or cannot be reasonably be avoided or stopped, to minimise and rectify such pollution or degradation of the environment".

For the purpose of this assessment, the impact significance for each identified impact was evaluated according to the following key criteria outlined in the sub-sections below.

3. EXISTING ENVIRONMENTAL IMPACTS

The activities that have already been undertaken (without authorisation) are as follow:

- Clearing and grubbing;
- Mass earthworks required for the horizontal and vertical realignment such as excavation for structures up to 1,5m deep, levelling, placing and compaction of the basecourse gravel layers;
- Mitre drain used for stormwater runoff control; and
- Stack/storage of stormwater pipes along the road alignment and within the wetland seep (*EAP's observation*).

The following negative impacts have occurred as a result of the unlawful commencement of these activities:

- Loss of topsoil;
- Loss of indigenous vegetation and species of conservation significance;
- Impact on vegetation, with smothering effects taking place at the toe of the mitre drains as result of poor attenuation of runoff which negatively impacts on suitable growth conditions;
- Sediment deposition (road material) within the wetland systems impacting on the health and functionality of the system as well as the system's ability to provide important ecosystem goods and services;
- Soil erosion;
- Damage to house foundations of older settlement (heritage/historical features).

Most of these existing impacts have been determined as a medium or high impact, mitigation measures were however still assigned from a precautionary approach principal. The existing impacts require extensive rehabilitation of surrounding environment and impacted wetland areas – which will need to be supervised and controlled by the relevant rehabilitation specialists. .

4. REQUIRED REHABILITATION OF AFFECTED SURROUNDING ENVIRONMENT

A site rehabilitation plan has been compiled and must be implemented to address the negative impacts that have occurred to date and to return the receiving environment to an acceptable level of integrity. The site rehabilitation plan has been incorporated into the EMPr attached in **Appendix F**.

The rehabilitation of the existing upgraded track and gravel Road L1970 must be implemented to counter the exacerbation of detrimental impacts associated with the status quo. Existing stormwater structures are poorly designed/constructed and as such have resulted in the degradation of indigenous vegetation at most of the discharge points associated with the upgraded track.

Velocity dissipaters, berms and flow attenuation measures must be incorporated to mitigate against the smothering of indigenous vegetation as a result of uncontrolled sediment load which results from severe erosion caused by excessive stormwater velocities.

Existing impacts perpetuated on the sensitive ecological habitats, especially where plants of conservation significance are located is very detrimental and is threatening the local population of the protected *Aloe gerstneri* and other provincially significant plant species. In the interests of reducing species loss, all indigenous plant species must be protected as a principle, and where possible these must be retained to the rehabilitation plan.

Although a search, rescue and relocate type action would partially mitigate the loss of plants of conservation significance, it will not compensate for the net loss of affected plant populations which have already been destroyed during the road upgrade.

Areas where vegetation is removed or damaged during the construction process of activities that are still to be undertaken, must be suitably rehabilitated with an appropriate mix of grasses and shrubs determined by a botanist or vegetation ecologist familiar with the area and riparian species some of which have been stated in the EMPr. Rehabilitation must occur once work in the area has been completed and must not wait until the end of the project i.e. progressive rehabilitation, which must be monitored daily, and watering and weeding must take place twice weekly.

Locally common grass and tree species that match the vegetation profile of Nquthu must be planted to establish an effective basal cover. (Please refer to recommended plant list provided in the EMPr attached in **Appendix F**).

5. POTENTIAL IMPACTS OF THE PROJECT'S ACTIVITIES THAT ARE STILL TO BE UNDERTAKEN AND SIGNIFICANCE AND PROPOSED MITIGATIONS

The following sections will provide a description of the potential impacts as identified by the specialists, EAP and through the PPP as well as the assessment according to the criteria described from **Table 17** to **Table 19**. Potential impacts associated with the proposed remaining activities to be undertaken during the construction and operation of the project life-cycle have been considered and assessed in the following sections and mitigation measures as stipulated must, as a minimum, be undertaken.

3.1 POTENTIAL ENVIRONMENTAL IMPACTS OF THE PROJECT'S ACTIVITIES THAT ARE STILL TO BE UNDERTAKEN DURING CONSTRUCTION PHASE

Physical Impacts

Soil

Activity

- Installation of storm-water drainage pipes and related works (Masonry Wing– and Head walls)
- Placement of a concrete slab through the wetland seep system (HGM1).
- Stripping of topsoil
- Further pavement layers of gravel material

Nature of potential impact

- Physical disturbance of soil.
- Loss of topsoil
- Soil compaction

Significance rating

Impact	Without mitigation					With mitigation[5]				
	Probability	Duration	Extent	Magnitude	Rating	Probability	Duration	Extent	Magnitude	Rating
Soil	5	3	3	8	70 High	5	2	2	6	50 Moderate

Mitigation Measures –

- Implement effective topsoil management practices (stripping topsoil, stockpiling and reuse during rehabilitation of disturbed areas).
- Topsoil[6] must be stockpiled separately from subsoil[7].
- Depending on the depth of the topsoil, a recommendation is made to remove between 150 and 200 mm of topsoil and stockpile it in small mounds (less than 1.5m in height).
- Strip topsoil from all areas where permanent or temporary structures and stockpile areas are to be established.

