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**Geotechnical, Environmental
& Earth Science Consultants**

**DRAFT BASIC ASSESSMENT REPORT:
FOR THE PROPOSED DEVELOPMENT OF THE ROCABAR
ACCESS ROADS AS PART OF THE N2 INTERSECTION
UPGRADE IN KOKSTAD, GREATER KOKSTAD LOCAL
MUNICIPALITY, KWAZULU-NATAL PROVINCE**

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Prepared by:

TERRATEST (PTY) LTD.

PO Box 794

Hilton, 3245

Telephone: (033) 343 6789

Contact: Ms N. Mkhize

Email: mkhizen@terratest.co.za



VERIFICATION PAGE

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CARRIED OUT BY: Terratest (Pty) Ltd. Pietermaritzburg PO Box 794 Hilton 3245 Tel: (033) 343 6789 Email: mkhizen@terratest.co.za		COMMISSIONED BY: JG Afrika (Pty) Ltd. PO Box 794 Hilton 3245 Tel: Email: PillayP@jgafrika.com		
AUTHORS: Ms. N. Mkhize		CLIENT CONTACT PERSON: Mr P. Pillay		
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By Author	Snr Environmental Assessment Practitioner	Ntsebo Mkhize		12/10/2022
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LEGISLATIVE REQUIREMENTS FOR A BASIC ASSESSMENT REPORT

This report has been compiled in accordance with the National Environmental Management Act 107 of 1998 (NEMA): Environmental Impact Assessment (EIA) Regulations, 2014 (as amended) and **Table 1** provides the requirements for and adheres to the requirements of the Basic Assessment Report contained in Appendix 1 of the NEMA EIA Regulations, 2014 (as amended) and refers to the relevant sections of this report where these requirements are addressed.

Table 1: Contents of this report in terms of the NEMA EIA Regulations, 2014 (as amended)

Section	Content	Reference in report
A Basic Assessment Report (BAR) must contain the information that is necessary for the competent authority to consider and come to a decision on the application, and must include -		
3 (1) (a)	Details of- <ul style="list-style-type: none"> (i) the EAP who prepared the report; and (ii) the expertise of the EAP, including a curriculum vitae; 	Chapter 4.1 and Appendix H
3 (1) (b)	The location of the activity, including: <ul style="list-style-type: none"> (i) the 21-digit Surveyor General code of each cadastral land parcel; (ii) where available, the physical address and farm name; (iii) where the required information in items (i) and (ii) is not available, the coordinates of the boundary of the property or properties; 	Chapter 1.2
3 (1) (c)	A plan which locates the proposed activity or activities applied for as well as associated structures and infrastructure at an appropriate scale; or, if it is- <ul style="list-style-type: none"> (i) a linear activity, a description and coordinates of the corridor in which the proposed activity or activities is to be undertaken; or (ii) on land where the property has not been defined, the coordinates within which the activity is to be undertaken; 	Chapter 1.2 Appendix A
3 (1) (d)	A description of the scope of the proposed activity, including <ul style="list-style-type: none"> (i) all listed and specified activities triggered and being applied for; and (ii) a description of the activities to be undertaken including 	Chapter 3.1 and Chapter 1.3

Section	Content	Reference in report
	associated structures and infrastructure	
3 (1) (e)	<p>A description of the policy and legislative context within which the development is proposed including –</p> <ul style="list-style-type: none"> (i) an identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks, and instruments that are applicable to this activity and have been considered in the preparation of the report; and (ii) how the proposed activity complies with and responds to the legislation and policy context, plans, guidelines, tools frameworks, and instruments 	Chapter 2
3 (1) (f)	A motivation for the need and desirability for the proposed development including the need and desirability of the activity in the context of the preferred location	Chapter 1.7
3 (1) (g)	A motivation for the preferred site, activity and design alternative	Chapter 7
3 (1) (h)	<p>A full description of the process followed to reach the proposed preferred alternative within the site, including:</p> <ul style="list-style-type: none"> (i) details of all the alternatives considered; (ii) details of the public participation process undertaken in terms of regulation 41 of the Regulations, including copies of the supporting documents and inputs; (iii) a summary of the issues raised by interested and affected parties, and an indication of the manner in which the issues were incorporated, or the reasons for not including them; (iv) the environmental attributes associated with the alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects; (v) the impacts and risks identified for each alternative, including the nature, significance, consequence, extent, duration and probability of the impacts, including the degree to which these impacts- <ul style="list-style-type: none"> (aa) can be reversed; (bb) may cause irreplaceable loss of resources; and (cc) can be avoided, managed or mitigated. (vi) the methodology used in determining and ranking the nature, 	<p>Chapter 7</p> <p>Chapter 5</p> <p>Chapter 5</p> <p>Chapter 6</p> <p>Chapter 9</p> <p>Chapter 8</p>

Section	Content	Reference in report
	<p>significance, consequences, extent, duration and probability of potential environmental impacts and risks associated with the alternatives;</p> <p>(vii) positive and negative impacts that the proposed activity and alternatives will have on the environment and on the community that may be affected focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects;</p> <p>(viii) the possible mitigation measures that could be applied and level of residual risk;</p> <p>(ix) the outcome of the site selection matrix;</p> <p>(x) if no alternatives, including alternative locations for the activity were investigated, the motivation for not considering such; and</p> <p>(xi) a concluding statement indicating the preferred alternatives, including preferred location of the activity</p>	<p>Chapter 8</p> <p>Chapter 8</p> <p>-</p> <p>-</p> <p>Chapter 7</p>
3 (1) (i)	<p>A full description of the process undertaken to identify, assess and rank the impacts the activity will impose on the preferred location through the life of the activity, including-</p> <p>(i) a description of all environmental issues and risks that were identified during the environmental impact assessment process; and</p> <p>(ii) an assessment of the significance of each issue and risk and an indication of the extent to which the issue and risk could be avoided or addressed by the adoption of mitigation measures</p>	<p>Chapter 9</p> <p>Chapter 9</p>
3 (1) (j)	<p>An assessment of each identified potentially significant impact and risk, including –</p> <p>(i) cumulative impacts;</p> <p>(ii) the nature, significance and consequences of the impact and risk;</p> <p>(iii) the extent and duration of the impact and risk;</p> <p>(iv) (iv) the probability of the impact and risk occurring;</p> <p>(v) (v) the degree to which the impact and risk can be reversed;</p>	<p>Chapter 9</p>

Section	Content	Reference in report
	<p>(vi) the degree to which the impact and risk may cause irreplaceable loss of resources; and</p> <p>(vi) (vii) the degree to which the impact and risk can be avoided, managed or mitigated</p>	
3 (1) (k)	Where applicable, a summary of the findings and impact management measures identified in any specialist report complying with Appendix 6 to these Regulations and an indication as to how these findings and recommendations have been included in the final report	Chapter 6
3 (1) (l)	<p>An environmental impact statement which contains-</p> <p>(i) a summary of the key findings of the environmental impact assessment;</p> <p>(ii) a map at an appropriate scale which superimposes the proposed activity and its associated structures and infrastructure on the environmental sensitivities of the preferred site indicating any areas that should be avoided, including buffers; and</p> <p>(iii) a summary of the positive and negative impacts and risks of the proposed activity and identified alternatives.</p>	Chapter 10
3 (1) (m)	Based on the assessment, and where applicable, impact management measures from specialist reports, the recording of the proposed impact management objectives, and the impact management outcomes for the development for inclusion in the EMPr	Appendix G
3 (1) (n)	Any aspects which were conditional to the findings of the assessment either by the EAP or specialist which are to be included as conditions of authorisation	Chapter 11
3 (1) (o)	A description of any assumptions, uncertainties, and gaps in knowledge which relate to the assessment and mitigation measures proposed	Chapter 1.9
3 (1) (p)	A reasoned opinion as to whether the proposed activity should or should not be authorised, and if the opinion is that it should be authorised, any conditions that should be made in respect of that authorisation	Chapter 11
3 (1) (q)	Where the proposed activity does not include operational aspects, the period for which the environmental authorisation is required, the date on which the activity will be concluded, and the post construction monitoring	Chapter 11

Section	Content	Reference in report
	requirements finalised	
3 (1) (r)	<p>An undertaking under oath or affirmation by the EAP in relation to:</p> <ul style="list-style-type: none"> (i) the correctness of the information provided in the reports; (ii) the inclusion of comments and inputs from stakeholders and I&APs; (iii) the inclusion of inputs and recommendations from the specialist reports where relevant; and (iv) any information provided by the EAP to interested and affected parties and any responses by the EAP to comments or inputs made by interested and affected parties. 	Appendix H and Page vii
3 (1) (s)	Where applicable, details of any financial provisions for the rehabilitation, closure, and ongoing post decommissioning management of negative environmental impacts	-
3 (1) (t)	Any specific information that may be required by the competent authority	-
3 (1) (u)	Any other matters required in terms of section 24(4)(a) and (b) of the Act	-

AFFIRMATION OF ENVIRONMENTAL ASSESSMENT PRACTITIONER (EAP)

This report was compiled and prepared by Ntsebo Mkhize, an EAP employed by Terratest (Pty) Ltd. I declare that the information provided in this report is correct and relevant to the activity/ project, that comments from Interested and Affected Parties have been incorporated into this report, that the report has included inputs and recommendations from Specialists and that all relevant project information was made available to Interested and Affected Parties.

Signature of EAP

12/10/2022

Date

EXECUTIVE SUMMARY

JG Afrika (Pty) Ltd. has appointed Terratest (Pty) Ltd. on behalf of South African National Roads Agency SOC Ltd. (SANRAL) as independent Environmental Consultants to undertake a Basic Assessment process (BA) and Water Use Authorisation Processes (WUA) required for the proposed development of the Rocabar access roads (to the Tradeport and future Motor City) as part of the N2 Intersection Upgrade in Kokstad, Harry Gwala District Municipality, KwaZulu-Natal Province.

It is important to highlight that an initial Draft Basic Assessment Report (DBAR) for this project was initially circulated for review and the application for Environmental Authorisation (EA) was submitted to the KwaZulu-Natal Economic Development, Tourism and Environmental Affairs (EDTEA) and not the National Department of Forestry, Fisheries and the Environment (DFFE). The current BAR is currently handled as a new application for EA and will be submitted to the DFFE.

The project involves the development of the following:

- New road section of approximately 370m with an initial maximum road width of 18.5m (4m x 3.5m wide lanes, with a 1.5m shoulder on either sides and a 1.5m wide sidewalk on one side). Phase 1 of the construction the road will taper from 4 lanes (18.5m) to 2 lanes (11.5m) including shoulders and sidewalk.
- Second new access roads approximately 310m x 10m wide (2 x 3.5m wide lanes, with a 1.5 m shoulder on either sides).
- Stream/wetland crossings on a 2 lane (11.5m) culvert. The culvert will be widened in the future to accommodate 4 lanes (18.5m).

The purpose of this report is to present the results of the environmental assessment undertaken for the proposed development of the Rocabar access roads. The report presents the following:

- Legislative framework governing the site;
- The status quo of the environmental conditions of the site as well as applicable environmental studies, licences and permits;
- Proposed designs and alternatives;
- Public Participation process;
- Impact assessment methodology and impact assessment; and
- Overall findings to indicate the sensitivity of the site, potential fatal flaws, and issues that require the attention of the SANRAL.

An Environmental Authorization through a BA process in terms of Section 24(5) of the National Environmental Management Act, (Act No. 107 of 1998) and a WUA as per the National Water Act (No. 36 of 1998) are required for the proposed development of access roads.

All legal provisions and the legal context for the proposed development presented in this document include a review of National, Provincial and Local Government legislation, regulations, policies and guidelines, which are relevant to, or have implications, for the proposed project.

In terms of section 24(2) of NEMA, the Minister and or any MEC in concurrence with the Minister may identify activities which require authorisation as these activities may negatively affect the environment. Environmental Impact Assessment (EIA) Regulations were promulgated in December 2014 (as amended) in terms of Section 24(5) and Section 44 of the National Environmental Management Act (NEMA), Act 107 of 1998. In terms of the 2014, EIA Regulations the triggered listed activities fall under Listing Notices 1, 2 and 3 which are further discussed as follows:

- Listing Notice 1 defines activities which will trigger the need for a Basic Assessment process;
- Listing Notice 2 defines activities which trigger a Scoping and Environmental Impact Assessment (EIA) process.
- Listing Notice 3 refers to certain listed activities located in specifically defined geographical areas for which a Basic Assessment process would be required

The listed activities below will be triggered for the project and a Basic Assessment process will need to be undertaken:

- Listing Notice 1, Activity 19: the infilling or depositing of any material of more than 10 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10 cubic metres from a watercourse.
- Listing Notice 1, Activity 24: The development of a road where no reserve exists where the road is wider than 8 metres.
- Listing Notice 3, Activity 14: the development infrastructure of structure with a physical footprint of 10 square metres or more where the development occurs within a watercourse or if not, development setback has been adopted, within 32 metres of a watercourse measured from the edge of a watercourse.

An understanding of the overall character and other sensitivities that were identified in the surrounding environment is pertinent to the project. The Biophysical aspects discussed are Geology, Regional Vegetation and Conservation Plan Area, Hydrological, Heritage and Palaeontological features. The Socio-Economic conditions are also discussed in this report.

In accordance with the requirements of Appendix 6 of the NEMA EIA Regulations, 2014 (as amended), and a review of the DFFE's Screening tool's specialist studies requirements, the following Specialist Studies were undertaken:

- Vegetation Assessment;
- Wetlands Assessment;
- Heritage Impact Assessment; and
- Geotechnical Investigation (this was not commissioned by the EAP but by the Project Engineers before the EAP was involved in the project).

In terms of Section 24 of NEMA, the proponent is required to demonstrate that alternatives have been described and investigated in sufficient detail during the BA process. It is important to highlight those alternatives must be practical, feasible, reasonable and viable to cater for an unbiased approach to the project and in turn to ensure environmental protection. A total of three (3) alternatives were identified for the project. These alternatives were provided by SANRAL as the Proponent. The advantages and disadvantages of each of these alternatives as well as the reason for the preferred alternative are presented in this report. These are as follows:

- No-go option;
- Layout Design; and
- Design Alternatives.

A Public Participation Process (PPP) consistent with Chapter 6 of the NEMA EIA Regulations, 2014 (as amended) was followed for the project. The Draft Basic Assessment Report has been compiled and will be issued out for Public and Competent Authority (CA) review for the legislated period of at least 30-days. The comments raised by various Interested and Affected Parties (I&APs) will be recorded and addressed in the Final BAR. The PPP that commenced in December 2021 under the EDTEA application comprised a newspaper advert, a notification letter, site notices and correspondence with various authorities and interested and affected parties. Under the current DFFE application, the PPP process that has been undertaken to date is summarised as follows:

- A newspaper advertisement was placed in a local newspaper (Kokstad Advertiser) in English on the 01st of September 2022;
- Electronic versions of an updated notification letter (mainly indicating that the Competent Authority is the DFFE and no longer the EDTEA) were compiled and distributed, by email, to Interested and Affected Parties (I&APs) who were already on the project database from the EDTEA BA process;
- Site notices were placed on various locations along and within proximity of the project site on the 25th of August 2022;
- The Draft Basic Assessment report will be made available to the public for a 30- day review period. All comments made by the public and commenting authorities will be incorporated into the final report which will be submitted to DFFE for review and decision-making;
- The commenting authorities will be provided with a copy of the report in electronic format and hardcopy (if requested)

In accordance with the NEMA EIA Regulations, as amended, promulgated in terms of Section 24 of the National Environmental Management Act (Act No. 107 of 1998), the EAP is required to assess the significance of potential impacts in terms of the following criteria:

- Nature of the impact;
- Extent of the impact;
- Intensity of the impact;
- Duration of the impact;
- Probability of the impact occurring;

- Reversibility of impacts;
- Impact on irreplaceable resources; and
- Cumulative impacts.

The potential impacts identified and discussed were divided into two themes which are as follows.

- Theme 1: Impacts on the Biophysical Environment - (impacts on surrounding indigenous plant species, fauna, soil and surface water); and
- Theme 2: Impacts on the Human Environment- (impacts on the surrounding residential area and business. These include traffic, dust and air quality, noise, visual, health and safety, and employment opportunities).

This DBAR provides a broad description of the biophysical, infrastructural and socio-economic issues associated with the proposed development for the proposed access roads. A comprehensive Public Participation Process was conducted and is also presented in this report. The DBAR presents an assessment of the impacts of each of the proposed activities as well as the potential cumulative impacts of the development in its entirety. Mitigation measures for each of the impacts are discussed to ensure that positive impacts can be optimised, and negative impacts minimised in order for the project to be integrated into the environment in a sustainable manner. It is the recommendation of the EAP that the proposed layout is the most effective way of meeting the need and purpose of the proposed activity. Taking into consideration the findings of the environmental impact assessment, the project benefits outweigh the negative impacts identified, provided that mitigation measures are applied effectively. Impacts of high significance are not foreseen once proper mitigation measures have been implemented. The EAP's key recommendations outlined in the report are as follows:

- a. The Applicant shall undertake a Water Use Application as per the National Water Act (Act No. 36 of 1998) prior to the commencement of the project activities;
- b. The Applicant shall inform all adjacent landowners of the commencement of construction activities at least 30 days before the commencement via adequate signage at strategic points on site;
- c. An independent Environmental Control Officer must be appointed to monitor all construction activities and ensure the demarcation of all applicable areas and approve the locations of all infrastructure;
- d. Prior to construction, the final road alignment, road reserve and development footprint area must be demarcated on site to ensure that construction impacts are contained within this area. If necessary, these areas may be fenced or, alternatively, nearby sensitive areas are to be fenced to prevent access
- e. Increased runoff due to removal of vegetation and increased soil compaction must be managed to ensure the prevention of siltation;
- f. Implement an Alien Plant Control Plan which specifies long-term monitoring schedules;
- g. Maintenance of construction vehicles or equipment should not take place within the watercourse or riparian areas;

- h. When excavating in watercourses the upper (30 cm) topsoil should be removed together with the vegetation and stored as sods on the site. These should then be replaced in disturbed areas requiring rehabilitation;
- i. Construction within the watercourses will require blocking of active flow. This should be done by blocking only half of the channel for construction, whilst the remaining half is allowed to maintain flow. The timeframe for construction through watercourses should also be kept to a minimum;
- j. Topsoil should be excavated and stockpiled separately from the subsoils to be used during the rehabilitation of the road verges.
- k. Drip trays shall be provided in construction areas for stationary plant mobile plants and machinery. The drip trays, sumps and bunds must be emptied regularly, especially before a known rain event and after a rain event, and the contents disposed of at a licensed disposal facility;
- l. The Contractor must be trained to recognise any heritage features. Should there be a sign of such objects, construction must halt in that area immediately and a suitably qualified heritage specialist must be called to investigate through the ECO;
- m. Adhere to all conditions of the Environmental Authorisation issued by DFFE as well as any conditions of permits that may be required thereafter; and
- n. Adhere to all recommendations outlined in the specialist Reports and the Environmental Management Programme.

**DRAFT BASIC ASSESSMENT REPORT:
PROPOSED DEVELOPMENT OF THE ROCABAR ACCESS ROADS AS PART OF THE N2 INTERSECTION
UPGRADE IN KOKSTAD, GREATER KOKSTAD LOCAL MUNICIPALITY, KWAZULU-NATAL PROVINCE**

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LIST OF ABBREVIATIONS/ACRONYMS

BA	-	Basic Assessment
CBA	-	Critical Biodiversity Areas
CV	-	Curriculum Vitae
DBAR	-	Draft Basic Assessment Report
DFFE	-	Department of Forestry, Fisheries and the Environment
DMR	-	Department of Mineral Resources and Energy
DWS	-	Department of Water and Sanitation
EA	-	Environmental Authorisation
EAP	-	Environmental Assessment Practitioner
EDTEA	-	Economic Development, Tourism and Environmental Affairs
EIA	-	Environmental Impact Assessment
EKZNW	-	Ezemvelo KwaZulu-Natal Wildlife
EMPr	-	Environmental Management Programme
ESA	-	Ecological Support Area
FBAR	-	Final Basic Assessment Report
HIA	-	Heritage Impact Assessment
I&AP	-	Interested and Affected Party
NEMA	-	National Environmental Management Act (Act No. 107 of 1998)
NFEPA	-	National Freshwater Ecosystem Priority Area
NGO	-	Non-Government Organisation
NWA	-	National Water Act (Act No. 36 of 1998)
PES	-	Present Ecological State
PIA	-	Palaeontological Impact Assessment
PLC	-	Project Liaison Committee
PPP	-	Public Participation Process
SAHRIS	-	South African Heritage Resources Information System
SANRAL	-	South African National Roads Agency SOC Ltd.
SAPS	-	South African Police Service
SG	-	Survey General
WMA	-	Water Management Area
WUA	-	Water Use Authorisation

GLOSSARY OF TERMS

This section provides a catalogue of terms and definitions, which may be used in this report and, or other documents drafted for the project.