[5] Impact scores given "with mitigation" are based on the assumption that the mitigation measures recommended in this assessment are implemented correctly and rehabilitation of the site is undertaken. Failure to implement mitigation measures during and after construction will keep the impact at an unacceptably high level.

[6] Topsoil is defined as the A horizon of the soil profile. Topsoil is the upper layer of soil from which plants obtain their nutrients for growth. It is often darker in colour, due to the organic fraction. Where topsoil is referred to, it is deemed to be both the soil and grass/ground cover fraction. Subsoil is defined as the B horizon of the soil profile.

[7] Subsoil is the soil horizons between the topsoil (A horizon) and the underlying parent rock. Subsoil often has more clay-like material than topsoil. Subsoil is of less value to plants, in terms of nutrients (food) and oxygen supply, than topsoil. When subsoil is exposed it erodes easily.

- Make sure that at no time is topsoil mixed with subsoil, spoil, or building rubble.
- All topsoil must be stored and be located on an area of level ground that will not be in the path of runoff water during a storm, away from the working area, drainage lines, areas of valuable vegetation or on the bases of banks. A mulch cover or hessian sheets must be used to protect this soil from erosion – either by wind or water.
- Topsoil must be handled twice only – once to strip and stockpile, and secondly to replace, level, shape and scarify – the latter must be done by hand.
- Maintain topsoil stockpiles in a weed free condition.
- Avoid handling soils when wet as this may result in the loss of soil structure and lead to compaction.

Erosion, sedimentation and degradation within wetland areas thus causing a hydrological impact

Activity

- Installation of storm-water drainage pipes and related works (Masonry Wing– and Head walls and)
- Placement of a concrete slab through the wetland seep system (HGM1).
- Stripping of topsoil
- Further pavement layers of gravel material
- Clearance of vegetation.

Nature of potential impact

- Increased sedimentation of surrounding surface water resources
- Deposition of sediment into the wetland systems; posing a risk to the geomorphological/functional integrity of the wetland systems.
- Creation of head-cut erosion and/or erosion gullies in the wetland areas.
- Increase in on-site and off-site erosion.
- Changes in the hydrological and geomorphologic integrity of the wetland systems as a result of impeding hydrological flow
- Physical alteration of natural water flow reaching water resources downslope/downstream.
- Increased stormwater runoff volume and velocity.

Significance rating

Impact	Without mitigation					With mitigation				
	Probability	Duration	Extent	Magnitude	Rating	Probability	Duration	Extent	Magnitude	Rating
Erosion and sedimentation	5	2	3	10	75 High	5	2	2	8	60 High

Mitigation Measures –

- The footprint area associated with the upgrade must be minimised, avoiding the wetland areas where possible. Areas earmarked for construction must be securely delineated to ensure a controlled footprint area. Activity outside of the delineated work footprint is STRICTLY prohibited unless agreed to by the ECO and then additional precautionary measures will be needed.
- Storm water management techniques must be designed and placed correctly to ensure that storm water runoff is controlled and channelled effectively to prevent soil erosion and sedimentation.
- The drainage provisions of the concrete slab must include adequate discharge capacity and be placed at a gradient that maintains effective flow.
- The design at the concrete slab bed level crossing must be wider than the water-flow channel to ensure the best opportunities to maintain channel functionality.
- Ensure that the concrete slab design does not impede the flow of water.
- Erosion protection measures must be installed at all pipe culverts or storm water drainage pipe outlets located along the routes, this is a requirement in addition to velocity control measures e.g. Berms, sand bags, reno mattress and hessian sheets, erosion control blankets, silt fences, geotextiles such as soil cells and retention or replacement of vegetation
- The base of the concrete slab must have a minimum of 750mm stone base to allow water to flow under the concrete base.
- Erosion mattresses and wing walls must be provided to mitigate the expected erosion of the exposed sides of the drainage channels.
- The use of sustainable drainage systems such as swales and infiltration trenches / filter drains must be incorporated into the design of the road.
- It is recommended that where water is collected it must be directed off and under the road through formalised stormwater runoff,
- Erosion protection measures must be installed at any pipe culverts or stormwater drainage pipe outlets located along the route.
- Water must not be allowed to flow down cut or filled slopes without adequate soil erosion protection in place.
- Attenuation of stormwater from the road upgrade is important to control the velocity of runoff towards the wetlands. Attenuation structures must be placed between the road upgrade and the wetlands i.e. stormwater must not be deposited directly into any watercourse.
- Water spreaders must be used to reduce the velocity of flow.
- Energy dissipaters must be constructed at any surface water outflow points.
- Install sediment barriers across the entire construction right-of-way to prevent sediment flow into the wetland
- Vegetation clearing must not be undertaken more than 5 days in advance of the work front.
- Vegetation clearing within the wetlands must only be undertaken when construction activity is actually underway at this point and such areas must be rehabilitated within 2 weeks of initial clearing occurring.
- Topsoil stockpiles must be appropriately protected using for example silt fences or sand bag barriers.
- No stockpiling of any materials may take place adjacent to any of the wetlands and must be at least 100m away any of the wetlands.

Biological Impacts

Impact on flora

Activity

- Installation of storm-water drainage pipes and related works (Masonry Wing– and Head walls)
- Placement of a concrete slab through the wetland seep system (HGM1).
- Stripping of topsoil
- Further pavement layers of gravel material

- Clearance of vegetation.
- Construction camp site establishment.

Nature of potential impact

- Loss of indigenous vegetation.
- Loss of species of conservation significance and protected in terms of Provincial and/or National legislation
- Disturbance and fragmentation of the vegetation communities.
- Disturbance to habitats.

Significance rating

Impact	Without mitigation					With mitigation				
	Probability	Duration	Extent	Magnitude	Rating	Probability	Duration	Extent	Magnitude	Rating
Vegetation removal for construction activities	5	2	3	10	**75 High**	5	2	2	8	**60 High**

Mitigation Measures –

- A Threatened or Protected species (TOPS) plant permit for the protected *Aloe gerstneri* must be obtained in accordance with the National Environmental Management Biodiversity Act (NEMBA) (Act 10 of 2004).
- Ordinary Plant Permits for the especially protected *Hypoxis, Crinum* and *Ledebouria* must be obtained from EKZNW prior to any additional activities being carried out. And all conservation-important species identified must be translocated prior to any construction activities.
- Disturbed areas must be rehabilitated immediately after construction has been completed in that area by planting appropriate indigenous vegetation species.
- Vegetation clearance must not be undertaken more than 5days in advance of the work front.
- The contractor's camp site must be located on the previously disturbed site area and must be outside the 1:100 year flood line or riparian habitat of a river, spring, lake, dam, wetland or outside any drainage feeding any wetland or pan and at least 100m away from any watercourse. .
- Ensure that contractor laydown areas are in the initial previously disturbed site area in order to minimise vegetation loss and ensure that they do not encroach into wetland / riparian zones or their respective buffer zones.
- Protected plants removed during construction must be replaced at a ratio of 1:10 (10 protected plants must be planted for every 1 protected plant removed); if the number of plants that has been destroyed in unknown then a minimum of 50 plants must be replanted in the affected areas

Pollution of water resources and soil

Activity

- Installation of storm-water drainage pipes and related works (Masonry Wing– and Head walls)
- Placement of a concrete slab through the wetland seep system (HGM1).

- Stripping of topsoil
- Further pavement layers of gravel material
- Clearance of vegetation.
- Construction camp site establishment.
- Movement of vehicles and use of heavy construction machinery.
- Finishing off.

Nature of potential impact

- Sediment release from construction servitude into the receiving environment.
- Contamination of soil and surface water resource.
- Mismanagement of waste and pollutants like hydrocarbons, construction waste and hazardous substances resulting in these substances entering and polluting sensitive natural environments either directly through surface runoff, or subsurface water movement.
- Oil / fuel leaks from vehicles and portable construction equipment such as generators will result in soil and surface contamination.

Significance rating

Impact	Without mitigation					With mitigation				
	Probability	Duration	Extent	Magnitude	Rating	Probability	Duration	Extent	Magnitude	Rating
Soil and Surface pollution	5	3	3	8	**70 High**	5	3	3	6	**60 High**

Mitigation Measures –

- No washing of concrete mixing equipment such as wheelbarrows, spades, picks or and pouring equipment or any object or equipment that is contaminated with cement or chemicals in any water resource. Premix concrete tankers may NOT be washed on or near the construction footprint; they must return to the supplier for cleaning out.
- Hazardous chemical substances must be stored within a bunded and roofed area to prevent spills from occurring directly on the ground / soil and the ingress of stormwater
- Handling of hazardous chemical substances (i.e. re-fuelling, pouring of oil etc.) must be done on a lipped spill tray and must not take place within 100m of the wetland areas.
- Spillages of fuels, oils and other potentially harmful chemicals must be cleaned up immediately and contaminants properly drained and disposed of using permitted solid/hazardous waste facilities (not to be disposed of within the natural environment). Any contaminated soil must be removed, and the affected area rehabilitated immediately – consult with relevant ecological specialists if spills occur.
- Construction materials and equipment must be stored at the camp site.
- Proper management and disposal of construction waste must occur during the lifespan of the project.
- No substances (e.g. Cement, oil, fuel, paint, bitumen etc.) must be released into any watercourses.
- The construction camp site must be kept clean and the work servitude on a daily basis and all litter must be collected and disposed of in waste bins on site.
- All waste generated during construction is to be disposed of as per the EMPr attached in **Appendix F**.
- An collection and disposal strategy must be implemented to ensure that waste is removed at least twice per month and taken to a permitted landfill site.
- Hazardous waste must be stored separately and disposed of at a permitted hazardous landfill sit.

- Waste bins must be secured and have lids to prevent litter from being blown and spread over the area.
- Portable toilets must be placed 100m away from the temporary boundary of any wetland areas.
- The design and use of SUDS which includes, but is not limited to, swales, filter strips and infiltration trenches that capture runoff, filter out the pollutants and allow for the diffuse release of water into the receiving environment is paramount to limiting the long term effects of an increase in hardened surfaces adjacent to the wetland areas situated along the routes.