Term	Definition
Alternatives	In relation to a proposed activity, means different means of meeting the general purpose and requirements of the activity, which may include alternatives to— <ul style="list-style-type: none"> (a) the property on which or location where it is proposed to undertake the activity; (b) the type of activity to be undertaken; (c) the design or layout of the activity; (d) the Design to be used in the activity; (e) the operational aspects of the activity; and (f) the option of not implementing the activity.
Clearing/Clearance	Refers to the removal of vegetation through permanent eradication and in turn no likelihood of regrowth. 'Burning of vegetation (e.g., fire-breaks), mowing grass or pruning does not constitute vegetation clearance, unless such burning, mowing or pruning would result in the vegetation being permanently eliminated, removed or eradicated'.
Competent Authority	In respect of a listed activity or specified activity, means the organ of state charged by this Act with evaluating the environmental impact of that activity and, where appropriate, with granting or refusing an environmental authorisation in respect of that activity.
Duty of Care	Every person who causes, has caused or may cause significant pollution or degradation of the environment to take reasonable measures to prevent such pollution or degradation from occurring, continuing or recurring, or, in so far as such harm to the environmental is authorised by law or cannot reasonably be avoided or stopped, to minimise and rectify such pollution and degradation of the environment."
Environment	The surroundings within which humans exist and that are made up of— <ul style="list-style-type: none"> (i) the land, water and atmosphere of the earth; (ii) micro-organisms, plant and animal life; (iii) any part or combination of (i) and (ii) and the interrelationships among and between them; and (iv) the physical, chemical, aesthetic and cultural properties and conditions of the foregoing that influence human health and well-being.
Environmental Assessment Practitioners	The individual responsible for the planning, management, coordination or review of environmental impact assessments, strategic environmental assessments, environmental management programmers or any other appropriate environmental instruments introduced through regulations.
Environmental Management Programme:	A programme with set objectives and timeframes that seek to achieve a required end state and describes how activities that have or could have an adverse impact on the environment will be mitigated, controlled and monitored.
Flora	Plant life that occurs in a specific geographical region and/habitat.

Term	Definition
Fauna	Animal life that occurs in a specific geographical region and/habitat.
Indigenous vegetation	Refers to vegetation consisting of indigenous plant species occurring naturally in an area, regardless of the level of alien infestation and where the topsoil has not been lawfully disturbed during the preceding ten years.
Interested and Affected Parties (IAPs)	(a) Any person, group of persons or organisation interested in or affected by such operation or activity; and (b) Any organ of state that may have jurisdiction over any aspect of the operation or activity.
Regulated area of a watercourse:	(a) The outer edge of the 1:100-year flood line and /or delineated riparian habitat whichever is the greatest measured from the middle of a river, spring, natural channel, lake or dam; (b) In the absence of a determined 1:100-year flood line or riparian area, the area within 100m from the edge of a watercourse where the edge of the watercourse is the first identifiable annual bank fill flood bench (subject to compliance to section 144 of the Act); (c) 500m radius from the delineated boundary of any wetland or pan.
Protected Area	A protected area is a clearly defined geographical space, recognised, dedicated and managed, through legal or other effective means, to achieve the long-term conservation of nature with associated ecosystem services and cultural values.
Public Participation Process	In relation to the assessment of the environmental impact of any application for an environmental authorisation, means a process by which potential Interested and Affected Parties are given opportunity to comment on, or raise issues relevant to, the application.
Urban edge	A demarcated edge of an area that is used as land use management tool to manage, direct and control the outer limits of development growth around an urban area. The aim is to control urban sprawl due to its associated adverse impacts.
Watercourse	(a) a river or spring; (b) a natural channel in which water flows regularly or intermittently; (c) a wetland, lake or dam into which, or from which, water flows; and (d) any collection of water which the Minister may, by notice in the Gazette, declare to be a watercourse, and a reference to a watercourse includes, where relevant, its bed and banks.
Wetland	Land which is transitional between terrestrial and aquatic systems where the water table is usually at or near the surface, or the land is periodically covered with shallow water, and which land in normal circumstances supports or would support vegetation typically adapted to life in saturated soil.

1. BACKGROUND AND INTRODUCTION

1.1 Project Introduction

In line with the NEMA EIA Regulations, 2014 (as amended), JG Afrika (Pty) Ltd. has appointed Terratest (Pty) Ltd. on behalf of South African National Roads Agency SOC Ltd. (SANRAL) as the Independent Environmental Consultants to undertake a Basic Assessment (BA) and Water Use Authorisation (WUA) processes for the proposed development of the Rocabar access roads (to the Tradeport and future Motor City) as part of the N2 Intersection Upgrade in Kokstad, Harry Gwala District Municipality, KwaZulu-Natal Province.

It is important to highlight that an initial Draft Basic Assessment Report (DBAR) for this project was initially circulated for review and the application for Environmental Authorisation (EA) was submitted to the KwaZulu Natal Economic Development, Tourism and Environmental Affairs (EDTEA) and not the Department of Forestry, Fisheries and the Environment (DFFE). The current BAR is currently handled as a new application for EA and will be submitted to the DFFE.

The broad goals of the proposed development are to relieve traffic congestion to an acceptable level of service, improve road geometry and road safety, construct a culvert and other structures required for hydraulic and traffic capacity improvement, and provide adequate pavement capacity for the design period.

The Mzintlava River, a tributary of the Mzimvubu River, transverses the site proposed for the access roads and impacts on the rivers are anticipated. As such, the following processes are currently underway for the proposed development of the access roads before commencement with construction activities:

- Water Use Authorisation in terms of National Water Act (Act No. 36 of 1998); and
- Basic Assessment Process in terms of the National Environmental Management Act: Environmental Impact Assessment Regulations, 2014 (as amended).

The proposed access roads will also traverse a single private property. It is important to note that a land acquisition process is already underway between SANRAL, the KwaZulu Natal Department of Transport and all affected landowner(s). In addition to this, the affected and adjacent property owners have been included in the Interested and Affected Parties (landowners) database and will be engaged throughout the Basic Assessment (BA) process.

As per the Environmental Impact Assessment (EIA) Regulations, 2014 (as amended), a Basic Assessment (BA) process must be undertaken in such a manner that the environmental outcomes, impacts and residual risks of the proposed Listed Activities being applied for are noted in the BAR and assessed accordingly by the Environmental Assessment Practitioner (EAP). It is important to note that the Listed Activities in terms of GNR 326 of the EIA Regulations, 2014 (as amended) applicable to this proposed project pertain only to the construction of the culvert associated with the proposed development of access roads.

This Basic Assessment Report has been compiled in accordance with the NEMA EIA Regulations, 2014 (as amended) and adheres to the requirements of the Basic Assessment Report contained in Appendix 1 of

the aforementioned regulations. This report is also part of the Design Development stage (Preliminary Design) and the initial overall project stage which are set out as follows:

- Project Assessment;
- Investigation for Design Development;
- Design Development Stage:
 - Preliminary Design;
 - Detail Design;
- Tender Documentation;
- Clarification Meeting, Tender Period and Tender Evaluation
- Administration and Monitoring of the Works Contract;
- Additional Duties, Special Services and Specialist Advice;
- Quality Control: Works Contract; and
- Close Out

Ultimately, the outcome of the BA Process is to provide the Competent Authority, the Department of Forestry, Fisheries and the Environment (DFFE), with sufficient information to provide a decision on the Application in terms of Environmental Authorisation (EA), in order to avoid or mitigate any detrimental impacts that the activity may impose on the receiving environment.

1.2 Locality Description and Project Activity

The project site for the proposed development is largely vacant, undeveloped and located within Ward 6 of Greater Kokstad Local Municipality, Harry Gwala District Municipality of KwaZulu-Natal Province and approximately 7km south of the Kokstad town and immediately east of the R56 provincial road.

The 21-digit Surveyor General (SG) code for the affected cadastral land parcel, as well as the details of the property affected by the proposed development of the access roads and culvert are provided in **Table 2**.

Table 2: Property details

21 Digit SG Code	Property Details
NOES00000000028900000	Remaining extent of the farm Koppies Kraal 289

Access to the site is gained via an existing gravel road that is linked to the R56 and as already mentioned, the Mzintlava River, a tributary of the Mzimvubu River, transverses the proposed site for the access roads. Refer to **Figure 1** and **Appendix A** for the location of the site in relation to the Kokstad town and **Figure 2** for the Google Earth aerial image of the proposed Rocabar access roads.

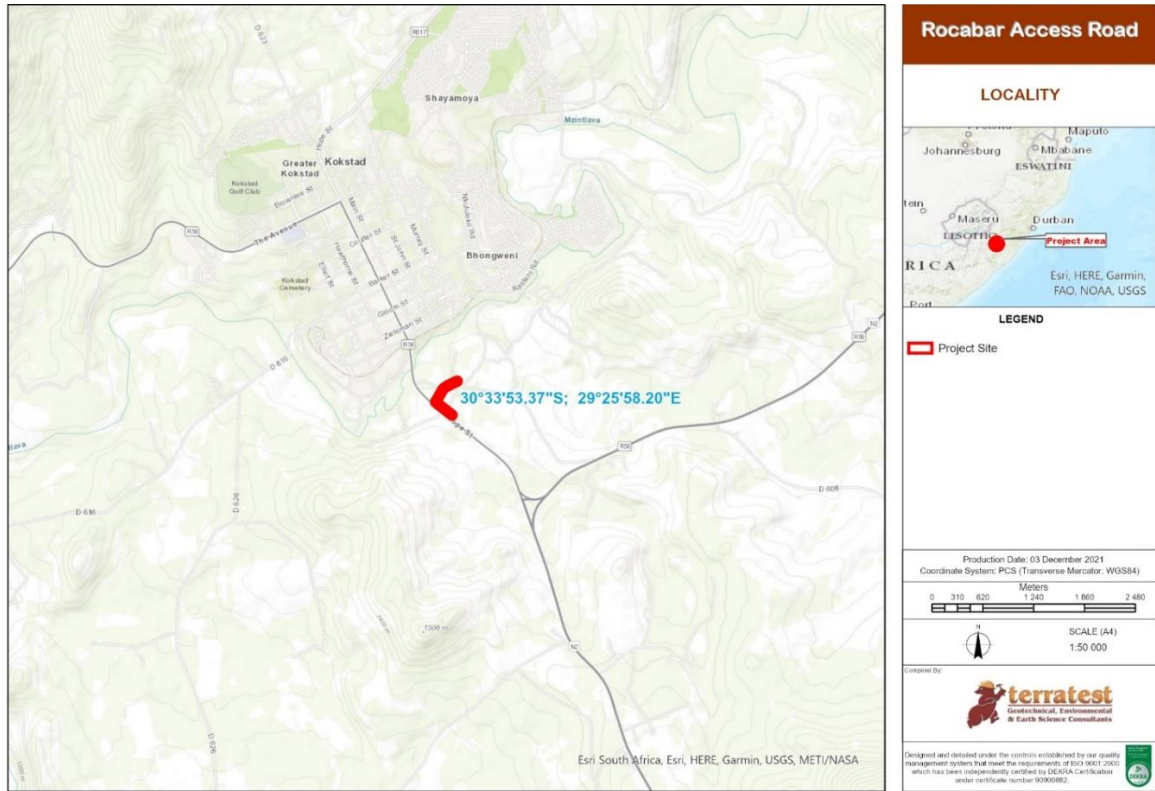


Figure 1: Location of the project site in relation to the town of Kokstad

1.3 Proposed Activity

The proposed construction of the access roads will include the following:

- New road section of approximately 370m with an initial maximum road width of 18.5m (4m x 3.5m wide lanes, with a 1.5m shoulder on either sides and a 1.5m wide sidewalk on one side). Phase 1 of the construction the road will taper from 4 lanes (18.5m) to 2 lanes (11.5m) including shoulders and sidewalk.
- Second new access roads approximately 310m x 10m wide (2 x 3.5m wide lanes, with a 1.5 m shoulder on either sides).
- Stream/wetland crossings on a 2 lane (11.5m) culvert. The culvert will be widened in the future to accommodate 4 lanes (18.5m).

It is worth noting that the watercourse crossing that triggered the need for the BA process is located at the end of Road 1. The approximate site co-ordinates for the above key components are provided on **Table 3**.

Table 3: Components of the proposed development

Section	Infrastructure	Longitude	Latitude
Road 1	Road Start at R56	30°33'54.28"S	27°25'57.41"E
	Road End at culvert	30°33'46.01"S	27°26'05.37"E
Road 2	Road Start at roundabout	30°33'50.15"S	27°25'59.45"E
	Road End	30°33'58.61"S	27°26'04.99"E



Figure 2: Aerial image of the project site showing the key components of the proposed development

1.4 Surrounding Land-uses

According to historical images accessed from Google Earth; the land in the vicinity of the project site was used for crop cultivation, however, that activity ceased prior to 2003 although some areas to the north of the site continued to be mowed for hay production.

By 2013, the Tradeport industrial complex (industrial complex, hereafter) to the immediate north-east of the project site had been built. Initially it was developed as a plywood production plant, but it is now a bulk wholesaler catering largely for trade from the Eastern Cape Province. To the immediate west of the project site for the proposed *Road 1* is a light industrial site catering primarily to the motor parts trade and to servicing of agricultural implements and a private residential property. Refer to **Figure 3** to **8** for the surrounding land-use.



Figure 3: Area adjacent to R56 road proposed for the starting point of Road 1



Figure 4: Boundary of the livestock pen of the west of the project site in reference to Road 1



Figure 5: Residential property immediately west of the project site (next to the livestock pen) in reference to Road 1



Figure 6: Industrial complex located north-east of the project site



Figure 7: Existing access roads to the industrial complex transverses the project site for Road 2



Figure 8: North-east view to the existing access roads to the industrial complex

1.5 Project Alternatives

In terms of the EIA regulations, attention needs to be given to all possible alternatives. The assessment of alternatives allows different approaches and ways of meeting the need, purpose and objectives of a proposed activity. Alternatives may include location or site alternatives, design/layout alternatives, activity alternatives and processes or Design alternatives, etc.

The no-go alternative or option also needs to be considered, as it provides the baseline against which the impacts of other alternatives can be compared. The objective of presenting, evaluating and motivating the feasible alternatives, is to identify the preferred option. In the case of the Rocabar access roads project, two alternatives were identified.

There are two types of alternatives (i.e., the layout alternatives and design alternatives) considered for the proposed development of the access roads and supporting infrastructure. The *route alternatives* are based on geometry alignment and consultation with the affected landowner and the *design alternatives* for the culvert are based on economic viability. These alternatives are briefly described and assessed in **Chapter 7** of this report provides a detailed description and assessment of Alternatives.

1.6 Material Sources

Construction material will be required for the proposed development and material sources cannot be exploited without authorisations from the Department of Mineral Resources and Energy (DMR). However, JG Afrika (Pty) Ltd. has indicated that they will obtain the required construction material from commercial material sources.

1.7 Project Need and Desirability

In South Africa, it is estimated that numerous road deaths are mainly caused by poor infrastructure or the absence of proper infrastructure. Hence, development of road infrastructure has become vitally significant in the country since it improves and saves the lives of road users. Although there is an existing access road to the commercial development, the broad goals for developing the proposed access roads are to:

- Relieve traffic congestion to acceptable level of service;
- Better the road geometry to improve road safety; and
- Improve traffic capacity.

On the other hand, it is well known that South Africa currently has a high unemployment rate and there is a dire need for creation of employment opportunities. The proposed access roads will also create a significant number of employment opportunities during the Construction Phase, and it is anticipated that more job opportunities will be created when the commercial developments (which will be supported by the proposed access roads) are complete.

1.8 Structure of the Basic Assessment Report

This report has also considered the requirements outlined in Appendix 1 of the NEMA EIA Regulations, 2014 (as amended) regarding the content of the Basic Assessment Report. In addressing these requirements, this BAR is divided into 12 Chapters, the contents of which will be presented as follows in this report:

- **Chapter 1** provides the background and introduction to the development proposal and profiles its proponents. Furthermore, this chapter provides an indication of the BA process that will be followed as well as providing insights into the legislative requirements that have resulted in the need for this process;
- **Chapter 2** provides the legislative framework for the BA process and the context of the proposed development. The legislative framework includes national and provincial legislation as well as planning framework which will have to be considered in the BA process;
- **Chapter 3** details the legislated environmental activities triggered by the proposed development;
- **Chapter 4** provides a detailed description of the adopted Basic Assessment Approach and Methodology for the project;
- **Chapter 5** details the Public Participation Process undertaken for the project. It also summarises key outcomes of the process;
- **Chapter 6** describes the receiving environment associated with the proposed activities;
- **Chapter 7** is a description and comparative assessment of the alternatives that were considered for the project;
- **Chapter 8** discusses the Impact Assessment Methodology;
- **Chapter 9** is a description and assessment of environmental impacts;
- **Chapter 10** provides the Environmental Impact Statement;
- **Chapter 11** discusses the recommendations and conclusion; and
- **Chapter 12** presents a Reference list for the report.

1.9 Assumptions, Gaps and Limitations

The following key gaps, assumptions and limitations were made when conducting the BA:

- The application is limited to the proposed development of the Rocabar access roads (to the Tradeport and future Motor City) as part of the N2 Intersection Upgrade in Kokstad and the associated watercourse crossing (in the form of a culvert); and
- It is assumed that all project related information provided by JG Afrika (Pty) Ltd., and specialist is true and accurate.

Thus, it can be concluded that other than the above, and the information presented in various sections of this report, the information used in this report was adequate for the purposes of the current impact assessment

2 APPLICABLE LEGISLATION, POLICY AND GUIDELINES

In accordance with the EIA Regulations, 2014 (as amended), this chapter provides a review of legislation, policies and guidelines which are applicable to the location of the proposed development . Furthermore, an explanation of the manner in which the proposed development complies with and responds to the legislation and policy context is presented. The contents of this report are based on a review of the information that was available at the time of the compilation of the report. The discussion in this chapter is by no means an exhaustive list of the legal obligations of the applicant in respect of environmental management for the proposed development. This DBAR specifically focuses on key Environmental legislation, policies and guidelines that include an environmental component. These are presented in **Table 4** and **5**.

Table 4: *Applicable legislation*

Title of Legislation, Policy or Guideline:	Administering Authority	Relevance
Constitution of the Republic of South Africa (No. 108 of 1996)	Republic of South Africa	The proposed development falls within the boundaries of South Africa.
Environmental Conservation Act, 1989(No. 73 of 1989)	Department of Forestry, Fisheries and the Environment	This Act has now largely been replaced by NEMA, but certain provisions such as still remain in force including the Noise Control Regulations (GN. 154 of 1992) which regulates the generation of disturbing noise and nuisance noise.
National Environmental Management Act, 1998 (No. 107 of 1998)	Department of Forestry, Fisheries and the Environment	The proposed development has a potential to cause degradation of the environment and as a Duty of care as set out in, section 28, as well as the requirements of sections 24(5) and 44 of NEMA Environmental Authorisation.
National Environmental Management: Biodiversity Act, 2004 (No. 10 of 2004)	Department of Forestry, Fisheries and the Environment	For the management and conservation of biodiversity and the protection of species and ecosystems that may be affected by the proposed development, which warrant national protection. This act provides for the regulated undertaking of restricted activities that, without a permit, may harm listed threatened or protected species or the management of activities that encourage the spread of alien or invasive species.

Title of Legislation, Policy or Guideline:	Administering Authority	Relevance
National Heritage Resources Act, 1999 (No. 25 of 1999)	South African Heritage Resources Agency	Any possible artefacts which could be of cultural or historical significance must be identified.
National Water Act, 1998 (No. 36 of 1998)	Department of Water and Sanitation	Legislation consulted during the impact assessment process to determine the legal requirements relating to the management of water resources, and the water use authorisation requirements applicable to the proposed development.
Occupational Health and Safety Act, 1993 (No. 85 of 1993)	Department of Employment and Labour	To provide for the health and safety of persons at work and for the health and safety of persons about the use of plant and machinery

Table 5: Guideline and Policy Framework

Title of Legislation, Policy or Guideline	Administering Authority	Relevance
Environmental Impact Assessment Regulations, as amended	Department of Forestry, Fisheries and the Environment	An Environmental Authorisation required to undertake the listed activities triggered by the proposed development.
National Development Plan of 2030	National Planning Commission (NPC)	The National Development Plan refers to the country's road network as "South Africa's largest single public asset ..." "National and provincial roads are the prime means of connecting people and moving cargo from small settlements and secondary towns to the centres of economic activity.
Guideline on need and desirability (2017)	Department of Forestry, Fisheries and the Environment	This guideline informs the consideration of the need and desirability aspects of the proposed project.
Integrated Environmental Management Information Series 5: Impact Significance (2002)	Department of Forestry, Fisheries and the Environment	Guideline considering during the identification and evaluation of potential impacts associated with the proposed development, and the reporting thereof in this BAR.