Disturbance of fauna

Activity

- Installation of storm-water drainage pipes and related works (Masonry Wing– and Head walls)
- Placement of a concrete slab through the wetland seep system.
- Stripping of topsoil
- Further pavement layers of gravel material
- Clearance of vegetation.
- Construction camp site establishment.
- Movement of vehicles and use of construction heavy machinery.

Nature of potential impact

- Potential to destroy to disturb, harm or injure faunal species (especially species with limited mobility) inhabiting the work servitude and camp-site site directly.
- Reduce habitat quality and species diversity.
- Disruption of access to grazing and crop areas.
- Poaching by construction workers.

Significance rating

Impact	Without mitigation					With mitigation				
	Probability	Duration	Extent	Magnitude	Rating	Probability	Duration	Extent	Magnitude	Rating
Disturbance of fauna	5	2	1	8	**55 Moderate**	5	2	1	6	**45 Moderate**

Mitigation Measures –

- No release of any substance i.e. cements, oil that could be toxic to fauna or faunal habitats
- Selected workers must be given training on the possible fauna that may be encountered along the site.
- Site workers are to be informed of any sensitive fauna on the site prior to construction activities commencing and be informed that poaching or disturbance is strictly prohibited.

- Under no circumstances shall any fauna be handled, removed, killed or interfered with by the Proponent, Project Manager, Resident Engineer, contractors, engineers, and their employees, including subcontractors or their subcontractors' employees. However, if construction activities are likely to injure, kill or interfere with any fauna encountered on the site, effective action must be taken to ensure their protection.
- Any fauna found within the construction corridor must be moved to the closest point of natural or semi-natural vegetation outside the construction servitude. This includes those species perceived to be vermin (such as snakes and rats). The latter species may require the services of a specialist to catch and relocate them

Proliferation of alien invasive vegetation

Activity

- Installation of storm-water drainage pipes and related works (Masonry Wing– and Head walls)
- Placement of a concrete slab through the wetland seep system (HGM1).
- Stripping of topsoil
- Further pavement layers of gravel material
- Clearance of vegetation.
- Construction campsite establishment.
- Movement of vehicles and use of heavy construction machinery
- Finishing off.

Nature of potential impact

- Encroachment of invasive species into disturbed areas
- Disturbance of indigenous vegetation.
- Alteration of habitat structure.
- Lower biodiversity (both number and quality of species).
- change nutrient cycling and productivity
- Modify food webs.
- Increased water usage.

Significance rating

Impact	Without mitigation					With mitigation				
	Probability	Duration	Extent	Magnitude	Rating	Probability	Duration	Extent	Magnitude	Rating
Proliferation of alien invasive vegetation species	5	2	2	8	**60 High**	5	2	2	6	**50 Moderate**

Mitigation Measures –

- An alien invasive management programme has been incorporated into Environmental Management Programme (EMPr) and must be implemented throughout the construction and rehabilitation phases of the project to prevent its introduction and spread, as per the legislative requirements specified under the Conservation of Agricultural Resources Act, 1983 amended in 2001 and the National Environmental Management: Biodiversity Act 2004 (Act No, 10 of 2004).
- Ongoing alien plant control must be undertaken along the road route and particularly in the disturbed wetland areas for the clearing/eradication of alien species during the construction phase.
- Herbicides must be carefully applied, in order to prevent any chemicals from entering the river. Spraying of herbicides is strictly forbidden. Herbicide may only be applied or used under the direct supervision of a person with a PCO licence. **Note:** there are only 2 specialised herbicides that may be used in wetland areas and their buffers
- All of areas of disturbance resulting from the implementation of the project must be eradicated of alien invasive vegetation in accordance with Section 28 of the NEMA (Duty of Care).
- Monitor all sites disturbed by construction activities for colonisation by exotics or invasive plants and control these as they emerge.
- Re-instate indigenous vegetation (grasses and indigenous trees) in disturbed areas as soon as practically possible once construction ceases so as to stabilise against erosion and attain environmental integrity of the area.
- All disturbed soils must be rehabilitated with local plant species to ensure that alien vegetation does not become established in the greater area.
- Minimise construction footprints prior to commencement of construction and control all edge effects of construction activities i.e. proliferation of alien vegetation, disturbances of soils.

Socio-economic Impacts

Noise Pollution

Activity

- Installation of storm-water drainage pipes and related works (Masonry Wing– and Head walls)
- Placement of a concrete slab through the wetland seep system (HGM1).
- Stripping of topsoil
- Further pavement layers of gravel material
- Construction camp site establishment.
- Movement of vehicles and use of heavy construction machinery

Nature of potential impact

- Noise levels along the road will increase again during the construction activities due to the use of heavy machinery and vehicles.

Significance rating

Impact	Without mitigation					With mitigation				
	Probability	Duration	Extent	Magnitude	Rating	Probability	Duration	Extent	Magnitude	Rating
Increase in noise	5	2	2	8	**60**	5	2	2	6	**50**

					High					**Moderate**

Mitigation Measures –

- During construction keep noise levels within acceptable limits in compliance with all relevant guidelines and regulations such as SANS 10103: 2008.
- All vehicles and machinery must be fitted with appropriate silencing technology that must be properly maintained.
- The use of all plant and machinery must be appropriate to the task required in order to reduce noise levels.

Elevated dust level

Activity

- Installation of storm-water drainage pipes and related works (Masonry Wing– and Head walls)
- Placement of a concrete slab through the wetland seep system (HGM1).
- Stripping of topsoil
- Further pavement layers of gravel material
- Construction camp site establishment.
- Movement of vehicles and use of heavy construction machinery.

Nature of potential impact

- General construction activities will result in increased dust pollution.

Significance rating

Impact	**Without mitigation**					**With mitigation**				
	Probability	**Duration**	**Extent**	**Magnitude**	**Rating**	**Probability**	**Duration**	**Extent**	**Magnitude**	**Rating**
Elevated dust level	5	2	2	8	**60 High**	5	2	2	6	**50 Moderate**

Mitigation Measures –

- Dust suppression must be implemented by spraying from a water tanker along the road and at least 2m either side during construction to prevent dust from being blown from the project site into neighbouring properties and from causing visibility problems for users on the road. Potable or treated water must not be used for dust suppression.
- Heavy machinery and vehicles must not exceed a speed limit of 30 km/hr along the area under construction.
- It must be ensured that, during transport, loads of loose material (such as sand, gravel etc.) on trucks is covered and/or dampened.
- Do not exceed the freeboard levels when transporting construction related materials.

- Camp construction areas / Access road / work faces –that have been stripped of vegetation must be effectively dampened to avoid excessive dust. This must apply particularly in instances of high wind speed or when dust is seen to be generated in significant quantities.
- Cover construction materials, skips and stockpiled soils if they are a source of dust.

Road safety and disturbance of traffic

Activity

- Installation of storm-water drainage pipes and related works (Masonry Wing– and Head walls)
- Placement of a concrete slab through the wetland seep system (HGM1).
- Stripping of topsoil
- Further pavement layers of gravel material
- Movement of vehicles and use of heavy construction machinery.
- Construction camp site establishment.
- Temporary road closure

Nature of potential impact

- Temporary disturbance for movement of pedestrians and vehicular traffic in the area.
- Construction activities and vehicles pose safety risks to the people in the community.
- Site access points and construction areas will result in increased road safety issues to members of the public.
- Uncontrolled stopping and dropping of passengers by taxis and private vehicles in the vicinity of the construction works will increase the risk of accidents and delays on surrounding roads.
- Hazardous areas such as excavations and chemical storage areas pose a potential safety risk to members of the public as well as site workers.

Significance rating

Impact	Without mitigation					With mitigation				
	Probability	Duration	Extent	Magnitude	Rating	Probability	Duration	Extent	Magnitude	Rating
Temporary pedestrians and vehicular disturbance	5	2	1	8	**55 Moderate**	5	2	1	6	**45 Moderate**

Mitigation Measures –

- Warning signs regarding the construction activities must be erected to warn pedestrians and drivers in the area.
- 14 calendar days prior to the commencement of construction activities, notify land owners and the local communities adjacent to the construction servitude which will be affected.

- Adequate and safe passage for pedestrians and road users through the construction footprint must be provided, controlled and maintained at all times during the construction; this will decrease the risk of accidents.
- The necessary traffic safety warning signage must be erected during construction as per the engineers' specifications to warn motorists and pedestrians of the potential dangers of the construction footprint.
- Construction site workers must remain within the designated construction zone at all times unless otherwise authorised by the resident engineer **and** the ECO.
- Construction workers / construction vehicles to take heed of normal road safety regulations. A courteous and respectful driving manner must be maintained so as not to cause injury to livestock or people.
- A speed limit of 20 km/h must be adhered to within the construction site and on all surrounding roads within the immediate vicinity of the work footprint.
- Flagmen must be used to control the traffic flow.
- Additional signage must be kept in storage on the construction site for replacement of missing and damaged signage.
- Areas used to store hazardous substances must be suitably signed, fenced and access controlled; residents living adjacent to the construction site must be notified of the existence of the hazardous storage area.
- Potentially hazardous areas such as excavated trenches or pits / storage areas are to be securely demarcated (not with hazard tape only) and made clearly visible at ALL times.

3.2 POTENTIAL ENVIRONMENTAL IMPACTS OF THE PROJECT'S ACTIVITIES THAT ARE LIKELY TO OCCUR DURING THE OPERATION PHASE (i.e. use of the upgraded and new sections of the roads)

Increased impervious area (Hardened surfaces)

Activity

- Operation of the track (north-east of the Sibeyela River) and gravel Road L1970 (south-east side of the Sibiyela River).
- Operation of stormwater infrastructure (concrete slab and stormwater pipes).
- Repair and maintenance works.
- Routine maintenance inspections.

Nature of potential impact

- Change in volume and velocity of stormwater runoff resulting from the upgraded road surface, along the existing route
- Erosion and increase in sediment inputs.
- Alterations in hydrological regimes as a result of increased storm water flood-peaks.