Title of Legislation, Policy or Guideline	Administering Authority	Relevance
Public participation guideline in terms of NEMA (2017)	Department of Forestry, Fisheries and the Environment	The purpose of this guideline is to ensure that an adequate public participation process is undertaken during the BA process.
Ezemvelo KZN Wildlife's Terrestrial Systematic Conservation Plan and Threatened Ecosystems	Ezemvelo KZN Wildlife	<p>The C-Plan systematic conservation plan that identifies and spatially maps Critical Biodiversity Areas (CBAs) required for biodiversity persistence and to inform protected area planning and rural land-use planning in the province. For successful implementation of the C-Plan, the CBAs need to be incorporated at all levels of spatial development planning.</p> <p>The proposed development is not located within any areas identified as CBA's or within a threaten ecosystem.</p>
Greater Kokstad Local Municipality Spatial Planning and Land Use Management Amendment By-Law	Greater Kokstad Local Municipality	To provide for the Town Planning and provisions for the Spatial Planning and Land Use Management Act (Act No. 16 of 2013) within the GKM.

3 ENVIRONMENTAL ACTIVITIES TRIGGERED BY THE PROPOSED DEVELOPMENT

3.1 Applicable Listed Activities according to NEMA EIA Regulations, 2014 (as amended)

In terms of section 24(2) of NEMA, the Minister and or any MEC in concurrence with the Minister may identify activities which require authorisation as these activities may negatively affect the environment. Environmental Impact Assessment (EIA) Regulations (as amended) were promulgated in December 2014 in terms of Section 24(5) and Section 44 of the National Environmental Management Act (NEMA), Act 107 of 1998 and consist of the following:

- Environmental Impact Assessment Regulations provides details on the processes and procedures to be followed when undertaking an Environmental Authorisation process;
- Listing Notice 1 define activities which will trigger the need for a Basic Assessment process;
- Listing Notice 2 define activities which trigger a Scoping and EIA process. If activities from both Listing Notice 1 and/or Listing Notice 2 and Listing Notice 3 are triggered, then a Scoping and EIA process will still be required.
- Listing Notice 3 define certain additional listed activities for which a Basic Assessment process would be required within identified geographical areas.

The above regulations were reviewed to determine whether the proposed development will trigger any of the above listed activities, and if so, what EIA process would be required. The triggered listed activities are presented in **Table 6** and will require authorisation in terms of Listing Notice 1 of the NEMA EIA Regulations, 2014 (as amended). A Basic Assessment Process will be required to be undertaken in line with all the requirements of the NEMA EIA Regulations, 2014 (as amended).

Table 6: Triggered Listed Activities

Government Notice & Activity Number	Activity in writing as per Listing Notice 1	Applicability
Activity 19 , Listing Notice 1 of 2014 (as amended)	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.	The proposed development will require the construction of a culvert across an existing watercourse. During the construction process, dredging, excavation, infilling of 10m ³ or more of material within or in close proximity to the watercourse will occur. This Listed Activity is therefore triggered.

3.2 Triggered Water Uses according to the National Water Act (Act No. 36 of 1998)

As per the National Water Act (Act No. 36 of 1998), should an identified activity trigger a Water Use, as defined in Section 21 of the Act, a Water Use Licence or a General Authorisation registration will be required prior to the activity being undertaken. The Competent Authority in this regard is the Department of Water

and Sanitation. As part of the proposed development, a culvert will be constructed across an existing watercourse and the access roads will be constructed within the regulated areas of a watercourse. The following activities of the NWA will therefore be triggered:

- Section 21 (c): impeding or diverting the flow of water in a watercourse
- Section 21 (i): altering the bed, banks, course or characteristics of a watercourse

Terratest (Pty) Ltd. has been appointed to undertake the necessary processes required to register the applicable Water Uses for the project. In this regard, a Pre-Application Meeting will be held with the Department of Water and Sanitation to ascertain their requirements and to confirm the Water Uses to be applied for. The necessary Water Use Authorisation process will be conducted as per the National Water Act (Act No. 36 of 1998) and does not fall within the mandate of NEMA and in turn the DFFE. As such, this aspect of the project will not be considered further in this Application for Environmental Authorisation.

4 BASIC ASSESSMENT APPROACH AND METHODOLOGY

4.1 Project Proponent and Environmental Assessment Practitioner

In accordance with the Regulation 13 of the EIA Regulations (as amended), the proponent is required to appoint an independent registered Environmental Assessment Practitioner (EAP) to undertake the Environmental Impact Assessment (EIA) process for any activities regulated in terms of the NEMA. As such, JG Afrika (Pty) Ltd., on behalf of SANRAL, has appointed Terratest (Pty) Ltd. an independent consulting firm to undertake the Basic Assessment process.

It is worth noting that the Applicant and the Developer for proposed development is SANRAL. However, development is jointly funded by SANRAL and the Department of Transport in KwaZulu Natal. Both Terratest (Pty) Ltd. and associated specialists are not subsidiaries of the proponent or have vested interested in the proposed development. The details of the project proponent and EAP are provided on **Table 7** and **8**.

Table 7: Details of the Proponent/Applicant

Organisation	South African National Roads Agency SOC Ltd. (SANRAL)	
	Name and Designation	Contact Details
Applicant's Representative	Name: Withheld due to POPIA. Information only available on written request Designation: Project Manager	Withheld due to POPIA. Information only available on written request

Table 8: Particulars of the EAP associated with the project

	Name and Designation	Contact Details
Report Author	Name: Ntsebo Mkhize Designation: Senior Environmental Assessment Practitioner	Tel: (033) 343 6700 Email: MkhizeN@terratest.co.za

A copy of the EAP's CV is attached as **Appendix H**.

4.2 Specialist Studies

In accordance with the requirements of Appendix 6 of the NEMA EIA Regulations, 2014 (as amended), the recently published Government Notice 320 (dated 20 March 2020) and Government Notice 1150 (dated 30 October 2020) in terms of NEMA and the National web-based environmental screening tool, the specialist studies indicated in **Table 9** were undertaken as part of the Basic Assessment process for the proposed development. A copy of the DFFE Screening Tool report has been attached to **Appendix C**

Table 9: Details of Specialist studies and consultant

Specialist Study	Company Name
Vegetation Assessment	Terratest (Pty) Ltd
Wetlands Assessment	Terratest (Pty) Ltd
Heritage Impact Assessment (Phase 1) and Palaeontological Impact Assessment	Umlando: Archaeological Surveys and Heritage Management
Geotechnical Investigation	Terratest (Pty) Ltd Vegetation Assessment (the study was not commissioned by the EAP but by the Project Engineers before the EAP was involved in the project)

The specialist reports are attached as **Appendix F** of this report.

4.3 Basic Assessment Methodology

The methodology for undertaking of a Basic Assessment Process in line with the NEMA EIA Regulations, 2014 (as amended) is provided below and the organogram of the BA Process is provided in **Figure 9** for reference purposes.

i. EDTEA Pre-application Meeting

A Pre-Application Meeting, through the use of MS Teams, was held with the officials of the DFFE on the 19th of May 2022. The minutes thereof are included in **Appendix D**. The purpose of the Pre-Application Meeting was to introduce the project to the DFFE and present and confirm the relevant Listed Activities and Specialist Studies pertinent to the proposed development. The meeting also served to present the history of the project in terms of the issues around the application that was previously submitted to EDTEA.

ii. Registration of the Application with the Competent Authorities

An Application Form for Environmental Authorisation has been completed and will be submitted together with the DBAR to DFFE for review and consideration.

iii. Public Participation Process

A Public Participation Process (PPP) consistent with Chapter 6 of the NEMA EIA Regulations, 2014 (as amended) was followed for the project. In addition to Chapter 6 of the NEMA EIA Regulations, 2014 (as amended). The details of the PPP undertaken to date is discussed in detail in Chapter 5 of this report.

iv. Draft Basic Assessment Report

This Draft Basic Assessment Report has been compiled and will be issued out for Public and Authority review for the legislated period of at least 30 days. It is important to highlight that the review period was determined in line with the reckoning of days as defined in Regulation 3 of the NEMA EIA Regulations, 2014

(as amended). The following commenting authorities will be provided with a copy of the report in either an electronic or hardcopy format:

- KwaZulu Natal Provincial Government;
 - EDTEA: Harry Gwala District Office
 - Department of Water and Sanitation
 - Department of Transport
 - KwaZulu-Natal Amafa and Research Institute
 - Ezemvelo KZN Wildlife
- South African National Roads Agency (SANRAL);
- Harry Gwala District Municipality; and
- Greater Kokstad Local Municipality and the Ward 6 Councillor.

v. Other Supporting Documents to the Basic Assessment

As part of the Basic Assessment process, an Environmental Management Programme (EMPr), has been compiled in line with Appendix 4 of the NEMA EIA Regulations, 2014 (as amended). The EMPr provides guidelines to SANRAL as the Project Developers, the Contractor as well as various other members of the technical team on how best to implement the mitigation measures for the proposed activity the site in order to avoid adverse environmental impacts. Refer to **Appendix G** of this Basic Assessment Report for the EMPr.

vi. Issuing of the Environmental Authorisation

Following the review of the Final Basic Assessment Report, DFFE will issue the SANRAL, as the Applicant, with their decision on the application, which could either be the rejection of the application or an approval for which an Environmental Authorisation (EA) will be issued in terms of Section 24 of NEMA. This Environmental Authorisation will be issued to the Applicant. It should be noted that the EA may state that the activity may not commence before certain conditions are complied with. The EA may also include any other conditions that DFFE considers necessary for the protection of the environment.

vii. Appeal Period

After a decision has been reached by DFFE, Chapter 2 of the National Appeal Regulations of 2014 makes provision for any affected person to appeal against the decision. Within 20 days of being notified of the decision by DFFE, the appellant must submit the appeal to the appeal administrator. An appeal panel may be appointed at the discretion of the delegated organ of state to handle the case. The appeal panel will then submit its recommendations to that organ of state for a final decision on the appeal to be reached.

Terratest (Pty) Ltd. will communicate the decision of the DFFE and the manner in which appeals should be submitted to the Minister and to all I&APs as soon as reasonably possible after the final decision has been received.

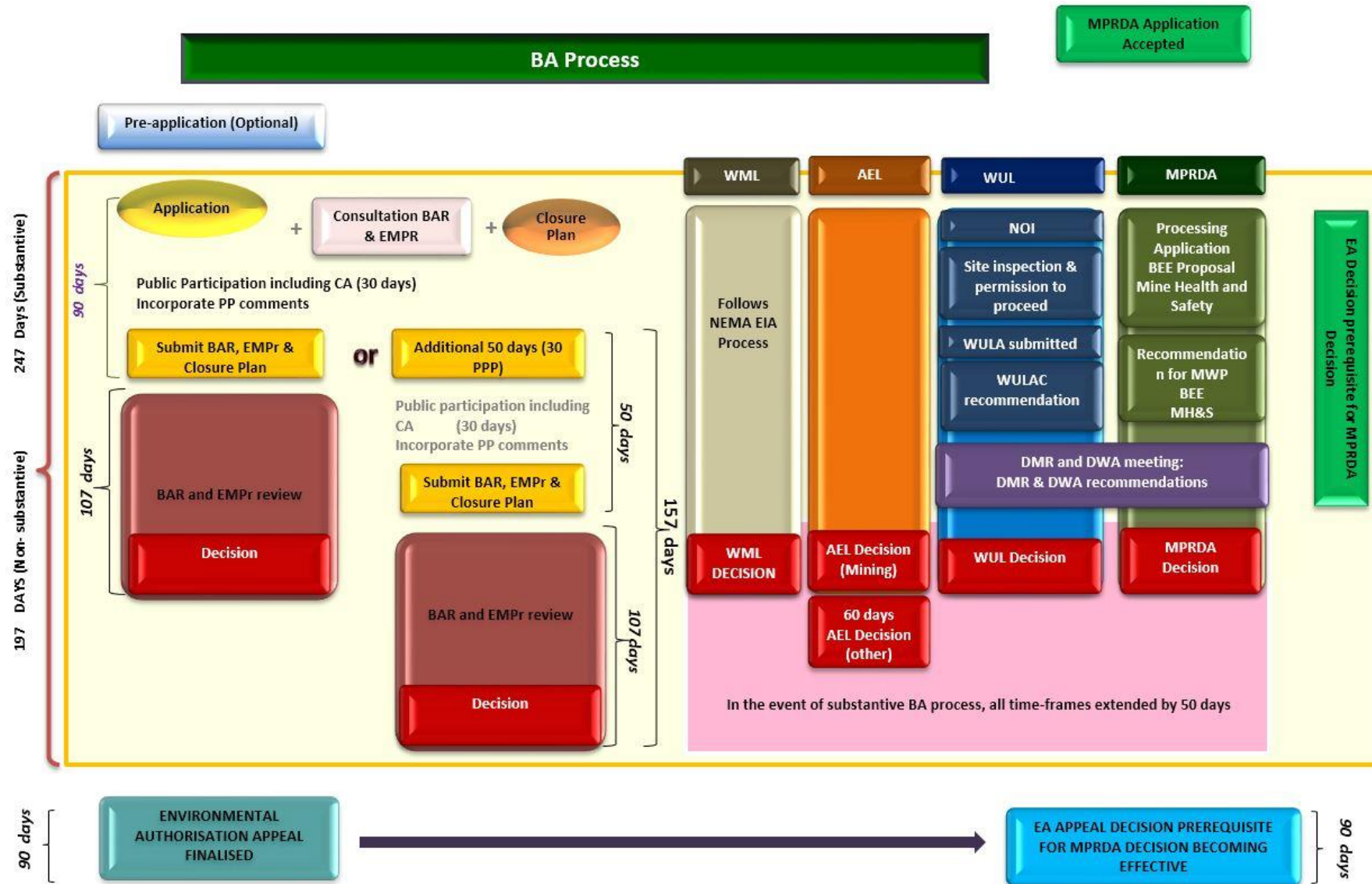


Figure 9: Organogram of the BA Process

5 PUBLIC PARTICIPATION PROCESS

The Public Participation Process (PPP) is conducted to afford any I&AP sufficient opportunity to provide comments; and to also provide the decision makers sufficient information in order to ensure an informed decision making. To fulfil the necessary public participation required as part of the BA Process, the activities associated with stakeholder engagement were and are in the process of being conducted by the EAP. These are presented in this section. *It is important to mention that when the initial application for EA was submitted to the EDTEA, public participation commenced in 2021 and included the below methods of notification. The PPP documents generated under the EDTEA submission are presented under **Appendix E5**.*

The below summarises the PPP undertaken under the current EDTEA Application.

(b) Newspaper Advertisement

While a newspaper advertisement was published at the initial onset of the project (i.e. in 2021) to notify the general public of the BA process, an additional advert was placed in a newspaper. During the current phase, an advertisement was published in English on the 01st of September 2022 on page 9 of the *Kokstad Advertiser* newspaper. Proof of the placement of the relevant advertisement is attached as **Appendix E1**.

(c) Site Notice Boards

Five (05) site notice boards were placed on site and adjacent areas on the 25th of August 2022. The notice boards were written in English and isiZulu. The purpose of the site notices was to inform I&APs about the proposed BA Application. The details of the EAP were also provided should any member of the public require additional information or wish to register on the database for the I&APs in the order to stay informed about the Application. The GPS coordinates on the placement of these notices is provided on **Table 10**. **Appendix E1** of this report presents a copy of the Site Notice Board map showing the locations of the placement.

Table 10: Details of the placement of site notices

Site notice position	GPS Co-ordinates
Site Notice Board 1	30°33'45.42"S; 29°26'6.26"E
Site Notice Board 2	30°33'54.60"S; 29°26'4.01"E
Site Notice Board 3	30°33'46.20"S; 29°25'48.18"E
Site Notice Board 4	30°33'53.65"S; 29°25'57.07"E
Site Notice Board 5	30°33'57.62"S; 29°26'2.54"E

(d) Written Notification to the Affected Parties and Organs of State

i. Interested and Affected Parties (I&APs)

A register of I&APs was compiled as per Section 42 of the EIA Regulations, 2014 (as amended). This included all relevant authorities (i.e., government departments, the local municipality, the district municipality, relevant conservation bodies), as well as the relevant Ward Councillors and Traditional Authority. This register was regularly updated to include those I&APs responding to the newspaper advertisements, site notice boards and Notification Letters. A copy of the I&AP Register is included as **Appendix E4** of this report.

ii. Notification Letter

A revised Notification Letter (i.e. 2021 version revised) was compiled and circulated to all identified I&APs by email. The purpose of the Notification Letter was to provide preliminary information regarding the project and its location. Furthermore, the Notification Letter invited preliminary comments from I&APs and requested those notified to provide details of other potential I&APs which they may be aware of.

The affected landowner and the Ward 6 Councillor were also notified of the proposed development via email.

A copy of the Notification Letter and proof of notification of the I&APs is included as **Appendix E2** and **E3** of this report.

(e) Public Meeting

A public meeting was not held due to limited interest in the proposed development.

(f) Comments Received

Following the publication of newspaper advertisements, placement of on-site notice boards and distribution of notification letters under the initial notification of 2021 and the additional notification of 2022, the key comments presented received by the EAP are presented in **Table 11**. Please refer to **Appendix E5** for original comments and the complete Comments and Responses Report.

Table 11: I&AP comment received

Date	Comment	Response
03/12/2021 received via email	<p>I am responding to the publication in the Kokstad Advertiser on the 2nd of December 2021 in respect of the proposed development of the “Rocabar Access roads”.</p> <p>I, hereby wish to register on behalf of Mount Currie 1-Stop, Kokstad as an interested and affected party and my contact details are reflected below.</p> <p>Kindly provide clarity on the following description in the publication “trade port and future Motor City”.</p>	<p>I acknowledge receipt of your email and thank you for registering your interest in the project.</p> <p>The proposed construction of the Rocabar access roads consist of the following:</p> <ul style="list-style-type: none"> • Road 1: New road section of approximately 370m with an initial maximum road width of 18.5m (4m x 3.5m wide lanes, with a 1.5m shoulder on either sides and a 1.5m wide sidewalk on one side). Phase 1 of the construction the road will taper from 4 lanes (18.5m) to 2 lanes (11.5m) including shoulders and sidewalk. • Road 2: Second new access roads approximately 310m x 10m wide (2 x 3.5m wide lanes, with a 1.5 m shoulder on either sides). • Stream/wetland crossings on a 2 lane (11.5m) culvert. The culvert will be widened in the future to accommodate 4 lanes (18.5m). <p>Please note that Road 1 ends at the existing Tradeport while Road 2 ends at the future Motor City. Please refer to the attached notification sheet with the Google Earth image showing the layout of the two access roads and the culvert.</p>
10/12/2021 received via email	Where will the Heathmans Kokstad (Pty) Ltd customers travel to reach the business?	Customers traveling to Heathmans Kokstad (Pty) Ltd will use one the access roads which form part of the proposed development of the Rocabar access roads.
05/12/2022 received via email	Existing entrance to be closed. Proposed new entrances onto property coming off Rocabar access roads.	The comment is noted. This is the intention of the project as direct access from the R56 will no longer be possible after the upgrade of the R56.

6 DESCRIPTION OF THE RECEIVING ENVIRONMENT

This Chapter serves to describe the environmental setting of the area identified whilst the environmental issues that were identified to be of significance are discussed in **Chapter 9** of this report. The Chapter will also provide a description of the overall character and other sensitivities that were identified in the surrounding environment. It must be highlighted that only aspects that are relevant to the project in terms of the environmental setting as well as the nature of the proposed activities are discussed in this section of the report. This Chapter will present both the Biophysical and the Socio-Economic Conditions of the site and its geographical setting.

6.1 Biophysical Aspects

Specialists' studies such as the Vegetation Assessment, Wetland Assessment, Heritage Impact Assessment and a Geotechnical Investigation have been undertaken to determine potential environmental sensitivities within the study area. These specialist studies are attached as **Appendix F**. The following description of the site environmental conditions is based on the site observations and the review of the specialist studies. The impacts that are associated with the development of the access roads have been identified and included in this Basic Assessment Report and the Environment Management Programme (EMPr) that have been prepared for this project. The EMPr is attached as **Appendix G**.