Significance rating

Impact	Without mitigation	With mitigation

	Probability	Duration	Extent	Magnitude	Rating	Probability	Duration	Extent	Magnitude	Rating
Increased impervious area	4	5	3	8	**64 High**	3	4	2	6	**36 Moderate**

Mitigation Measures –

- Attenuation of stormwater from the road upgrade is important to control the velocity of runoff towards the wetlands.
- Address increased runoff volumes at source.
- Disturbed area in the watercourse as a result of road maintenance must be rehabilitated as soon as maintenance in an area is complete or near complete.
- The grass must be allowed to lengthen and thicken naturally to facilitate reduction in runoff velocity and volume, increase sediment deposition within the buffer zone and increase infiltration of stormwater.
- Stockpiled topsoil must be replaced following construction activities and be shaped to match the natural topography of the site. All stripped topsoil MUST be appropriately replaced on the site.

Degradation of wetland areas

Activity

- Operation of the track (north-east of the Sibeyela River) and gravel Road L1970 (south-east side of the Sibiyela River).
- Operation of stormwater infrastructure (concrete slab and stormwater pipes).
- Repair and maintenance works.
- Routine maintenance inspections.

Nature of potential impact

- In the longer-term, sediment movement as a result of inadequately designed roads and stormwater infrastructure can lead to excessive erosion within these wetlands.
- Unchecked erosion will lead to the desiccation of the soils associated with the wetlands
- Change the hydrological and geomorphological dynamics of the wetlands.
- Degradation of the wetlands

Significance rating

Impact	Without mitigation					With mitigation				
	Probability	Duration	Extent	Magnitude	Rating	Probability	Duration	Extent	Magnitude	Rating
Degradation of the wetlands	5	2	3	10	**75 High**	5	2	2	8	**60 High**

Mitigation Measures –

- It is important to maintain any SUDS feature that are installed along the road route. Un-maintained SUDS features may eventually fail operationally as a result of sediment build up and the effect this has on vegetation growth.
- The use of SUDS features can also be used to remediate parts of the wetland systems adjacent to the road that will be impacted through allowing for erosion control, attenuation of water which will promote vegetation growth in these areas.
- Areas sensitive to erosion must be identified and monitored to ensure that erosion risks are minimised.
- Any erosion features must be stabilised following defection of stormwater infrastructures with soft engineering (preferred over hard engineering options) such as re-sloping and stabilising. Where risks are high, unstable/eroding banks must be reinforced/stabilised using appropriate engineering works such as gabions/rock pack/geotextile bags.
- The concrete slab low-lying crossing area must be regularly checked to ensure it is not being degraded or causing degradation and that, the area is kept clear to avoid impeding flows to downstream areas. This minimises erosion.

Pollution of wetlands and soil

Activity

- Operation of the track (north-east of the Sibeyela River) and gravel Road L1970 (south-east side of the Sibiyela River).
- Operation of stormwater infrastructure (concrete slab and stormwater pipes).
- Repair and maintenance works.
- Routine maintenance inspections.
- Vegetation rehabilitation – on-going during the life-span of the project.

Nature of potential impact

- Increased in first flush effect of the pollutants into adjacent wetland systems.
- Pollutants from vehicle using the road would be discharged directly into the wetlands.
- Contamination of wetland resources through toxic organic and/or heavy metals.

Significance rating

Impact	Without mitigation					With mitigation				
	Probability	Duration	Extent	Magnitude	Rating	Probability	Duration	Extent	Magnitude	Rating
Pollution of water resources and soil	4	4	3	8	**60 High**	3	3	2	6	**33 Moderate**

Mitigation Measures –

- The design and use of SUDS which includes, but is not limited to, swales, filter strips and infiltration trenches that capture runoff, filter out the pollutants and allow for the diffuse release of water into the receiving environment is paramount to limiting the long term effects of an increase in hardened surfaces adjacent to the wetland areas situated along the route.
- Storm water outlet structures must be inspected on a monthly basis to ensure that littler is removed and correctly disposed of (at a permitted landfill site).
- The drainage provisions identified in design must be established early during the construction period and each provision must then be assessed after construction, and inspected after the first major storm event, to ensure there are no unexpected consequences.
- All disturbed soils must be rehabilitated with local plant species to ensure that alien vegetation does not invade the area.
- All soils compacted as a result of construction activities must be ripped and profiled.
- Water on the road must be diverted away to minimise the amount of water running directly from the road into wetlands. Such drainage must lead the water to vegetated filter strips, which remove particles and contaminants from the water.
- Regular maintenance and checking of the infrastructure must however take place over the lifespan of the project.

Spread of Alien invasive species

Activity

- Operation of the track (north-east of the Sibeyela River) and gravel Road L1970 (south-east side of the Sibiyela River).
- Operation of stormwater infrastructure (concrete slab and stormwater pipes).
- Repair and maintenance works.
- Routine maintenance inspections.
- Vegetation rehabilitation – on-going during the life-span of the project.

Nature of potential impact

- The continued spread of alien invasive species as a result of the disturbance.
- Infestation of alien vegetation post construction poses an ecological threat as they alter habitat structure, lower biodiversity, change nutrient cycling and productivity, and modify food webs.
- Increased water usage.
- Destruction of indigenous species.

Significance rating

Impact	Without mitigation					With mitigation				
	Probability	Duration	Extent	Magnitude	Rating	Probability	Duration	Extent	Magnitude	Rating
Spread of Alien invasive species	4	5	3	8	**64 High**	3	4	3	6	**39 Moderate**

Mitigation Measures –

- An invasive alien invasive management programme has been incorporated into an Environmental Management Programme attached in **Appendix F,** as per the legislative requirements specified under the Conservation of Agricultural Resources Act, 1983 amended in 2001 and the National Environmental Management: Biodiversity Act 2004 (Act No, 10 of 2004) to prevent its introduction and spread.
- Ongoing invasive alien plant control must be undertaken and implemented for the clearing/eradication of alien species during the operational phase of the road and particularly in the disturbed areas as these areas could quickly be colonised by invasive alien species.
- All of areas of disturbance resulting from the implementation of the project must be eradicated of alien invasive vegetation in accordance with Section 28 of the NEMA (Duty of Care).
- Re-instate indigenous vegetation (grasses and indigenous trees) in disturbed areas as soon as practically possible once construction ceases so as to stabilise against erosion and sedimentation.
- All areas disturbed after the completion of the construction activities must be rehabilitated to an acceptable state and must be monitored afterwards to prevent these areas from being colonised by alien invasive species.

SECTION F: PROPOSED MONITORING, CONTROL AND AUDITING

- An EMPr has been compiled for this application and has been attached in **Appendix F**. This EMPr is fundamental to the BA process and the management measures stipulated in the EMPr must be effectively implemented to reduce the impacts of further construction activity.
- The following monitoring and auditing strategies are recommended for the proposed upgrade of existing track (north-east of the Sibeyela River) and existing gravel Road L1970 (south-east side of the Sibiyela River):
  - An experienced and independent Environmental Control Officer (ECO) must be appointed by the Proponent prior to commencement of any construction activities to ensure that the environmental conditions that may be stipulated in the environmental and water use authroisation are implemented and that compliance with the provisions of the EMPr attached in **Appendix F** are implemented by the Engineer and appointed Contractor.
  - The ECO must ensure that all mitigation measures are implemented, and effective rehabilitation undertaken. The site mitigation and rehabilitation measures must be achieved.
  - The ECO is to be on site twice a month – once for site visit or project progress meeting and once for auditing.
  - The ECO must be able to make recommendations on the ground as the project unfolds and possible new aspects are noted
- It is crucial that a wetland rehabilitation, terrestrial and IAP specialist form part of the rehabilitation team to undertake the rehabilitation of the impacted area.
- An invasive alien control programme must be implemented to prevent the further spread of these species as per the legislative requirements specified under the Conservation of Agricultural Resources Act, 1983 amended in 2001 and the National Environmental Management: Biodiversity Act 2004 (Act No, 10 of 2004). Invasive Alien Programme (IAP) must be undertaken at least 4 times a year post-construction during the first 5 years to ensure that alien plants are effectively managed and eradicated from the site and thereafter twice yearly for the lifespan of the project, with adequate monitoring and follow-up measures.
- Stormwater control measures must be implemented, monitored and inspected to ensure water running off road does not cause erosion of the surrounding environment.
- The first **post** construction inspection must be conducted upon hand-over, and must be conducted jointly by the Municipality officials, project manager, environmental control officer and engineers responsible for design. The second inspection must take place 12 months after hand over, in order to asses:
  - the extent to which natural re-growth has occurred;
  - the erosion resulting from the preceding season, taking into consideration the amount of rainfall; and
  - the need for additional erosion protection or re-vegetation.
  - Successful eradication of alien invasive vegetation
- One (1) Environmental audit report must be submitted to the relevant DEDTEA Compliance Control Environmental Officer: Compliance Monitoring and Enforcement (CME) Component every month during construction.
- On completion of construction activities, a post construction phase audit must be conducted to ensure the rehabilitation efforts have been implemented. This audit must be conducted one month after construction work has been completed.
- The Proponent is required to ensure that follow up assessments for six (6) months post construction are undertaken by a competent ECO, to determine the success of the re-vegetation process and to check the condition of the banks/slopes and stormwater infrastructure as well as ascertain the effectiveness of erosion control around the project site. Where no erosion has been observed for one (1) year post construction and if rehabilitation has reached a level of 85% basal cover then the ECO can sign off the project.
- An annual environmental audit report for the first three (3) years, post construction of the upgraded roads must be submitted to the DEDTEA to ascertain the effectiveness of the rehabilitation plans and monitor the operation of the activities.

SECTION G: ENVIRONMENTAL IMPACT STATEMENT

The project involves the upgrade of the existing Mantuli track from the T-junction with D1301 for a length of 2.89km (north-east of the Sibeyela River) and the upgrade of the existing gravel Road L1970 from the Mfihlelwane Primary School approximately 1.67km in length (South-east side of the Sibiyela River). Both areas of road upgrade involved the widening from 5m to 8.4m with a road reserve of 12m (6m each side) to a Class 4 gravel road according to the Department of Transport gravel road standards. At this juncture in the project there is no feasible and reasonable alternatives for upgrading of the existing track (north-west of the Sibiyela River) from the T-junction with road D1301 and the existing gravel Road L1970 at the South-east side of the Sibiyela River.