The project site for the proposed development is largely vacant. However, the immediate area proposed for the starting point for *Road 1* (where the access roads is linked to the R56 road) and the area where *Road 2* transects with the existing access roads to the industrial complex, is dominated by large Gum trees providing screening along the fence of the private residential property and livestock pen, respectively (**Figure 10**). Several formalised stormwater management infrastructure was also observed on the platform embankment area where the construction of a culvert across a watercourse is proposed. Refer to **Figure 11** and **12**.

Elsewhere around the site, livestock is kept for sale, either in pens or free grazing on the rough veld and in some cases, the vegetative grass cover was observed to have been burnt (**Figure 13** and **14**). Car tracks and footpaths were also observed across the project site (**Figure 15**). Dumping of waste soil and general waste is also being done in the area near Road R56 as shown in **Figure 14**.



Figure 10: Gum trees observed within the project site



Figure 11: Area proposed for the construction of the culvert across the watercourse



Figure 12: Formalised stormwater management infrastructure on the platform embankment in Figure 11



Figure 13: Livestock grazing observed within the project site



Figure 14: Burnt vegetation cover



Figure 15: Car tracks and footpaths across the project site



Figure 16: Evidence of littering and dumping of general waste within the project site

6.1.1 Geology and Soils

According to the 1:250 000 scale geological map sheet, the site is underlain by a dolerite sill, as well as fine grained, grey sandstone which alternates with is described as grey to yellowish brown, highly weathered, thinly bedded, with a soft rock hardness, mudstone of the Adelaide subgroup which forms part of the Beaufort Group. The mudstone was observed intercalated with thin sandstone lenses. **Figure 17** shows the Geology Map extract which covers the project site for the proposed access roads.

According to the Geotechnical Investigation undertaken by the Terratest (Pty) Ltd. the sandstone bedrock (**Figure 18**) is intersected at an average depth of 1.20m at the culvert position and it has been profiled as grey, brown, moderately weathered, highly fractured, medium grained, with a hard rock strength. The Geotechnical Investigation has been attached to **Appendix F4** of this report.

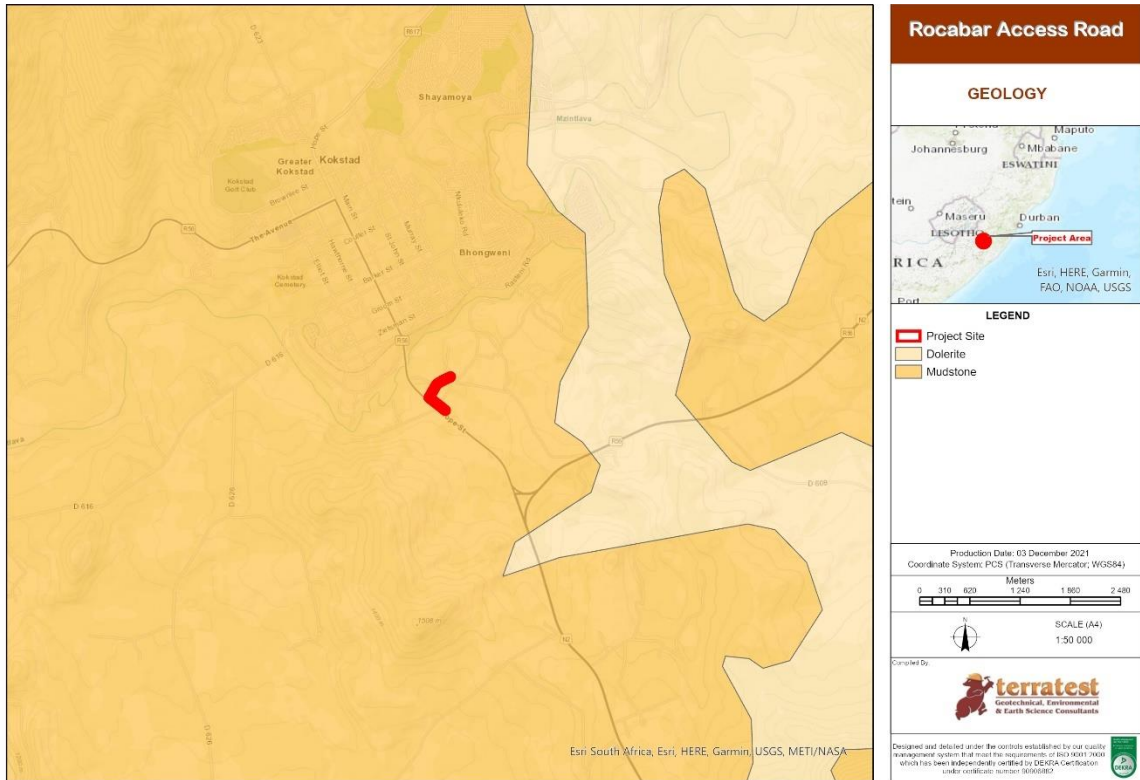


Figure 17: Geology Map of the project site



Figure 18: Sandstone bedrock at the culvert position

6.1.2 Regional Vegetation and Conservation Plan Area

The KwaZulu-Natal Biodiversity Spatial Planning (KZN BSP) defines the areas of land in the form of Critical Biodiversity Areas (CBAs) and Ecological Support Areas (ESAs) required to ensure the persistence and conservation of biodiversity within the province (EKZNW, 2016). The project site contains no Critical Biodiversity Areas, no Threatened Ecosystems, no Landscape Corridors, and no Ecological Support Areas as shown in **Figure 19**; it is therefore not critical for the support of conservation important biota.

Based on the Terrestrial and Aquatic Vegetation Assessment which has been undertaken by Terratest (Pty) Ltd. and attached to **Appendix F1**, the nearest Important Bird and Biodiversity Areas are the Mount Currie Nature Reserve and the Penny Park Wetland. Both are more than 5 km away. The study area is not within the 5km buffer of any Biodiversity Stewardship Area, or a conservation area listed in the National Environmental Management: Protected Areas Act (Act No. 57 of 2003). The edge of the Mount Currie Nature Reserve 5 km buffer is not far away from the project site but is within the town of Kokstad.

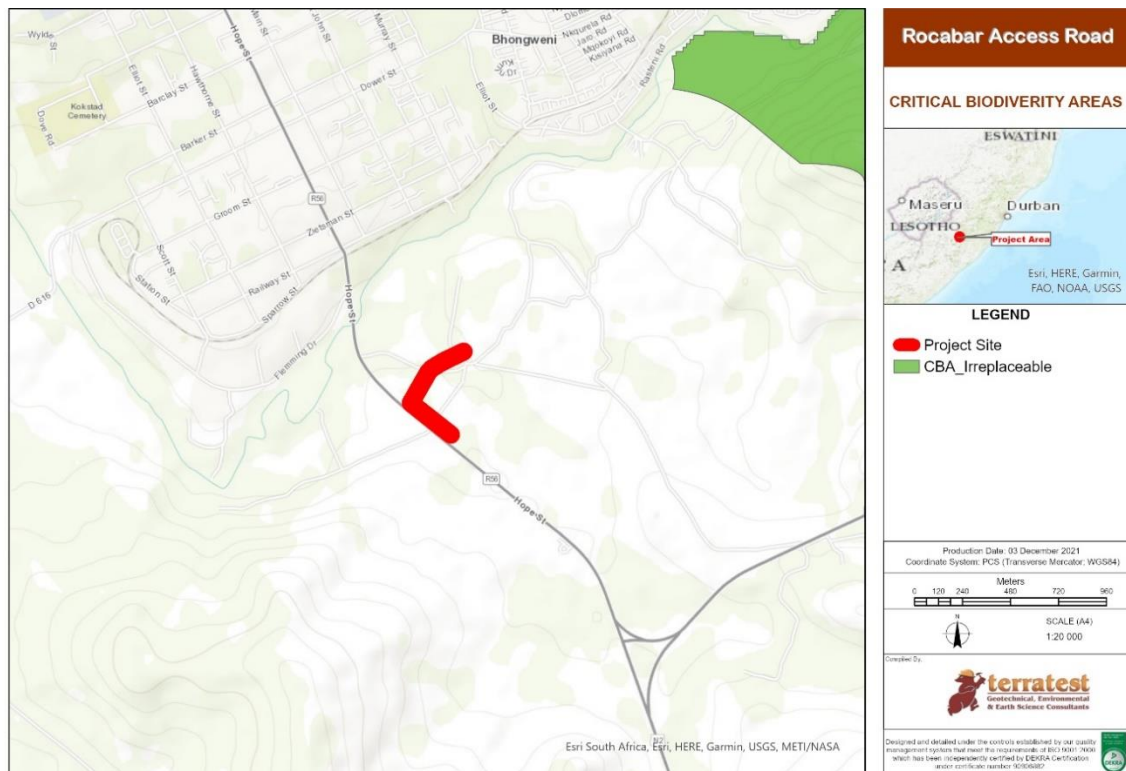


Figure 19: C-Plan of the project site

The SANBI VEGMAP (2018) database indicates that whole project area lies within East Griqualand Grassland (Gs 12) (**Figure 20**). This type is described by Mucina and Rutherford, (2006) as a “*Hilly country with slopes covered by grassland in places , with patches of bush clumps with *Leucosidea sericea* (only wet sites) or *Diospyros lycioides*, *Acacia karroo* and *Ziziphus mucronata* in low-lying and very dry sites.*” Its conservation status is rated as being “Vulnerable” due to extensive losses that have already taken place as a result of agricultural activities and urban sprawl. Less than 1% is formally conserved but a part of the conserved area lies in the nearby Mount Currie Nature Reserve. The only plant species of concern listed for the vegetation type is *Encephalartos friderici-guilielmi* which is found in sub-escarpment grasslands and not present at the study site.

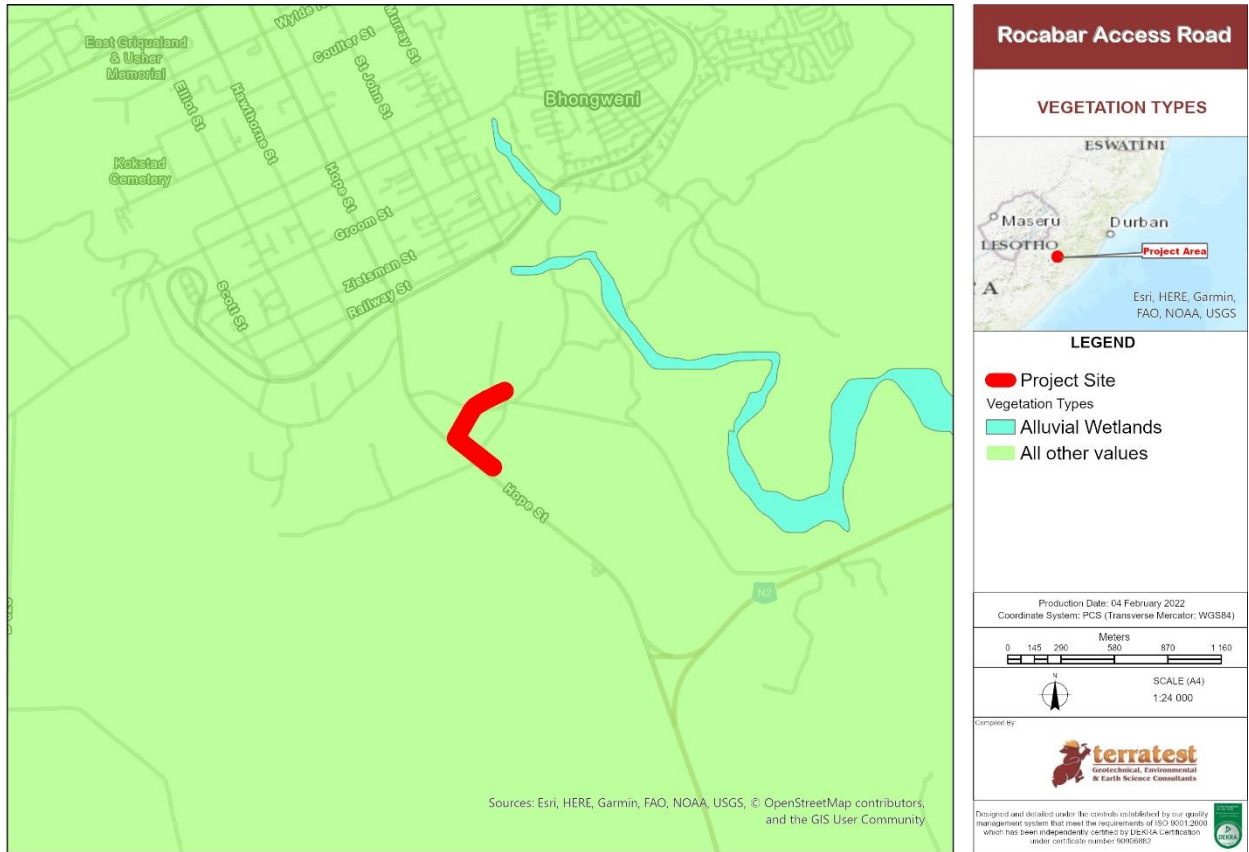


Figure 20: Vegetation Map of the study site

The project site is severely degraded with sparse vegetation in most places. The remains of contoured crop fields are visible over extensive areas and although they have not been cultivated for many years, they have never developed any substantial vegetation cover. Woody vegetation is almost entirely absent other than the observed alien trees including Gums, Willows, and Black Wattle. There is a riparian strip of woody species along the Mzintlava River, however this species does not contain indigenous species. The indigenous terrestrial plant species seen are listed in **Table 12** and the alien plant species in **Table 13**. Examples of some of the alien plants’ species are shown in **Table 14**.

Table 12: Indigenous terrestrial plant species seen in the study area

Scientific Name	Common Name
<i>Acalypha peduncularis</i>	Brooms and Brushes
<i>Albucca setosa</i>	Small White Albucca
<i>Arctotis arctotoides</i>	Mat-Forming Herb
<i>Berhkeya multijuga</i>	Spiny Berg Thistle
<i>Berhkeya speciosa</i>	Slender Berhkeya
<i>Chaetacanthus burchellii</i>	Fairy Stars
<i>Cynodon dactylon</i>	Kweek Grass
<i>Diclis reptans</i>	Dwarf Snapdragon
<i>Falckia oblonga</i>	White Carpet
<i>Felicia filifolia</i>	Fine-Leaved Aster
<i>Gazania krebsiana</i>	Common Gazania
<i>Gomphocarpus physocarpus</i>	Hairy Balls

Scientific Name	Common Name
<i>Helichrysum aureonitens</i>	Golden Everlasting
<i>Hyparhenia hirta</i>	Thatch Grass
<i>Hypoxis angustifolia</i>	Narrow-Leaved Star Flower
<i>Ipomoea cf. crassipes</i>	Leafy-Flowered Ipomoea
<i>Lactuca inermis</i>	Small Marsh Daisy
<i>Pentanisia angustifolia</i>	Narrow-Leaved Pentanisia
<i>Senecio cf. latifolius</i>	Molteno-Disease Plant
<i>Senecio madagascariensis</i>	Senecio
<i>Solanum incanum</i>	Bitter Apple
<i>Stachys aethiopica</i>	African Stachys
<i>Xysmalobium cf. undulatum</i>	Milkwort

Table 13: Alien plant species seen in the study area

Scientific Name	Common Name	Invader Category
<i>Agave sp.</i>	Sisal	Category 2
<i>Acacia mearnsii</i>	Black wattle	Category 2
<i>Argemone ochroleuca</i>	White Mexican poppy	Category 1b
<i>Boerhavia diffusa</i>	Spiderling	
<i>Canna indica</i>	Canna	Category 1b
<i>Centella asiatica</i>	Marsh pennywort	Wetland species
<i>Cirsium vulgare</i>	Scotch thistle	Category 1b
<i>Eucalyptus grandis</i>	Gum Tree	Category 2
<i>Euphorbia prostrata</i>	Creeping Milkweed	
<i>Hypochaeris radicata</i>	Hairy wild lettuce	
<i>Modiola caroliniana</i>	Red-flowered mallow	
<i>Oenothera rosea</i>	Pink evening primrose	
<i>Pennisetum clandestinum</i>	Kikuyu grass	
<i>Plantago lanceolata</i>	Narrow-leaved ribwort	In both dry and wet areas
<i>Richardia brasiliensis</i>	Tropical richardia	
<i>Salix mucronata</i>	Willow	Wetland/ Category 2
<i>Solanum sisymbriifolium</i>	Dense-thorned bitter apple	Category 1b
<i>Sonchus oleraceus</i>	Sowthistle	
<i>Tagetes minuta</i>	Khaki weed	

Table 14: Examples of some of the alien plant species on site

		
<p>Scientific name: <i>Acacia mearnsii</i> Common name: Black wattle</p>	<p>Scientific Name: <i>Opuntia sp.</i> Common Name: Prickly Pear</p>	<p>Scientific Name: <i>Sonchus oleraceus</i> Common Name: Sowthistle</p>
		
<p>Scientific name: <i>Eucalyptus grandis</i> Common name: Gum Tree</p>	<p>Scientific name: <i>Tagetes minuta</i> Common name: Khaki weed</p>	<p>Scientific name: <i>Solanum sisymbriifolium</i> Common name: Dense-thorned bitter apple</p>

6.1.3 Hydrological and Aquatic Characteristics

The project site lies in the Sub-Escarpment Grassland Group 6 wetlands and is located in the DWS' Quaternary Catchment T32, which forms part of the Mzimvubu-Tsitsikamma Water Management Area (WMA). The catchment is drained by the Mzimvubu River, which arises from the summit of the Drakensberg at an elevation of 2500mm and flows south, where it discharges into the Indian Ocean via the Mzimvubu Estuary. Refer to **Figure 21** for the hydrology Map of the project site.

The Mzintlava River presented in **Figure 21 and 22** is listed in the NFEPA rivers database and is assigned to PES Class B (Largely Natural) and is listed as a Fish Corridor. According to the Wetland Assessment conducted for the proposed development and attached to **Appendix F2**, the latter designation (of a Fish Corridor) is misleading as the river has a poor indigenous fish assemblage and there are waterfalls as well as artificial barriers both upstream and downstream of the project site.

The NFEPA and Ezemvelo KZN Wildlife wetland databases show much the same features in the general area around the project site with the only difference being that the NFEPA data includes artificial features such as farm dams, wastewater treatment works while the Ezemvelo KZN Wildlife mapping does not include them. Neither of the two datasets shows any wetland features within 500 m of the proposed roads. However, it is known that there are wetlands in the area as they are visible on Google Earth, and it was evident during the ground truthing exercise for the Wetland Assessment multiple channels of the drainage line which passes through the area very strongly suggest that the whole area was once a wetland. It is surmised by the landform and from observations on other systems in the general area that it would have been an Unchannelled Valley Bottom system. However, as a result of the human activities there, including deliberate drainage, it is now a Channelled Valley Bottom system.

Downstream of the road which leads to the Tradeport complex is an old low-level concrete structure which may have caused the characteristics of the wetland change to some extent. The water passes through a number of concrete pipes (**Figure 23**) and so the flows are very confined as a result. The primary channel becomes very much larger and deeper and appears to have been artificially enlarged in places. The additional depth takes the base of the channel down to the bedrock and a few shallow pools of water were seen. These conditions appear to pre-date the Tradeport bridge.

Note was also taken of the Unchannelled Valley Bottom wetland which approaches the study area from the southern side. This system passes under the R56 and continues in a shallow ditch as it approaches the area where the proposed road routes are located. At that point it flows into the old crop lands and its structure is almost completely eradicated. Its flows change route to either pass around the old croplands, or through them. In the latter instance they tend to puddle behind contour ridges, but this situation is not natural.

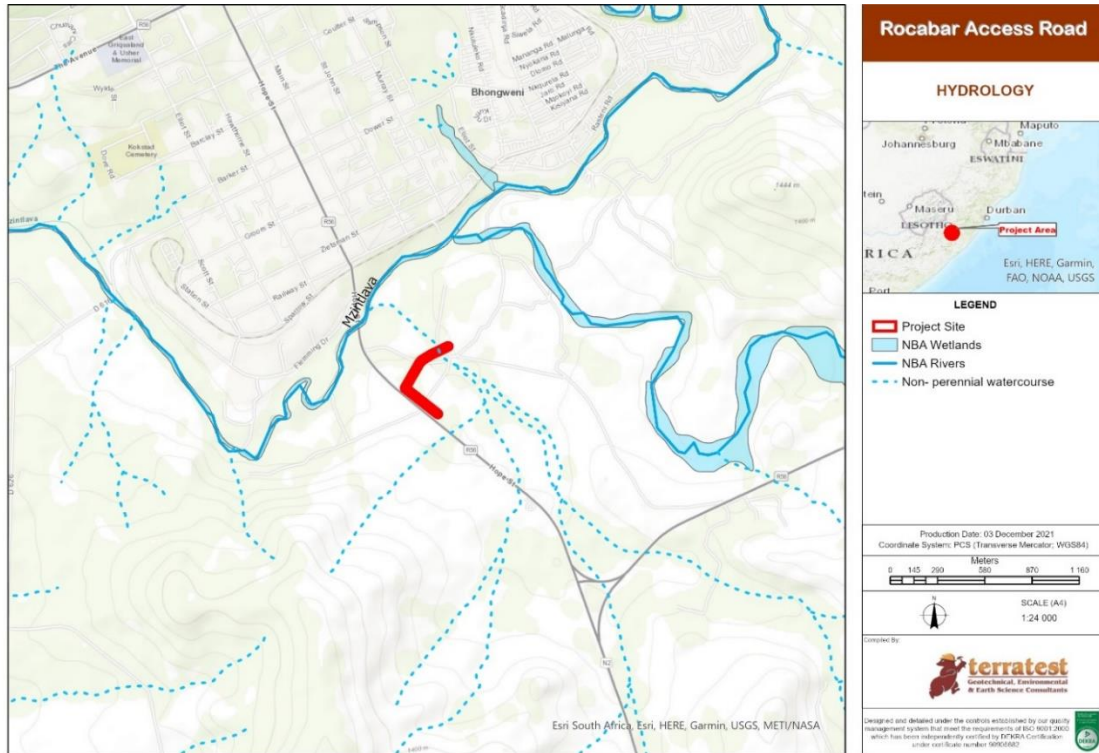


Figure 21: Hydrology Map of the project site

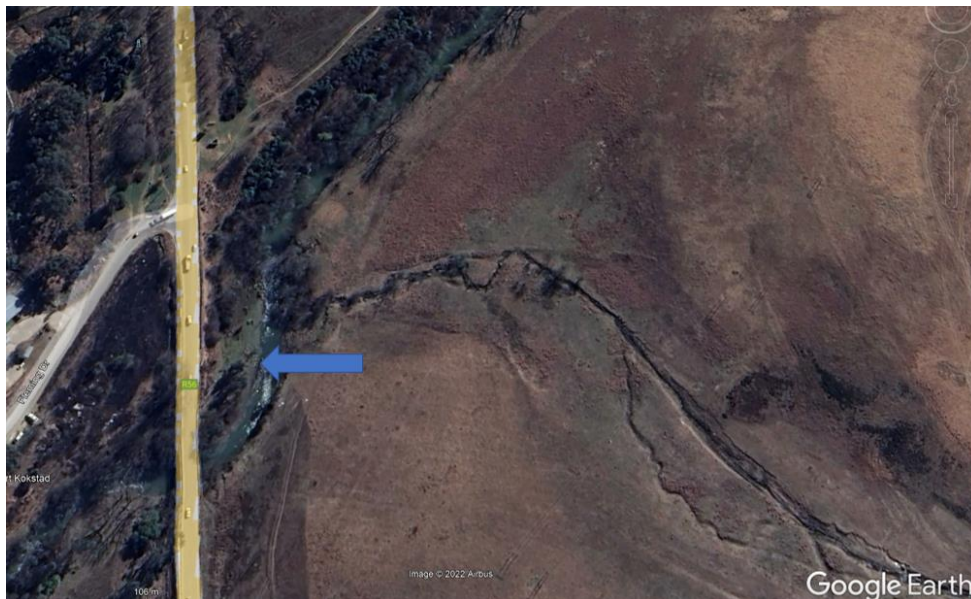
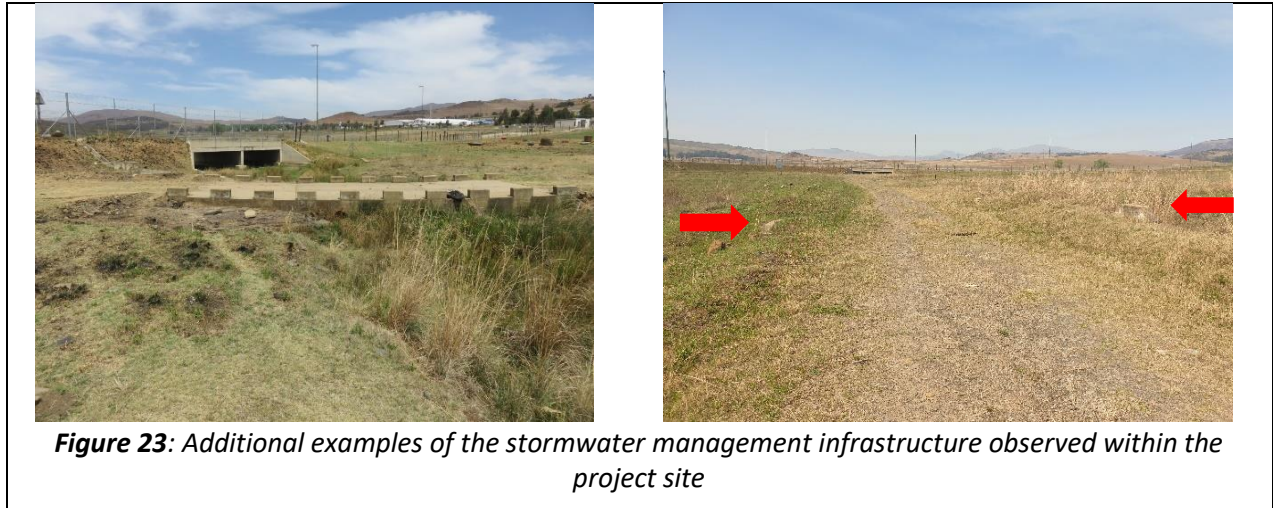


Figure 22: An aerial view of the Mzintlava River (blue arrow) showing wetland flowing in from the south-east



6.1.4 Heritage Features

A Heritage Impact Assessment was undertaken by Umlando: Archaeological Surveys and Heritage Management, for the proposed development and a copy of the report is attached to **Appendix F3**. The desktop study noted that there had been previous archaeological and palaeontological surveys in areas adjacent to the proposed development. The archaeological survey along the R56 did not locate any heritage material while the original Krantz Kop farmhouse was located approximately 2km east of the project site.

6.1.5 Palaeontological Features

The project site is in an area of high palaeontological sensitivity; a Palaeontological Impact Assessment Umlando: Archaeological Surveys and Heritage Management as part of the HIA report attached to **Appendix F3**. According to the Heritage specialist, the Adelaide Subgroup geological formation, which is underlaid by the project site, was also identified by Dr Groenewald (Anderson, 2012) on the Farm Krantzkop 2km to the east of the project site, and by Dr Gees (2011) along the R56.

The Adelaide Subgroup is highly productive as far as fossils are concerned. Fossils include plant fossils of Glossopteris and vertebrate fossils of the Dicynodon and Lystrosaurus Assemblage zones. Both reports recommended that a PIA is undertaken if an unweathered bedrock is encountered. The geotechnical report compiled for the project site by Terratest (2019) notes that the affected area is predominantly composed by alluvial soils. Only the area where a culvert will extend into the sandstone deposits.

According to the specialist, based on experience and the lack of any previously recorded fossils from the area, it is extremely unlikely that any fossils would occur. Therefore, it is recommended that no palaeontological site visit is required unless fossils are found during any phase of the project.

6.2 Socio-Economic Conditions

The Greater Kokstad Local Municipality is a Category B municipality situated on along the western border of the Harry Gwala District of KwaZulu-Natal. This municipality covers an area of approximately 2 680 km²

and is one of the four (4) local municipalities that makes up the Harry Gwala District Municipality. Furthermore, this municipality is bordered by Dr Nkosazana Dlamini-Zuma Municipality, Umzimkhulu Municipality, uMuziwabantu Municipality, Umzimvubu Municipality and Matatiele Municipality to the north, east, southeast, south, and west, respectively. It is also bordered by the Lesotho hinterland to the north-west.

The Greater Kokstad Local Municipality consists of ten (10) wards and has one (1) major town centre which is the town of Kokstad. In terms of section 18(3) of the Local Government: Municipal Structures Act (Act No. 117 of 1998), the MEC responsible for local government has determined that the municipal council consists of nineteen (19) councillors. Traditional leaders are not recognised within the Greater Kokstad Municipality and are therefore not allowed to participate in the proceedings of the council in terms of Section 81(1) of the Municipal Structures Act (No. 117 of 1998).

According to Statistics South Africa (2011), the largest portion of the population within the Greater Kokstad Local Municipality is represented by the Black African racial group (87%), followed by the Coloured racial group at 8% and a relatively small group of Whites and Indians/Asians (1%). The dependency ratio for Greater Kokstad is 50. There are 19 140 households in the local municipality, with an average of 3,4 persons per household. About 85% of households are informal dwellings and approximately 36% of residences are owned and fully paid off. Approximately 98% of households have access to piped portable water from either inside the dwelling, inside the yard or water on a community stand. Access to proper sanitation is high with over two thirds having access to a flush toilet connected to the sewerage system.

The Greater Kokstad Municipality is recognised as the lead economic node within the District of Harry Gwala. By virtue of its strategic location as the provincial gateway to the Eastern Cape, the town of Kokstad, which is the administrative, commercial, trade and financial services centre of the Greater Kokstad Municipality, has developed to become the main commercial services centre and principal economic hub of the Harry Gwala District Municipality.

The local economy of Greater Kokstad has benefited significantly through long-established trade and services networks with the neighbouring smaller “feeder” towns that rely upon the goods and services available at the town of Kokstad; such as Rietvlei, Harding, Underberg and Umzimkhulu in the province of KwaZulu-Natal, and the surrounding towns of the Eastern Cape, such as Matatiele, Cedarville, Lusikisiki, Flagstaff, Mt Ayliff, Mt Frere, Ntabankulu and Matatiele; all of which have contributed immensely to the development of the Town of Kokstad. The main economic sectors of the municipality include: - Agriculture (36%), trade (20%), community services (18%), finance (16%), transport (4%), manufacturing (3%), and electricity (2%). The unemployment rate of the local municipality is however sitting at 28,9% (Census, 2011).

7 PROJECT ALTERNATIVES

In terms of the EIA Regulations, 2014 (as amended), feasible and reasonable alternatives must be identified and considered within the Basic Assessment process. According to the above-mentioned, an alternative is defined as “...in relation to a proposed activity, means different means of meeting the general purpose and requirements of the activity, which may include alternatives to the:

- a. property on which or location where it is proposed to undertake the activity;
- b. type of activity to be undertaken
- c. design or layout of the activity;
- d. Design to be used in the activity;
- e. operational aspects of the activity; and
- f. Includes the option of not implementing the activity.”

The purpose of alternatives as defined in the Department of Environmental Affairs and Tourism’s (now Department of Forestry and Fisheries and Environment (DFFE), 2004 Integrated Environmental Information Series on the Criteria for determining alternatives in EIA, ‘ is to find the most effective way of meeting the need and purpose of the proposal, either through enhancing the environmental benefits of the proposed activity, and or through reducing or avoiding potentially significant negative impacts.’

In terms of Section 24 of NEMA, the proponent is required to demonstrate that alternatives have been described and investigated in sufficient detail during the BA process. It is important to highlight that these alternatives must be practical, feasible, reasonable and viable to cater for an unbiased approach to the project and in turn to ensure environmental protection.

The role of alternatives is to find the most effective way of meeting the need and purpose of the proposal, either through enhancing the environmental benefits of the proposed activity, and or through reducing or avoiding potentially significant negative impacts.

In order to ensure full disclosure of alternative activities, it is important that various role players contribute to their identification and evaluation. Stakeholders have an important contribution to make during the Basic assessment Process and each role is detailed as follows:

The role of the environmental practitioner is to:

- encourage the proponent to consider all feasible alternatives
- provide opportunities for stakeholder input to the identification and evaluation of alternatives;
- document the process of identification and selection of alternatives;
- provide a comprehensive consideration of the impacts of each of the alternatives; and
- document the process of evaluation of alternatives.

The role of the proponent is to:

- assist in the identification of alternatives, particularly where these may be of a technical nature;
- disclose all information relevant to the identification and evaluation of alternatives;
- be open to the consideration of all reasonable alternatives; and
- be prepared for possible modifications to the project proposal before settling on a preferred option.

The role of the public is to:

- assist in the identification of alternatives, particularly where local knowledge is required;
- be open to the consideration of all reasonable alternatives; and
- recognise that there is rarely one favoured alternative that suits all stakeholders and that alternatives will be evaluated across a broad range of criteria, including environmental, social and economic aspects.

The applicability of each alternative type to the proposed project is outlined in **Table 15**. It must be highlighted that the alternatives presented in the table are derived from both the EIA Regulations (2014) as amended as well as the Department of Environmental Affairs and Tourism's (now DFFE) 2004 Integrated Environmental Information Series on the Criteria for determining alternatives in EIA. Where the alternative is applicable to the project, it will be further discussed in this report.

Table 15: Applicability of each alternative type to the proposed development

Alternative	Comment
No-go Option	This alternative must be discussed on all projects as it allows for an assessment of impacts should the activity not be undertaken. Refer to Section 7.3
Activity Alternatives	These are at times referred to as project alternatives which in the case of this project entails the construction of a road. There are no other alternatives to this activity as this will defer to the no-go option which is discussed in Section 7.3. Therefore, activity alternatives will not be discussed in this report.
Location/ Property Alternatives	The proposed development is linear and only affects the preferred site.
Process Alternatives	These are also known as technological and equipment alternative and will not be discussed in this report.
Demand Alternatives	This is applicable to the demand for a product or service. An example of this would be where there is a need to provide more drinking water. Examples of alternatives can be through managing demand through various methods or providing additional drinking water. Specific to the proposed project, alternatives regarding the demand for the road are not applicable as this is development of new access roads. Therefore, these alternatives will not be discussed in this report.

Alternative	Comment
Scheduling Alternatives	Scheduling alternatives are also known as sequencing or phasing alternatives. This alternative is not applicable to the project. as the construction of the proposed roads will not be undertake in phases
Input Alternatives	Not applicable to the project but mainly to industries where inputs and in turn outputs are crucial to operations.
Routing Alternatives	Consideration of alternative routes generally applies to linear developments such as power lines, transport and pipeline routes. The proposed project is a linear, hence the proposed route alternatives are discussed in Section 7.1.
Layout alternatives	Since the project is linear, layout alternatives have been assessed. Refer to Section 7.1.
Design Alternatives	This entails the consideration of different designs for aesthetic purposes or different construction materials in an attempt to optimise local benefits and sustainability would constitute design alternatives. Refer to Section 7.2.

7.1 Layout Alternatives

In developing the proposals for the construction of the intersection upgrade in Kokstad and the upgrading of the provincial R56 road over the time period of late 2010 to date, a key component of the proposals has been the requirement for road authorities to formally classify their roads in accordance with South African Road Classification and Access Management Manual (TRH26), and where possible to retrofit or incorporate mitigation measures to ensure that each road operates at its intended classification. In this respect, the provincial R56 road is classified as a Class 2 Rural Road. Considering its proximity to the defined urban edge of the town of Kokstad and the concomitant likelihood of that urban edge expanding to include this section of R56 road in the future, the classification used for design proposals was adjusted to a Class 2 Urban Road.

With this classification used as the basis for the development of the R56 road upgrade proposals, it was incumbent upon the road authorities to ensure that intersection spacings and accesses to individual properties were adhered to. As a Class 2 Urban Road does not permit direct accesses to individual properties, there was a need to provide alternative solutions for access to individual properties adjacent to R56 along this section of the road.

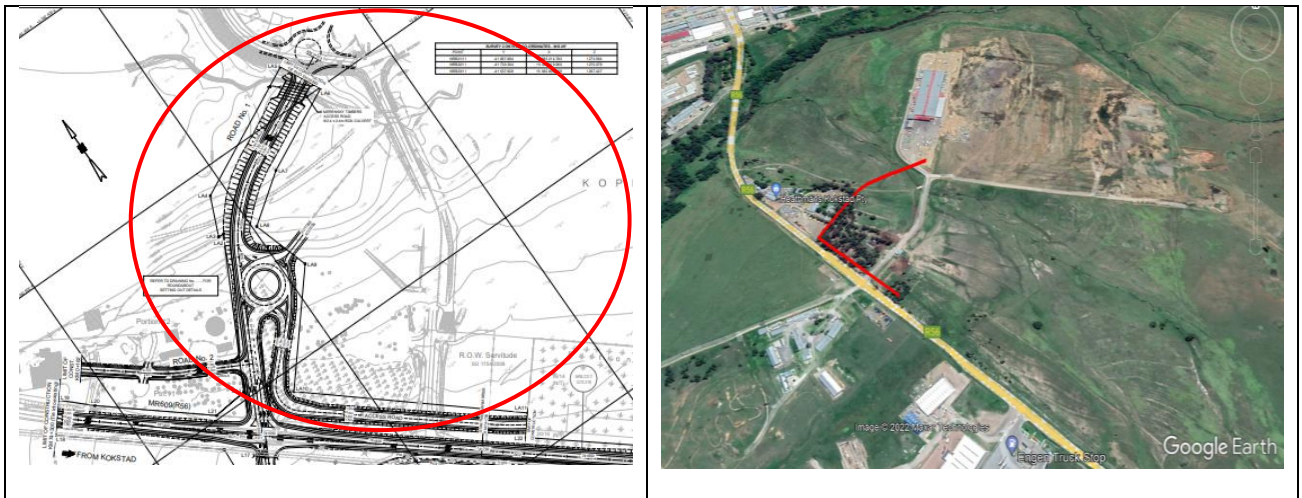
New intersection locations at km 74+400 and km 75+780 were identified as locations meeting the minimum intersection spacing requirements for a Class 2 Urban Road and lower-class access roads were developed from these intersections. On the southern side of the R56 road, where the majority of the developed individual properties exist, a parallel service road that links between these two intersections was developed to provide all properties with similar access. On the northern side of the R56 road, there were only three (3) landowners whose property accesses were affected by the proposals. The landowners of industrial complex are the owners of the vast majority of the extensive land mass and due to the topography of the

area, two access points were provided. The first is from the intersection at km 75+780, which falls within the SANRAL road reserve, and the other is at the new intersection at km 74+400. It is also from this intersection at km 74+400 that access to the other two landowners, motor spares and the proposed Motor City site, has to be provided.

The process of engaging with the landowners on the proposed road layouts and their individual access dates back to August 2015 where access from the proposed new intersection was tabled for discussion. This provided a new access to motor spares and connected back to the industrial complex existing access, as well as providing an access point for the yet the future/yet to be developed Motor City site. Over the ensuing years, the land development proposals of industrial complex have changed several times, and with each land development proposal the access needs were revisited. It can be noted that in all of the alternative proposals, the access to the motor spares remains the same and the following Layout Alternatives have been investigated as part of the proposed development.