The placement of stormwater pipes infrastructure on the upgraded existing Mantuli track will consist of 600 mm and 900mm diameter in size and will occur at twelve (12) different positions shown in the **table 7** on **page 21 to 22** and **Figure 3** on **page 23**. It is proposed as well to place a concrete slab through the wetland seep (HGM1) as a stormwater control measure and to prevent the road from becoming unusable during the rainy season. The placement of stormwater pipe infrastructure on the upgraded existing gravel Road L1970 will consist of 600 mm and 900mm diameter in size and will occur at eight (8) different positions shown in the **table 8** on **page 22** and **Figure 3** on **page 23.**

The above-mentioned activities have already been undertaken on this site and only final aspects such as formal stormwater control still needs to be put in place. These activities have resulted in severe negative impacts to the receiving natural environment and have given rise for the need of rehabilitation.

The following negative impacts have occurred as a result of the illegal commencement of road construction and upgrade:

- damage to house foundations of older settlement (heritage/historical features);
- impact on vegetation, with smothering effects taking place at the toe of the mitre drains as result of poor attenuation of runoff which negatively impacts on suitable growth conditions;
- sediment deposition (road material) within the wetland systems impacting on the health and functionality of the system as well as the system's ability to provide important ecosystem goods and services; and
- soil erosion.

However, the most significant concerns from a biophysical functioning perspective with respect to the project parameters that are still to be undertaken would be the impacts on flora, loss of protected vegetation composition and protected plant species, lack of habitat connectivity, hydrological impacts, erosion, sedimentation and degradation of wetlands areas, pollution of water resources and soil as well as the proliferation of alien plant species. This will require careful management.

The maintenance of landscape connectivity, ecological corridors and rehabilitation are of paramount importance for the persistence of functioning ecological systems This report is accompanied by an EMPr, which includes recommendations and mitigation measures made by the specialists. This EMPr must be approved by the DEDTEA to give it legal standing and must then be rigorously implemented by the Proponent.

The proposed project will result in medium term direct negative impacts on the health and functionality of the wetland systems and vegetation community dynamics. These negative impacts are only expected during the construction phase and possibly the early stages of rehabilitation. Whilst these impacts can be rated as significant, they can be mitigated to an acceptable level provided that the mitigation measures as proposed in this report, specialist reports, wetland rehabilitation report and the accompanying EMPr are effectively implemented and monitored.

The overall significance of positive socioeconomic and environmental impacts is beneficial as it should improve access for road users (motorists and pedestrians); increase mobility, reduce travel times and address erosion risks, curbing consequential environmental degradation, if the SUDS are implemented as formal stormwater control measures. The mitigation measures stated in the EMPr must be rigorously implemented, this will further reduce the impacts of construction activity.

Temporary job opportunities and skills development is expected to continue during the construction phase of the road upgrade therefore benefiting the local communities.

SECTION H: CONCLUSION

Should a positive decision be granted by the Competent Authority/ies, the following minimum conditions must be included in the Environmental Authorisation:

- Financial provision must be set aside prior to construction commencing for the implementation of the EMPr attached in **Appendix F** and for the rehabilitation of the disturbed ecosystems after completion of construction activities including monitoring, auditing and maintenance during construction and operational phase of the project.
- The Proponent must appoint an independent and suitably experienced ECO and necessary specialists for the construction and rehabilitation phases of the development to ensure compliance with the provision of the EMPr.
- An independent environmental auditor must be appointed to audit the condition of the site as may be stipulated in the environmental authorisation should a positive authorisation be issued,
- Cognisance and compliance must be taken of the recommended mitigation and rehabilitation measures in the Specialist Wetland Report, Vegetation Assessment report, Wetland Rehabilitation report, Heritage Impact Assessment Report and desktop Palaeontological Impact Assessment (PIA) Report (See attached in **Appendix D**) including all the mitigation measures recommended in this DBAR report and the site specific EMPr.
- The management measures stipulated in the environmental management programme (EMPr) must be effectively implemented to reduce the impacts of further construction activity.
- All parties involved in the construction and ongoing maintenance of the upgrading of the existing track (north-west of the Sibiyela River) from the T-junction with road D1301 and the existing gravel Road L1970 at the South-east side of the Sibiyela River and associated stormwater infrastructure (including contractors, engineers, and administrators) are, in terms of NEMA's "Duty of Care" and "Remediation of Damage" requirements (Section 28), required to prevent any further pollution or degradation of the environment,;be responsible for preventing impacts occurring, continuing or recurring and for the costs of all repairs and rehabilitation of the environment.
- Removal of alien invasive plants must occur with specific follow-up control measures, and reclamation and management of soil erosion along the construction footprint (this is an ongoing requirement in terms of national legislation).
- A water use authorisation must be obtained from the Department of Water & Sanitation **prior** to any construction activities commencing.

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