(a) Proposed and Preferred Layout Option

After numerous engagements with the landowners, the landowner affected by the proposed development wanted road layouts that maximise their developable land area and the owners of the Motor City site wanted their access to tie into their existing sub-division layout. Based on the land accusation discussion, **below is the Proposed and Preferred Layout Option.**



Road 1 - Start at R56 road: 30°33'54.28"S; 27°25'57.41"E

Road 1 - End at culvert: 30°33'46.01"S; 27°26'05.37"E

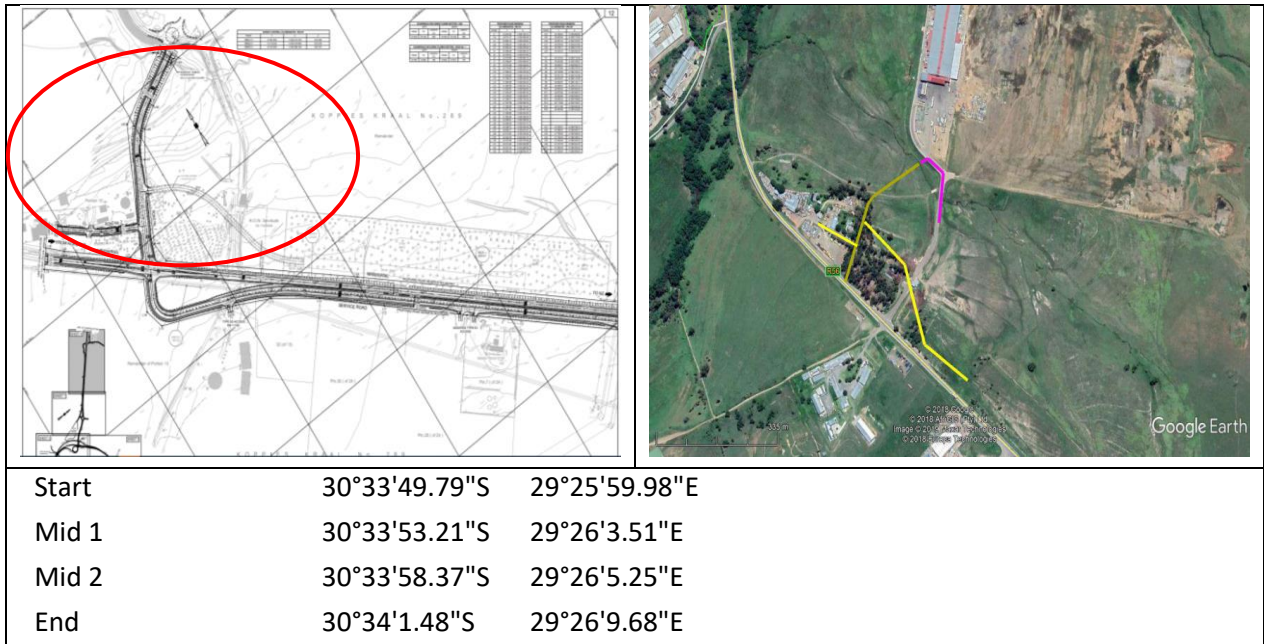
Road 2 - Start at the roundabout: 30°33'50.15"S; 27°25'59.45"E

Road 2 – End: 30°33'58.61"S; 27°26'04.99"E

(b) Layout Alternative 1

During further discussions with the landowners of the industrial complex, they were insistent that the alternative access needed to be the same or similar to their existing access with more direct access routes. This Layout Alternative is only able to service the motor spares and the industrial

complex but does not incorporate access to the future Motor City site. **The below Layout Alternative is therefore not a preferred alternative.**



7.2 Design Alternatives

This section addresses the design alternatives assessed for the culvert design.

(a) Proposed and Preferred Option: Concrete Box Culvert

The use of concrete box culvert infrastructure has emerged as the most preferred design alternative that has been considered for the proposed development of a culvert. Some of the advantages of the use of a concrete box culvert is that it can be economical when material is readily available, has a long lifespan and relatively low maintenance requirements. Furthermore, concrete box culverts have a non-combustible material, which makes them fire-safe and able to withstand high temperatures, windy weather conditions, water, insects and rodents. Concrete requires no maintenance for the duration of its service life. **This is the Proposed and Preferred Design Option.**

(b) Alternative 1: Armco Steel Pipe Culvert

A steel pipe culvert is light, has low strength and stiffness per weight. It is non-shrinking and non-creeping at ambient temperatures and is more accurate detailing. Generally, Armco Culverts require ongoing maintenance to prevent the structure from rusting and holes forming which undermine the road leading to embankment failure. This would be costly to maintain and during maintenance, vehicular movement will be affected.

Although steel is usually regarded as the cheaper option, it must be noted that the price of steel can fluctuate more than concrete. In addition, even though cost benefits can be realised in terms of use of the steel bridge option, the security impacts and strict monitoring requirements are

outweighed by the “use of concrete” option. This design alternative is therefore not preferred for the reasons stated above as consideration of this option may cause unnecessary safety risks in the community and as such can be easily targeted by criminals thus defeat the objective of the project.

This Design Alternative is therefore not a preferred alternative.

7.3 No-Go Alternative

Also referred to as the “Do nothing’ option, this refers to SANRAL not developing the proposed access roads on the identified site. In this scenario the potential positive and negative environmental and social impacts as described in this Basic Assessment Report will not occur and the status quo will be maintained. Furthermore, this alternative presents a lost opportunity in terms of the employment and business opportunities (during the Construction Phase and Operation Phase) associated with the proposed Rocabar access roads.

On a local level, should the complete development proceed, the current industrial complex and the future Motor City will benefit from the proposed development financially as there will be more people using the services of these commercial complexes. In addition, these complexes will create job opportunities for the community members of Kokstad. The no-development option will therefore not be beneficial to the landowner or the broader community nor the general public. **The No-Go Alternative is therefore not a preferred alternative.**

8 IMPACT ASSESSMENT METHODOLOGY

The main objective of this section is to provide independent and scientifically sound information on the impacts identified during the BA. Based on the requirements of the impact assessment, impacts identified, and issues and concerns raised are assessed with regard to their significance. The impact assessment is aimed at determining the impacts associated with the proposed development and the prescription of mitigation measures. Other impacts associated with the proposed development are discussed in detail in this section. The significance of the potential impacts is described in terms of their nature, extent, duration, intensity and probability.

In this report, impacts with a low significance are considered to have no influence on the decision to proceed with the proposed development. Impacts with a moderate significance will influence the decision, unless they can be effectively mitigated to a low significance, whereas impacts with a high significance - despite mitigation - would influence the decision to proceed with the proposed development.

8.1 Impact Mitigation Hierarchy

The Impact Mitigation Hierarchy provides steps that must be used in mitigating adverse impacts of a project and in turn ensuring environmental protection. There are various levels of preference for mitigation options with the most preferred method and the first step as *avoidance* and the least and final method as *offset*. Each of the mitigation types will be discussed and contextualised to the proposed development of the Rocabar access roads and supporting infrastructure.

Step 1: Avoid - Although this is the most preferred form of mitigation on projects to avoid adverse environmental impacts. The proposed road development will result in the disturbance of the Mzintlava River during construction. Impacts on the watercourse will be unavoidable as the proposed project requires the construction of a culvert over the riparian area.

Step 2: Minimise - This entails the reduction of adverse environmental impacts through various means as it based on the recognition that environmental impacts cannot be fully avoided in the proposed development. The minimisation of adverse impacts will be adopted for the pre-construction, construction, and operational phase of the proposed project. The Mitigation measures proposed are discussed in **Chapter 9** of this report as well as in the Environmental Management Programme attached as **Appendix G**.

Step 3: Rectification - Where an impact has already taken place, rectification entails the implementation of corrective measures to avoid further adverse environmental impacts. Rectification will apply in cases where Contractors have not adhered to specific restrictions or when the proposed mitigation measures are not adhered to, or unforeseen impacts arise.

Step 4: Reduction - This is applicable where the above-mentioned rectification is not possible. Rectification requires new management practices and/or changes in methodology to ensure environmental protection.

Step 5: Environmental Offset - although this does not occur on the proposed development, it is meant to cater for the effects of the development through compensation of biodiversity losses by measures such as the establishment of new plants on another area outside the study area where it is not possible to avoid

the clearance of vegetation or rehabilitate the disturbed areas. Refer to **Figure 24** for an illustration of the Mitigation Hierarchy.

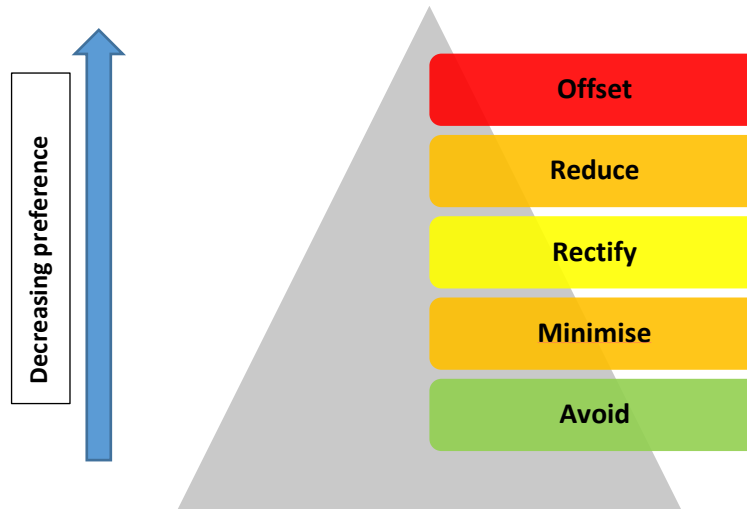


Figure 24: Mitigation Hierarchy (Source: Eco Intelligent, 2016)

8.2 Impact Assessment Methodology

In accordance with the NEMA EIA Regulations, as amended, the EAP is required to assess the significance of potential impacts in terms of the following criteria:

- Nature of the impact;
- Extent of the impact;
- Intensity of the impact;
- Duration of the impact;
- Probability of the impact occurring;
- Reversibility of impacts;
- Impact on irreplaceable resources; and
- Cumulative impacts.

Activities within the framework of the proposed development and their respective Construction, Operation, Decommission and Rehabilitation Phases, give rise to certain impacts. Decommissioning is however not discussed as it is not anticipated that the Rocabar access roads and culvert will be decommissioned in the near future. When decommissioning is proposed, an impact assessment for closure shall be undertaken at that time. For the purpose of assessing these impacts, the project has been divided into three phases from which impacts can arise and are namely:

- a) Construction Phase: This phase refers to all the construction related activities on site during closure of the site, until the Contractor leaves the site.

- b) Operation Phase: This phase refers to the period in which the proposed road will be operational. Monitoring.
- c) Rehabilitation Phase: This includes all activities undertaken to ensure that the environmental integrity of the site is maintained and preserved after rehabilitation has taken place.

The assessment of the impacts will be conducted according to a synthesis of criteria required by the integrated environmental management procedure. The methodology that will be used comprises of the following four steps:

- Step 1: Identification of positive and negative impacts of the project;
- Step 2: Identification of the significance rating of the impact before mitigation;
- Step 3: Identification of the mitigation measure and the mitigation efficiency; and
- Step 4: Identification of the significance rating of the impact after mitigation.

Activities that will be undertaken to give effect to the proposed development gives rise to certain impacts. For the purpose of assessing these impacts, the project has been divided into the following phases discussed in **Table 16**.

Table 16: Phases of the proposed project

Phases of the project in which impacts will occur
Status Quo: The study area as it currently exists.
Pre-Construction Phase: All activities undertaken before construction phase including specialist studies and assessments
Construction Phase: All activities on site up to the start of construction, not including the transport of materials, but including the initial site preparations. This also includes the impacts that would be associated with planning
Rehabilitation Phase (Closure and Rehabilitation Phase): All activities undertaken to ensure the site is restored to its original state as humanely possible.
Monitoring Phase (Post-Closure Phase): All activities after Rehabilitation, including the operation and maintenance of the proposed development.

The activities arising from each of the relevant phases have been included in the impacts assessment tables. The assessment endeavours to identify activities that would require environmental management actions to mitigate the impacts arising from them. The criteria against which the activities were assessed are given in the next section.

8.3 Assessment Criteria

The assessment of the impacts has been conducted according to a synthesis of criteria required by the guideline documents to the EIA regulations (2006) and integrated environmental management series

published by the Department of Environmental Affairs and Tourism (DEAT) currently Department of Forestry, Fisheries and Environment (DFFE).

In addition to the above, it is a requirement of Appendices 1 and 2 of the NEMA EIA Regulations, 2014 (as amended) that an Impact and Risk Assessment process be undertaken for the Basic Assessments and Environmental Impact Reporting. The Assessment Criteria is based on the following:

- Nature of impact;
- Extent;
- Duration;
- Intensity;
- Probability;
- Determination of significance; and
- Reversibility of impact.

Each of these are explained in **Table 17** below.

Table 17: Assessment Criteria

Assessment Criteria	Scoring
<p>a) Nature of Impact</p> <p>This is an appraisal of the type of effect the proposed activity would have on the affected environmental component. The description should include what is being affected, how and whether the impact is positive or negative</p>	<p>Scoring does not apply, impact will either be positive or negative</p>




Assessment Criteria	Scoring
<p>b) Extent (E)</p> <p>The physical and spatial size of the impact. This is classified as:</p> <ul style="list-style-type: none"> i. Site The impact could affect the whole, or a measurable portion of the site. ii. Local The impacted area extends only as far as the activity, e.g., a footprint of the specific activity. iii. Regional The impact could affect areas such as neighbouring farms, transport corridors and the adjoining towns. iv. National The impact could have an effect on South Africa. 	<p style="text-align: center;">1</p> <p style="text-align: center;">2</p> <p style="text-align: center;">3</p> <p style="text-align: center;">4</p>

Assessment Criteria	Scoring
<p>c) Duration (D)</p> <p>The lifetime of the impact; this is measured in the context of the lifetime of the proposed project.</p> <p>i. Short term The impact will either disappear with mitigation or will be mitigated through natural processes (less than 1 year).</p> <p>ii. Medium term The impact will last up to the end of the phases, thereafter it will be entirely negated (1 to 10 years).</p> <p>iii. Long term The impact will continue or last for the entire operational life of the development but will be mitigated by direct human action or by natural processes thereafter.</p> <p>iv. Permanent Mitigation either by man or natural processes will not occur in such a way or in such a time span that the impact can be considered transient, thus beyond decommissioning.</p>	<p>1</p> <p>2</p> <p>3</p> <p>4</p>

Assessment Criteria	Scoring
<p>d) Intensity (I)</p> <p>Is the impact destructive or benign? Does it destroy the impacted environment, alter its functioning, or slightly alter it? These are rated as:</p> <p>i. Low The impact alters the affected environment in such a way that the natural processes or functions are not affected.</p> <p>ii. Medium (Moderate) The affected environment is altered, but function and process continue, albeit in a modified way.</p> <p>iii. High Function or process of the affected environment is disturbed to the extent where it temporarily or permanently ceases. This will be a relative evaluation within the context of all the activities and the other impacts within the framework of the project.</p>	<p>1</p> <p>2</p> <p>3</p>

Assessment Criteria	Scoring
<p>e) Consequence of Impact (C)</p> <p>The anticipated consequence of the impact is determined using the following formula: Consequence = Duration + Extent + Intensity Consequence is rated as:</p> <ul style="list-style-type: none"> i. Negligible An acceptable impact on natural systems, patterns or processes. ii. Low A small impact on natural systems, patterns or processes, where the environment continues to function but in a modified manner and for which mitigation is desirable but not essential. iii. Moderate A substantial alteration of natural systems, patterns or processes, where environmental functions and processes are altered such that they temporarily or permanently cease. Mitigation will be required. iv. High A serious alteration of natural systems, patterns or processes. Impacts may result in the irreversible damage to irreplaceable aspects if mitigation measures are not implemented. v. Very High Very high impact on natural systems, patterns or processes, where environmental functions and processes are altered such that could permanently cease, even with mitigation. 	<p style="text-align: center;">3</p> <p style="text-align: center;">4-5</p> <p style="text-align: center;">6-8</p> <p style="text-align: center;">9-10</p> <p style="text-align: center;">11-12</p>

Assessment Criteria	Scoring
<p>f) Probability (P)</p> <p>This describes the likelihood of the impacts actually occurring. The impact may occur for any length of time during the life cycle of the activity, and not at any given time. The classes are rated as follows:</p> <ul style="list-style-type: none"> i. Improbable The possibility of the impact occurring is very low, due either to the circumstances, design or experience. ii. Probable There is a possibility that the impact will occur to the extent that provisions must be made. iii. Highly probable It is most likely that the impacts will occur at some or other stage of the development. Plans must be drawn up before the undertaking of the activity. iv. Definite The impact will take place regardless of any prevention plans, and mitigation actions or contingency plans are relied on to contain the effect. 	<p style="text-align: right;">1</p> <p style="text-align: right;">2</p> <p style="text-align: right;">3</p> <p style="text-align: right;">4</p>

Assessment Criteria			Scoring				
g) Significance of impact with or without mitigation							
Score		Significance = Consequence x Probability					
Probability	4	Definite	4	8	12	16	20
	3	Highly probable	3	6	9	12	15
	2	Probable	2	4	6	8	10
	1	Improbable	1	1	2	4	5
			Negligible	Low	Moderate	High	Very High
			1	2	3	4	5
		Consequence					
<p>Significance is determined through a synthesis of impact characteristics. Significance is an indication of the importance of the impact in terms of both physical extent and time scale, and therefore indicates the level of mitigation required. To determine significance of the potential impact/risk, the consequence is multiplied by probability. The classes are rated as follows:</p>							
<p>i. No significance </p> <p>The impact is not substantial and does not require any mitigation. Score 1-5.</p>				1-5			
<p>ii. Low </p> <p>The impact is of little importance but may require limited mitigation. Score 4-6.</p>				4-6			
<p>iii. Medium (Moderate) </p> <p>The impact is of importance and therefore considered to have a negative impact. Mitigation</p>				8-10			

Assessment Criteria	Scoring				
<p>is required to reduce the negative impacts to acceptable levels. Score 8-10.</p> <table border="1" data-bbox="185 454 793 526"> <tr> <td data-bbox="185 454 624 526">iv. High</td> <td data-bbox="624 454 793 526" style="background-color: yellow;"></td> </tr> </table> <p>The impact is of great importance. Failure to mitigate, with the objective of reducing the impact to acceptable levels, could render the entire development option or entire project proposal unacceptable. Score 12-16.</p> <table border="1" data-bbox="185 846 793 918"> <tr> <td data-bbox="185 846 624 918">v. Fatal Flaw</td> <td data-bbox="624 846 793 918" style="background-color: red;"></td> </tr> </table> <p>The impact presents a fatal flaw, and the entire development option or entire project proposal is unacceptable. Score 20.</p>	iv. High		v. Fatal Flaw		<p style="text-align: center;">12-16</p> <p style="text-align: center;">20</p>
iv. High					
v. Fatal Flaw					
<p>h) Reversibility of impact (R)</p> <p>The extent to which the impacts are reversible</p> <ul style="list-style-type: none"> <li data-bbox="231 1227 874 1355"> <p>i. Yes The impact is reversible within two years after construction.</p> <li data-bbox="231 1406 874 1534"> <p>ii. No The impact is reversible within 2 to 10 years after construction.</p> 					

Assessment Criteria	Scoring
<p data-bbox="183 275 861 347">i) The degree to which the impact can cause irreplaceable loss of resources</p> <p data-bbox="231 387 861 555">i. Low The impact results in the loss of resources but the natural, cultural and social processes/functions are not affected.</p> <p data-bbox="231 611 861 779">ii. Medium The loss of resources occurs but natural cultural and social processes continue, albeit in a modified manner.</p> <p data-bbox="231 835 861 958">iii. High The impact results in irreplaceable loss of resource.</p>	

In order to maintain consistency, all potential impacts that have been identified during the BA process will be listed in impact assessment tables. The assessment criteria used in the tables will be applied to all of the impacts and a brief descriptive review of the impacts and their significance provided in the text of the report. The overall significance of impacts will be determined by considering consequence and probability.

9 DESCRIPTION AND ASSESSMENT OF ENVIRONMENTAL IMPACTS

A Basic Assessment Report (BAR) must contain all the information that is necessary for a good understanding of the nature of issues identified during the BA process. The BAR must include a description of environmental issues and potential impacts, including cumulative impacts, mitigation measures that have been identified and other aspects as outlined in Appendix 4 of the NEMA EIA Regulations, 2014 as amended. This chapter also describes the environmental issues and impacts as identified during the BA Process for the proposed development. The proposed mitigation measures are discussed in this Chapter as well as well as in the EMPr attached as **Appendix G** of this report.

The main objective of this section is to provide independent and scientifically sound information on the impacts identified during the Basic Assessment (BA) Process. Based on the requirements of the impact assessment, impacts identified, and issues and concerns raised are assessed with regard to their significance. The impact assessment is aimed at determining the impacts associated with the proposed development and the prescription of mitigation measures. Other impacts associated with the proposed development are discussed in detail in this section. It must be highlighted that the Impact Assessment Methodology discussed in **Chapter 8** of this report was used to assess the identified impacts.

In this report, impacts with a **low significance** are considered to have no influence on the decision to proceed with the proposed project. Impacts with a **moderate significance** will influence the decision unless they can be effectively mitigated to a low significance, whereas impacts with a **high significance** despite mitigation would influence the decision to proceed with the proposed project. The impacts discussed in this section were identified by the Project Team (including specialists). The potential impacts identified and elaborated on in this chapter have been presented as follows:

- Theme 1: Impacts on the Biophysical Environment; and
- Theme 2: Impacts on the Human Environment.

In both themes, the potential impacts for all construction (activities related to rehabilitation) as well as the Monitoring phases of the projects are assessed. It must be noted that the Impact Assessment Methodology as presented in **Chapter 8** of this report will be used to assess the impacts in terms of:

- nature, significance and consequences of the impact and risk;
- extent and duration of the impact and risk;
- probability of the impact and risk occurring;
- the degree to which the impact and risk can be reversed;
- the degree to which the impact and risk may cause irreplaceable loss of resources; and
- the degree to which the impact and risk can be avoided, managed or mitigated. The cumulative impacts of the project will also be discussed.

For the purposes of this assessment, this impact assessment will **only** focus on the impacts that are likely to occur during the Construction and Operational Phases of the proposed development based on the location of the site and the site sensitivities determined from desktop and field assessments.

9.1 Theme 1: Impacts on the Biophysical Environment

The following impacts have been assessed under *Theme 1: Impacts on the Biophysical Environment* and are discussed in detail in the sections below.

- Destruction, loss and fragmentation of the vegetation community
- Introduction and spread of alien vegetation
- Changes in water quality due to foreign materials and increased nutrients
- Disturbance of wetland and instream habitat
- Changes in sediment entering and exiting the watercourse system
- Changes in water flow regime
- Loss of Topsoil and Soil Compaction

9.1.1 Destruction, loss and fragmentation of the vegetation community

The highest impact on floral habitat will occur during the Construction Phase of the project, particularly at the alignment areas and culverts area. Site clearing associated with the roads' construction could lead to direct loss of habitat. Loss of habitat also means loss of food and nesting resources, which could lead to the disappearance of the affected species from the area. **Table 18** presents an assessment of the impacts associated with loss of floral habitat.

Table 18: Impact assessment associated with loss of floral habitat

Project Phase	Nature of impact	Extent	Duration	Intensity	Consequence (E+D+)	Probability	Reversibility	Loss of Resources	Significance (C X P)	Significance
									Without Mitigation	With Mitigation
Preferred and Proposed Layout Route										
Construction	Negative	1	2	2	4-5	4			12-16	8-10
		Site	Medium	Medium	Low	Definite	Y	Low	High	Medium
Operation	Negative	1	1	1	3	2			4-6	4-6
		Site	Short term	Low	Negligible	Probable	Y	Low	Low	Low
Cumulative	Negative	1	1	1	3	2		Low	4-6	4-6
		Site	Short term	Low	Negligible	Probable	Y		Low	Low
Layout Route Alternative 1										
Construction	Negative	1	2	2	4-5	4			12-16	8-10
		Site	Medium	Medium	Low	Definite	Y	Low	High	Medium
Operation	Negative	1	1	1	3	2			4-6	4-6
		Site	Short term	Low	Negligible	Probable	Y	Low	Low	Low
Cumulative	Negative	1	1	1	3	2			4-6	4-6
		Site	Short term	Low	Negligible	Probable	Y	Low	Low	Low

The proposed mitigation measures to avoid adverse impacts associated with loss and fragmentation of the vegetation community:

- Areas of indigenous vegetation, outside of the direct project footprint, should under no circumstances be fragmented or disturbed further;
- Rehabilitation of the disturbed areas must be made a priority. Any disturbed area must be revegetated with plant and grass species which are endemic to the project area;
- All activities must be restricted too within the low/medium sensitivity areas;
- All construction/operational and access must make use of the existing access roads;
- All laydown, chemical toilets etc. should be restricted to low/medium sensitivity areas. Any materials may not be stored for extended periods of time and must be removed from the project area once the construction/closure phase has been concluded;
- Construction impacts associated with the proposed project must be contained within the footprint of the demarcated areas as indicated on the final approved project layout plan; and
- Prior to construction, the final road alignment, road reserve and development footprint area must be demarcated on site to ensure that construction impacts are contained within this area. If necessary, these areas may be fenced.

9.1.2 Introduction and spread of alien vegetation

The removing of soil and vegetation results in opportunistic invasions after disturbance and the introduction of seed in building materials and on vehicles. Invasions of alien plants can impact on hydrology, by reducing the quantity of water entering a watercourse, outcompete natural vegetation, and decreasing the natural biodiversity. Once in a system alien invasive plants can spread through the catchment. If allowed to seed before control measures are implemented alien plants can easily colonise and impact on downstream users. **Table 19** presents an assessment of the impacts associated with the introduction and spread of alien vegetation.

Table 19: Impacts assessment associated with the introduction and spread of alien vegetation

Project Phase	Nature of Impact	Extent	Duration	Intensity	Consequence (E+D+)	Probability	Reversibility	Loss of Resources	Significance (C X P)	Significance
									Without Mitigation	With Mitigation
Preferred and Proposed Layout Route										
Construction	Negative	1	2	2	4-5	2			8-10	4-6
		Site	Medium	Medium	Low	Probable	Y	Low	Medium	Low
Operation	Negative	1	1	1	3	2			4-6	4-6
		Site	Short term	Low	Negligible	Probable	Y	Low	Low	Low
Cumulative	Negative	1	1	1	3	2			4-6	4-6
		Site	Short term	Low	Negligible	Probable	Y	Low	Low	Low
Layout Route Alternative 1										
Construction	Negative	1	2	2	4-5	2			8-10	4-6
		Site	Medium	Medium	Low	Probable	Y	Low	Medium	Low
Operation	Negative	1	1	1	3	2			4-6	4-6
		Site	Short term	Low	Negligible	Probable	Y	Low	Low	Low
Cumulative	Negative	1	1	1	3	2			4-6	4-6
		Site	Short term	Low	Negligible	Probable	Y	Low	Low	Low

The proposed mitigation measures associated with the introduction and spread of alien vegetation are provided below:

- Implement an Alien Plant Control Plan which specifies long-term monitoring schedules;
- Retain vegetation and soil in position for as long as possible, removing it immediately ahead of construction / earthworks in that area and returning it where possible afterwards;
- Monitor the establishment of alien invasive species within the areas affected by the construction and take immediate corrective action where invasive species are observed to establish;
- Where sedimentation has been observed, effective rehabilitation with a focus on the long-term control of alien invasive plants should be done; and
- Rehabilitate or revegetate disturbed areas.

9.1.3 Changes in water quality due to foreign materials and increased nutrients

Construction and operational activities may result in the discharge of solvents and other industrial chemicals, leakage of fuel/oil from vehicles and the disposal of sewage resulting in the loss of sensitive biota in the wetlands/rivers and a reduction in watercourse function as well as human and animal waste. **Table 20** presents an assessment of the impacts associated with changes in water quality due to foreign materials and increased nutrients.

Table 20: Impacts assessment associated with changes in water quality due to foreign materials and increased nutrients

Project Phase	Nature of Impact	Extent	Duration	Intensity	Consequence (E+D+)	Probability	Reversibility	Loss of Resources	Significance (C X P)	Significance
									Without Mitigation	With Mitigation
Preferred and Proposed Layout Route										
Construction	Negative	1	2	2	4-5	4			12-16	8-10
		Site	Medium	Medium	Low	Definite	Y	Low	High	Medium
Operation	Negative	1	1	1	4-5	2			8-10	4-6
		Site	Short term	Low	Low	Probable	Y	Low	Medium	Low
Cumulative	Negative	1	1	1	4-5	2			8-10	4-6
		Site	Short term	Low	Low	Probable	Y	Low	Medium	Low
Layout Route Alternative 1										
Construction	Negative	1	2	2	4-5	4			12-16	4-6
		Site	Medium	Medium	Low	Definite	Y	Low	High	Low
Operation	Negative	1	1	2	4-5	2			8-10	4-6
		Site	Short term	Medium	Low	Probable	Y	Low	Medium	Low
Cumulative	Negative	1	1	2	4-5	2			8-10	4-6
		Site	Short term	Medium	Low	Probable	Y	Low	Medium	Low

The proposed mitigation measures associated with the changes in water quality due to foreign materials and increased nutrients is provided below:

- Provision of adequate sanitation facilities located outside the 32m of the watercourse;
- Implementation of appropriate stormwater management around excavations to prevent the ingress of run-off into the excavation and to prevent contaminated runoff into the watercourse;
- The development footprint must be fenced off from the watercourse, with the exception of the culvert crossing, and no related impacts may be allowed into the watercourse e.g., water runoff from cleaning of equipment, vehicle access etc;
- After construction, the land must be cleared of litter, surplus materials, and equipment, and all parts of the land shall be left in a condition as close as possible to that of prior to use;
- Maintenance of construction vehicles / equipment should not take place within the watercourse or watercourse buffer;
- Control of waste discharges and do not allow dirty water from operational activities to enter the watercourse; and
- Treatment of pollution identified should be prioritized accordingly.

9.1.4 Disturbance of wetland and instream habitat

Activities such as the clearing of vegetation from construction working servitudes through watercourses; the setting up of construction camps and storage areas; the movement of construction vehicles and personnel during road and stormwater infrastructure construction activities; as well as the inappropriate storage or dumping of building material or concrete in areas surrounding the direct development footprint may result in the disturbance of wetland, riparian and instream habitat as well as in the compaction or disturbance of soils. This disturbance may also result in the proliferation of alien and invasive species within the surrounding watercourses. **Table 21** presents an assessment of the impacts associated with disturbance of wetland, riparian and instream habitat system.

Table 21: Impacts assessment associated with changes in disturbance of wetland and instream habitat

Project Phase	Nature of Impact	Extent	Duration	Intensity	Consequence (E+D+)	Probability	Reversibility	Loss of Resources	Significance (C X P)	Significance
									Without Mitigation	With Mitigation
Preferred and Proposed Layout Route										
Construction	Negative	1	2	2	4-5	4			10-12	8-10
		Site	Medium	Medium	Low	Definite	Y	Low	High	Medium
Operation	Negative	1	1	1	4-5	2			8-10	4-6
		Site	Short term	Low	Low	Probable	Y	Low	Medium	Low
Cumulative	Negative	1	1	1	4-5	2			8-10	4-6
		Site	Short term	Low	Low	Probable	Y	Low	Medium	Low
Layout Route Alternative 1										
Construction	Negative	1	2	2	4-5	4			10-12	4-6
		Site	Medium	Medium	Low	Definite	Y	Low	High	Low
Operation	Negative	1	1	2	4-5	2			8-10	4-6
		Site	Short term	Medium	Low	Probable	Y	Low	Medium	Low
Cumulative	Negative	1	1	2	4-5	2			8-10	4-6
		Site	Short term	Medium	Low	Probable	Y	Low	Medium	Low

The proposed mitigation measures associated with the disturbance of the wetland and instream habitat are provided below:

- A detailed Method Statement for proposed construction activities within watercourses must be compiled prior to construction;
- Limit construction activities within watercourses and their associated buffer (of 32m wide) areas to the dry winter months;
- Clearly demarcate the construction footprint with orange hazard tape (or similar) and strictly prohibit the movement of construction vehicles and personnel outside of the demarcated areas;
- Portions of the watercourses and associated buffer areas that are located outside of the demarcated construction footprint must be designated as no-go areas;
- Demarcation of the construction footprint must be signed off by an Environmental Control Office (ECO). Demarcation should not be removed until construction is complete, and rehabilitation has taken place; and
- The construction footprint through watercourses and their associated buffer areas must be as narrow as possible.

9.1.5 Changes in sediment entering and exiting the watercourse system

Construction activities will result in earthworks and soil disturbance as well as the disturbance of natural vegetation. This could result in the loss of topsoil, sedimentation of the watercourse and increase the turbidity of the water. **Table 22** presents an assessment of the impacts associated with changes in sediment entering the existing the system.

Table 22: Impacts assessment associated with changes in sediment entering the existing the system

Project Phase	Nature of impact	Extent	Duration	Intensity	Consequence (E+D+)	Probability	Reversibility	Loss of Resources	Significance (C X P)	Significance
									Without Mitigation	With Mitigation
Preferred and Proposed Layout Route										
Construction	Negative	1	2	2	4-5	4			12-16	8-10
		Site	Medium	Medium	Low	Definite	Y	Low	High	Medium
Operation	Negative	1	1	2	4-5	2			8-10	4-6
		Site	Short term	Medium	Low	Probable	Y	Low	Medium	Low
Cumulative	Negative	1	1	2	4-5	2			8-10	4-6
		Site	Short term	Medium	Low	Probable	Y	Low	Medium	Low
Layout Route Alternative 1										
Construction	Negative	1	2	2	4-5	4			12-16	4-6
		Site	Medium	Medium	Low	Definite	Y	Low	High	Low
Operation	Negative	1	1	2	4-5	2			8-10	4-6
		Site	Short term	Medium	Low	Probable	Y	Low	Medium	Low
Cumulative	Negative	1	1	2	4-5	2			8-10	4-6
		Site	Short term	Medium	Low	Probable	Y	Low	Medium	Low

The proposed mitigation measures associated with changes in sediment entering the existing system is provided below:

- Use of SANRAL road standards in terms of drainage and stormwater where practical and possible within project agreements. Stormwater structures shall be designed in accordance with the SANRAL drainage manual in such a way that nearly no sediment is accumulated at the inlets or outlets;
- In order to prevent soil erosion and reduce flow velocities, erosion protection shall be designed in the form of energy dissipator blocks, gabions and reno mattresses at the outlet structures;
- Construction in and around watercourses must be restricted to the dryer winter months where possible;
- Retain vegetation and soil in position for as long as possible, removing it immediately ahead of construction or earthworks in that area;
- Remove only the vegetation were essential for construction. Rehabilitation Plans must be submitted and approved for rehabilitation of damage during construction and the plan must be implemented immediately upon completion of construction;
- Cordon off areas that are under rehabilitation as no-go areas using danger tape and steel droppers. If necessary, these areas should be fenced off to prevent vehicular, pedestrian and livestock access;
- During the Construction Phase measures must be put in place to control the flow of excess water so that it does not impact on the surface vegetation;
- Protect all areas susceptible to erosion and ensure that there is no undue soil erosion resultant from activities within and adjacent to the construction camp and work areas; and
- Runoff from the construction area must be managed to avoid erosion and pollution problems. not allow any disturbance to the adjoining natural vegetation cover.

9.1.6 Changes in water flow regime

This potential impact is associated with changing the quantity and fluctuation properties of the watercourse are for example, obstructing water flow. The source of this impact includes the compaction of soil and the clearing of vegetation during construction of a road, including the Construction and Operational Phases of the proposed development. In the present project, this will include the construction of a major culvert. **Table 23** presents an assessment of the impacts associated with changes in water flow regime.

Table 23: Impacts assessment associated with changes in water flow regime

Project Phase	Nature of impact	Extent	Duration	Intensity	Consequence (E+D+)	Probability	Reversibility	Loss of Resources	Significance (C X P)	Significance
									Without Mitigation	With Mitigation
Preferred and Proposed Layout Route										
Construction	Negative	1	2	2	4-5	4			12-16	8-10
		Site	Medium	Medium	Low	Definite	Y	Low	High	Medium
Operation	Negative	1	1	1	3	2			4-6	4-6
		Site	Short term	Low	Negligible	Probable	Y	Low	Low	Low
Cumulative	Negative	1	1	1	3	2			4-6	4-6
		Site	Short term	Low	Negligible	Probable	Y	Low	Low	Low
Layout Route Alternative 1										
Construction	Negative	1	2	2	4-5	4			12-16	8-10
		Site	Medium	Medium	Low	Definite	Y	Low	High	Medium
Operation	Negative	1	1	1	3	2			4-6	4-6
		Site	Short term	Low	Negligible	Probable	Y	Low	Low	Low
Cumulative	Negative	1	1	1	3	2			4-6	4-6
		Site	Short term	Low	Negligible	Probable	Y	Low	Low	Low

The proposed mitigation measures associated with changes in water flow regime are provided below:

- A review of stormwater structures associated with the road should be done to ensure that the culvert is suitable and contribute to the control of erosion along the road, rather than increases it;
- Energy dissipaters should be included in the design of the culvert;
- Construction affecting watercourses must be restricted to the dryer winter months where possible;
- Use of SANRAL road standards in terms of drainage and stormwater where practical and possible within project agreements; and
- Effective stormwater management should be a priority during the Construction Phase. This should be monitored as part of the EMPr. High energy stormwater input into the watercourses should be prevented at all costs. Changes to natural flow of water (surface water as well as water flowing within the soil profile) should be considered.

9.1.7 Loss of Topsoil and Soil Compaction

Potential disturbance on soil includes compaction owing to vehicle traffic (during the Construction Phase) and increased surface runoff from the compacted areas. Soil pollution may emanate from petroleum hydrocarbon contamination owing to vehicle and machinery breakdown during the construction phase. The proposed construction of the road will require the clearance of vegetation and stripping of topsoil resulting in the loss of the original spatial distribution of the natural soil forms and horizon sequences. **Table 24** presents an assessment of the impacts associated with loss of topsoil and soil compaction.

Table 24: Impacts assessment associated with loss in topsoil and compaction

Project Phase	Nature of impact	Extent	Duration	Intensity	Consequence (E+D+)	Probability	Reversibility	Loss of Resources	Significance (C X P)	Significance
									Without Mitigation	With Mitigation
Preferred and Proposed Layout Route										
Construction	Negative	1	2	2	4-5	2			8-10	4-6
		Site	Medium	Medium	Low	Probable	Y	Low	Medium	Low
Operation	Negative	1	1	1	3	2			4-6	4-6
		Site	Short term	Low	Negligible	Probable	Y	Low	Low	Low
Cumulative	Negative	1	1	1	3	2			4-6	4-6
		Site	Short term	Low	Negligible	Probable	Y	Low	Low	Low
Layout Route Alternative 1										
Construction	Negative	1	2	2	4-5	2			8-10	4-6
		Site	Medium	Medium	Low	Probable	Y	Low	Medium	Low
Operation	Negative	1	1	1	3	2			4-6	4-6
		Site	Short term	Low	Negligible	Probable	Y	Low	Low	Low
Cumulative	Negative	1	1	1	3	2			4-6	4-6
		Site	Short term	Low	Negligible	Probable	Y	Low	Low	Low

The proposed mitigation measures associated with the topsoil and soil compaction are provided below:

- Topsoil should be excavated and stockpiled separately from the subsoils to be used during the rehabilitation of the road verges. The topsoil stockpiles should not exceed 2m;
- Drip trays shall be provided in construction areas for stationary mobile plant and construction machinery;
- Drip trays, sumps and bunds must be emptied regularly, especially before a known rain event and after a rain event, and the contents disposed of at a licensed disposal facility;
- All vehicles and equipment shall be kept in good working order and serviced regularly;
- Leaking equipment shall be repaired immediately or removed from the site;
- A stormwater management plan must be compiled and implemented by the Contractor to take the increased surface water run-off rates and volumes and their erosion potential into consideration; and
- Should concrete be mixed on site, mixing will take place within a demarcated fenced off concrete batching area at the Contractor's Camp. Concrete must be mixed on an impervious surface.

9.2 Theme 2: Impacts on the Human Environment

The following impacts have been assessed under *Theme 2: Impacts on the Human Environment* and are also discussed in detail in the sections below.

- Traffic on local roads
- Dust and Air Quality Impacts
- Noise Impacts
- Heritage Impacts
- Visual Impacts
- Health and Safety Impacts
- Temporary Economic and Employment Opportunities

9.2.1 Traffic on local roads

The movement of construction vehicles during the construction of the proposed access roads can result in an increase in traffic congestion on local roads. Activities during the Construction Phase of the project such as stop and go points, and temporary diversions will disrupt the normal flow of traffic. During the Operational Phase, traffic volume is expected to improve within the adjacent link roads. The proposed roads will have a positive impact on traffic during the Operational Phase. The assessment of this impact is indicated in **Table 25**.

Table 25: Impacts assessment associated with traffic on local roads

Project Phase	Nature of Impact	Extent	Duration	Intensity	Consequence (E+D+)	Probability	Reversibility	Loss of Resources	Significance (C X P)	Significance
									Without Mitigation	With Mitigation
Preferred and Proposed Layout Route										
Construction	Negative	1 Site	2 Medium	2 Medium	4-5 Low	2 Probable	Y	Low	8-10 Medium	4-6 Low
Operation	Negative	1 Site	1 Short term	1 Low	3 Negligible	2 Probable	Y	Low	Positive	1-3 No Significance
Cumulative	Negative	1 Site	1 Short term	1 Low	3 Negligible	2 Probable	Y	Low	Positive	1-3 No Significance
Layout Route Alternative 1										
Construction	Negative	1 Site	2 Medium	2 Medium	4-5 Low	2 Probable	Y	Low	8-10 Medium	4-6 Low
Operation	Negative	1 Site	1 Short term	1 Low	3 Negligible	2 Probable	Y	Low	Positive	1-3 No Significance
Cumulative	Negative	1 Site	1 Short term	1 Low	3 Negligible	2 Probable	Y	Low	Positive	1-3 No Significance

The proposed mitigation measures for the management of traffic brought about by construction activities are as follows:

- There must be an erection of signage to warn motorists about the presence of construction vehicles;
- Construction activities must be limited to daytime hours where possible;
- Construction vehicles must not exceed speed limits of 40km/h within the construction site;
- Construction vehicles travelling on public roads must adhere to speed limits; and
- Construction vehicles must not dispose of soil or other material on roads. Where this occurs, the ECO and Contractor must ensure that the material must be removed before the end of the working day.

9.2.2 Dust and Air Quality Impacts

Clearance of vegetation, grading, excavation activities and increased traffic volumes will result in dust generation and impact on the local community and adjacent business in the area. Depending on the activities undertaken on site and the climatological conditions, the level of dust emissions will vary. An assessment of the potential dust and air quality impacts of all phases are shown in **Table 26**.

Table 26: Impacts assessment associated with air quality

Project Phase	Nature of impact	Extent	Duration	Intensity	Consequence (E+D+)	Probability	Reversibility	Loss of Resources	Significance (C X P)	Significance
									Without Mitigation	With Mitigation
Preferred and Proposed Layout Route										
Construction	Negative	1	2	2	4-5	2			8-10	4-6
		Site	Medium	Medium	Low	Probable	Y	Low	Medium	Low
Operation	Negative	1	1	1	3	2			4-6	4-6
		Site	Short term	Low	Negligible	Probable	Y	Low	Low	Low
Cumulative	Negative	1	1	1	3	2			4-6	4-6
		Site	Short term	Low	Negligible	Probable	Y	Low	Low	Low
Layout Route Alternative 1										
Construction	Negative	1	2	2	4-5	2			8-10	4-6
		Site	Medium	Medium	Low	Probable	Y	Low	Medium	Low
Operation	Negative	1	1	1	3	2			4-6	4-6
		Site	Short term	Low	Negligible	Probable	Y	Low	Low	Low
Cumulative	Negative	1	1	1	3	2			4-6	4-6
		Site	Short term	Low	Negligible	Probable	Y	Low	Low	Low

The proposed mitigation measures for dust and air quality are as follows:

- Implement dust suppression measures in all areas that will be affected by construction activities and where dust will be generated. Dust suppression must also be undertaken during windy and dry weather conditions;
- A continuous dust monitoring process needs to be undertaken during construction;
- Speed restriction of no more than 40km/h must be implemented for all construction vehicles within the construction site;
- Heavy vehicles and machinery should be serviced regularly to minimise exhaust fume pollution;
- Soil stockpiles shall be located in sheltered areas, where possible, to limit the erosive effects of the wind; and
- All vehicles transporting friable materials such as sand must be covered by a tarpaulin or wetted down.

9.2.3 Noise Impacts

Construction sites are synonymous with noise impacts. High noise levels can have an adverse impact on both site labourers as well as the public, including occupiers of adjacent land. With regards to the proposed roads, noise sensitive receptors such as the neighbouring residential properties, motor spares and other facilities that are situated adjacent to the project site. It is therefore important that this impact is assessed as presented in **Table 27**. During the Operational Phase of the project, it is not anticipated that the proposed roads will have an effect on the nearby receptors as a low noise road surface has been considered during the planning and design of the proposed roads.

Table 27: Impacts assessment associated with noise

Project Phase	Nature of impact	Extent	Duration	Intensity	Consequence (E+D+)	Probability	Reversibility	Loss of Resources	Significance (C X P)	Significance
									Without Mitigation	With Mitigation
Preferred and Proposed Layout Route										
Construction	Negative	1	2	2	4-5	2			8-10	4-6
		Site	Medium	Medium	Low	Probable	Y	Low	Medium	Low
Operation	Negative	1	1	1	3	2			4-6	4-6
		Site	Short term	Low	Negligible	Probable	Y	Low	Low	Low
Cumulative	Negative	1	1	1	3	2			4-6	4-6
		Site	Short term	Low	Negligible	Probable	Y	Low	Low	Low
Layout Route Alternative 1										
Construction	Negative	1	2	2	4-5	2			8-10	4-6
		Site	Medium	Medium	Low	Probable	Y	Low	Medium	Low
Operation	Negative	1	1	1	3	2			4-6	4-6
		Site	Short term	Low	Negligible	Probable	Y	Low	Low	Low
Cumulative	Negative	1	1	1	3	2			4-6	4-6
		Site	Short term	Low	Negligible	Probable	Y	Low	Low	Low

The proposed mitigation measures to address noise impacts in the undertaking of construction activities are as follows:

- The working hours stipulated in the Construction Permit, where applicable, must be adhered to. Where this is not applicable, the following working hours must be adhered to: Monday to Friday from sunrise to sunset and where applicable on weekends or Public Holidays based on agreements between SANRAL and the Contractor;
- All construction plant and other equipment must be in a good working order to reduce possible noise pollution; and
- Noise reduction is essential, and Contractors must endeavour to limit unnecessary noise, especially loud talking, shouting or whistling, radios, sirens or hooters, motor revving, etc.

9.2.4 Heritage Impacts

Construction activities such as excavations and grading could expose or damage features of heritage and cultural value beneath the surface. Although there are no Heritage features within the study area, any heritage features discovered during the Construction Phase shall be noted of and should any heritage feature be identified during any stage of the project, activities must stop and the Amafa and the ECO must be contacted. Refer to **Table 28** for an assessment of potential impacts on heritage resources.

Table 28: Impacts assessment associated with heritage resources

Project Phase	Nature of Impact	Extent	Duration	Intensity	Consequence (E+D+)	Probability	Reversibility	Loss of Resources	Significance (C X P)	Significance
									Without Mitigation	With Mitigation
Preferred and Proposed Layout Route										
Construction	Negative	1	2	1	4-5	1	Y	Low	4-6	1-3
		Site	Medium	Low	Low	Improbable			Low	No Significance
Operation	Negative	1	2	1	4-5	1	Y	Low	4-6	1-3
		Site	Medium	Low	Low	Improbable			Low	No Significance
Cumulative	Negative	1	2	1	4-5	1	Y	Low	4-6	1-3
		Site	Medium	Low	Low	Improbable			Low	No Significance
Layout Route Alternative 1										
Construction	Negative	1	2	1	4-5	1	Y	Low	4-6	1-3
		Site	Medium	Low	Low	Improbable			Low	No Significance
Operation	Negative	1	2	1	4-5	1	Y	Low	4-6	1-3
		Site	Medium	Low	Low	Improbable			Low	No Significance
Cumulative	Negative	1	2	1	4-5	1	Y	Low	4-6	1-3
		Site	Medium	Low	Low	Improbable			Low	No Significance

In order to protect Heritage Resources on site, the following mitigation measures are proposed:

- The Contractor(s) should be made aware of possible heritage and archaeological finds during the construction activities;
- Should any heritage artefacts be exposed during excavation, work on the area where the artefacts were discovered, shall cease immediately and Amafa and the ECO shall be notified as soon as possible;
- All discoveries shall be reported immediately to a heritage practitioner so that an investigation and evaluation of the finds can be made. Acting upon advice from these specialists, the ECO will advise the necessary actions to be taken;
- Should any graves be uncovered during the Construction Phase of the project, the Applicant and appointed ECO must ensure in terms of section 38(6) of the Act, the responsible heritage resources authority (Amafa), as well as the South African Police Service (SAPS) are notified; and
- The ECO must train the Contractor to recognise any heritage features. Should there be a sign of such objects, construction must immediately halt in that area, and it must be demarcated. A suitably qualified heritage specialist must be called to investigate through the ECO.

9.2.5 Visual Impacts

During the Construction Phase of the project, it is anticipated that construction vehicles in the area as well as excavations will have a potentially negative impact on the surrounding land use. In terms of the Operational Phase of the project, the area surrounding the site is invaded by other visual elements such as residential areas, existing road networks and business facilities. Although the proposed development would be clearly visible, especially to the residents of Kokstad, it is anticipated that it would, blend in with the rest of the environment considering the existing road. The overall assessment of this impact is summarised in **Table 29**.

Table 29: Assessment of Visual Impacts

Project Phase	Nature of impact	Extent	Duration	Intensity	Consequence (E+D+)	Probability	Reversibility	Loss of Resources	Significance (C X P)	Significance
									Without Mitigation	With Mitigation
Preferred and Proposed Layout Route										
Construction	Negative	1	2	2	4-5	1			8-10	4-6
		Site	Medium	Medium	Low	Probable	Y	Low	Medium	Low
Operation	Negative	1	1	1	3	1			4-6	4-6
		Site	Short term	Low	Negligible	Probable	Y	Low	Low	Low
Cumulative	Negative	1	1	1	3	1			4-6	4-6
		Site	Short term	Low	Negligible	Probable	Y	Low	Low	Low
Layout Route Alternative 1										
Construction	Negative	1	2	2	4-5	1			8-10	4-6
		Site	Medium	Medium	Low	Probable	Y	Low	Medium	Low
Operation	Negative	1	1	1	3	1			4-6	4-6
		Site	Short term	Low	Negligible	Probable	Y	Low	Low	Low
Cumulative	Negative	1	1	1	3	1			4-6	4-6
		Site	Short term	Low	Negligible	Probable	Y	Low	Low	Low

In order to mitigate the potential visual impacts, the following measures are proposed:

- Dust levels must be kept down by regularly wetting dirt roads and exposed soil areas inside the site;
- Clearly demarcate the construction site to limit the area of disturbance;
- Remove all waste, including cleared vegetation from site as soon as possible unless the material will be reused on site. A dedicated area for the placement of waste that will either be removed or reused must be identified and demarcated; and
- Domestic waste generated from the site camp must be kept in labelled bins with lids and removed every week or more often as the need arises and be disposed of at a registered landfill. Proof of the disposal must be kept. Where waste is removed from site through other means, e.g., arrangement with adjacent landowners, written confirmation of this arrangement must be obtained.

9.2.6 Health and Safety Impacts

During the Construction Phase, the work that will be required may have health and safety implications for the personnel that will be working on the project. However, during the Operational Phase of the project, the proposed access roads will address safety, mobility functions and ensure that reasonable access is provided to adjacent properties and areas to enable the future land use development. The impact is considered to be positive during the Operational Phase. The overall assessment of this impact is summarised in **Table 30**.

Table 30: Assessment of Health and Safety Impacts

Project Phase	Nature of Impact	Extent	Duration	Intensity	Consequence (E+D+)	Probability	Reversibility	Loss of Resources	Significance (C X P)	Significance
									Without Mitigation	With Mitigation
Preferred and Proposed Layout Route										
Construction	Negative	2	2	2	4-5	2			8-10	4-6
		Local	Medium	Medium	Low	Probable	Y	Low	Medium	Low
Operation	Positive	2	1	1	3	2				1-3
		Local	Short term	Low	Negligible	Probable	Y	Low	Positive	No Significance
Cumulative	Positive	2	1	1	3	2				1-3
		Local	Short term	Low	Negligible	Probable	Y	Low	Positive	No Significance
Layout Route Alternative 1										
Construction	Negative	2	2	2	4-5	2			8-10	4-6
		Local	Medium	Medium	Low	Probable	Y	Low	Medium	Low
Operation	Positive	2	1	1	3	2				1-3
		Local	Short term	Low	Negligible	Probable	Y	Low	Positive	No Significance
Cumulative	Positive	2	1	1	3	2				1-3
		Local	Short term	Low	Negligible	Probable	Y	Low	Positive	No Significance

In order to mitigate the potential Health and Safety Impacts, the following measures are proposed:

- Contractor must appoint a Health and Safety Officer for the Construction Phase of the project;
- A Health and Safety Officer as well as an independent consultant must be appointed to audit the site's compliance with the OHS Act during construction;
- Suitable Personal Protective Equipment (PPE) must be worn at all times by all employees on site during the Construction Phase of the project;
- With the exception of the project team members, no persons should be allowed to enter the construction site area. The site and crew are to be managed in strict accordance with the OHS Act;
- The Contractor must ensure that all emergency procedures are in place prior to commencing work; Emergency procedures must include (but not be limited to) fire, spills, contamination of soil, accidents to employees and limiting casual access to the construction site for workers, use of hazardous substances and materials, etc.; and
- The Contractor must ensure that a list of all emergency services (including police and ambulance services), telephone numbers or contact persons are kept up-to-date and that all numbers and names are posted at conspicuous locations throughout the construction site.

9.2.7 Temporary Economic and Employment Opportunities

The proposed development will have a positive impact within the Harry Gwala District Municipality as suppliers of construction materials will experience economic growth during the Construction Phase. During the Construction Phase, the skilled and semi-skilled jobs will be created. The use of local labour, as far as possible, is recommended as this would have a positive impact on the local economy. The impact is considered to be positive. The overall assessment of this impact is summarised in **Table 31**.

Table 31: Assessment of Temporary Employment Impacts

Project Phase	Nature of Impact	Extent	Duration	Intensity	Consequence (E+D+)	Probability	Reversibility	Loss of Resources	Significance (C X P)	Significance
									Without Mitigation	With Mitigation
Preferred and Proposed Layout Route and Route Alternative 1										
Construction	Positive	2 Local	2 Medium	2 Medium	4-5 Low	2 Probable	Y	Low	Positive	4-6 Low
Temporary job opportunities for the local residents and suppliers will only be created during the construction phase of the project.										

Even though the impacts related to temporary employment is positive, the SANRAL 14-point plan that stipulates the principles concerning project liaison, sub-contracting and labour sourcing shall be implemented. A Project Liaison Committee (PLC) shall be established to assist with the recruitment of local labour.

9.2.8 Cumulative Impacts

The NEMA EIA Regulations, 2014 (as amended) defines a “cumulative impact” in relation to an activity, as the past, current and reasonably foreseeable future impact of an activity, considered together with the impact of activities associated with that activity, that in itself may not be significant, but may become significant when added to the existing and reasonably foreseeable impacts eventuating from similar or diverse activities. This is required on the basis that the impact of an activity that in itself may not be significant but may become significant when added to the existing and potential impacts eventuating from similar or diverse activities or undertakings in the area. The environmental impacts that will emanate from the activities associated with the proposed construction of the access roads have already been discussed in this BAR. Mitigation measures to ameliorate these impacts during the Construction and Operational Phases of the project have been discussed in some sections of this chapter and are prescribed in detail in the EMPr.

10 ENVIRONMENTAL IMPACT STATEMENT

There are two designs which largely follow the same route with the exception of a traffic circle and a culvert within the watercourse. During the Construction Phase, earthworks and soil disturbances could result in the loss of topsoil, sedimentation of the watercourse and increase the turbidity of the water. Even though the site proposed for development is dominated by the infestation of alien vegetation, it provides potential habitat or foraging opportunities for faunal species (such as the livestock).

The proposed development of the Rocabar access roads will lead to the permanent, direct loss of intact floral habitat in proceeding within the project, it is therefore important that integrated environmental management be considered. Each of the impacts identified in this report can be mitigated by the measures outlined in this report as well as the Environmental Management Programme. These mitigation measures must be supplemented with additional conditions from the Environmental Authorisation that will be issued by DFFE as the Competent Authority.

A total of two (2) layout and design alternatives were identified for the project in addition to the *No-go alternative*. Direct, indirect and cumulative impacts were identified for the various project phases and in the case of the Layout alternatives, both alternatives were assessed in detail during the stages of project planning, design and/or the Basic Assessment process. There were five (5) specialist assessments undertaken to aid with this DBAR. A Heritage and Palaeontological Impact Assessment, a Terrestrial Biodiversity Assessment, Wetland and Aquatic Impact Assessment and a Geotechnical Investigation. The studies found the site to be overall, moderate to low sensitive mainly due to the transformed nature of the project site.

Based on the summary of environmental observations presented, the types of impact, duration, likelihood and significance of the impacts are varied for a project of this nature. This Impact Assessment in Chapter 9 of this BAR illustrates that there are various potential negative and positive impacts that may result from the construction of the proposed Rocabar access roads and associated infrastructure. From an environmental perspective and with the consideration of the potential impacts detailed above, the proposed development will have moderate to low impacts on the bio-physical environment, all of which can be fully mitigated, managed, and where possible, prevented. The proposed development will have an impact of *moderate to low* significance as culvert infrastructure will be constructed within the sensitive environment (e.g., watercourse). The mitigation measures proposed are robust enough to minimize impacts that may arise from the proposed development and significant environmental sensitivities were identified by the specialists that were appointed for the project.

All specialists agree that there are no fatal flaws to the proposed development the access roads on the preferred site beside the negative impacts that will be introduced during the Construction Phase. These impacts will mainly diminish over time, especially since there are no negative impacts expected during the Operational Phase of the development. It is therefore the opinion of the EAP that the proposed development of the Rocabar access roads should be constructed as per the assessment and the recommendation provided in this Basic Assessment Report.

11 RECOMMENDATIONS AND CONCLUSION

This Basic Assessment Report has provided a comprehensive assessment of the potential environmental impacts associated with the proposed activity. These impacts have been identified by the EAP and the specialist studies undertaken for the proposed development. The key findings of the Basic Assessment Process are discussed in this report. It is the recommendation of the EAP that the preliminary design be approved as this route is the most effective way of meeting the need and purpose of the proposed activity. The impact assessment has revealed that the Construction and Operational Phases of the proposed project will generate negative impacts of moderate to low significance after mitigation, but of a moderate to high positive significance for road users. The proposed project will enhance traffic and safety conditions for pedestrians, vehicles and adjacent landowners. The construction of the proposed roads will complement infrastructure development within the area. Infrastructure forms the backbone of a country's economy; hence the proposed development is significant for the overall development of the country.

Taking into consideration the findings of the Environmental Impact Assessment, the project benefits outweigh the negative impacts identified provided that mitigation measures are applied effectively. Impacts of high significance are not foreseen once proper mitigation measures have been implemented. It is therefore recommended that the environmental authorities subject the proposed application to the following conditions:

- a. The Applicant shall undertake a Water Use Authorisation Application as per the National Water Act (Act No. 36 of 1998) prior to the commencement of the project activities;
- b. The Applicant shall inform all adjacent landowners of the commencement of construction activities at least 30-days before the commencement;
- c. An independent Environmental Control Officer must be appointed to monitor all construction activities and ensure the demarcation of all applicable areas and approve the locations of all infrastructure;
- d. Prior to construction, the final road alignment, road reserve and development footprint area must be demarcated on site to ensure that construction impacts are contained within this area. If necessary, these areas may be fenced or, alternatively, nearby sensitive areas are to be fenced to prevent access;
- e. Increased runoff due to removal of vegetation and increased soil compaction must be managed to ensure the prevention of siltation;
- f. Implement an Alien Plant Control Plan which specifies long-term monitoring schedules;
- g. Maintenance of construction vehicles or equipment should not take place within the watercourse or riparian areas;
- h. When excavating in watercourses the upper (30 cm) topsoil should be removed together with the vegetation and stored as sods on the site. These should then be replaced in disturbed areas requiring rehabilitation;
- i. Construction within the watercourses will require blocking of active flow. This should be done by blocking only half of the channel for construction, whilst the remaining half is allowed to maintain flow. The timeframe for construction through watercourses should also be kept to a minimum;

- j. Topsoil (the top 30cm of the soil profile) should be excavated and stockpiled separately from the subsoils to be used during the rehabilitation of the road verges.
- k. Drip trays shall be provided in construction areas for stationary plant mobile plants and machinery. The drip trays, sumps and bunds must be emptied regularly, especially before a known rain event and after a rain event, and the contents disposed of at a licensed disposal facility;
- l. The Contractor must be trained to recognise any heritage features. Should there be a sign of such objects, construction must halt in that area immediately and a suitably qualified heritage specialist must be called to investigate through the ECO;
- m. Adhere to all conditions of the Environmental Authorisation issued by DFFE as well as any conditions of permits that may be required thereafter; and
- n. Adhere to all recommendations outlined in the specialist reports (**Appendix F**) and the Environmental Management Programme in **Appendix G**.

Based on the environmental assessment of the site conditions, and the potential impact of the proposed road, the preliminary design has emerged as the most viable option subject to adherence to mitigation measures outlined in this report and the EMPr. It is recommended that these activities are completed within a period of 5 years to avoid dire impacts on the environment which cannot be corrected.

It is therefore strongly advised that the recommendations highlighted in this section be included as conditions of authorisation by the DFFE. It is Terratest (Pty) Ltd.'s recommendation that the Applicant, SANRAL, be granted an Environmental Authorisation for the proposed roads subject to the conditions stipulated in the preceding section and that all Mitigation Measures provided in this report be strictly adhered to and closely monitored by an independent EAP to avoid adverse environmental Impact.

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