BASIC ASSESSMENT PROCESS

for the

PROPOSED UPGRADE OF AN EXISTING SECTION OF THE R103 AND THE CONSTRUCTION OF A NEW 1,6KM GREENFIELDS LINK ROAD BETWEEN THE CAMPERDOWN INTERCHANGE AND THE CAMPERDOWN OVERPASS, MKHAMBATHINI LOCAL MUNICIPALITY, KWA-ZULU NATAL

DFFE REF NO: 14/12/16/3/3/1/2430

FINAL BASIC ASSESSMENT REPORT

January 2022

Report prepared for:	Report prepared by:
SANRAL SOC Limited PO Box 100401 Scottsville 3209	Qpoint Group Pty Ltd 2016/511316/07 4 Camilla Close, Northwold 2188
SANRAL BUILDING SOUTH AFRICA THROUGH BETTER ROADS	QPOINT

PROJECT INFORMATION

Title: FINAL BASIC ASSESSMENT REPORT for the PROPOSED UPGRADE OF AN EXISTING SECTION OF THE R103 AND THE CONSTRUCTION OF A NEW 1,6KM GREENFIELDS LINK ROAD BETWEEN THE CAMPERDOWN INTERCHANGE AND THE CAMPERDOWN OVERPASS, MKHAMBATHINI LOCAL MUNICIPALITY, KWA-ZULU NATAL

Competent Authority:	Department of Forestry, Fisheries and the Environment (DFFE)
Reference #:	14/12/16/3/3/1/2430
Applicant:	SANRAL SOC Limited
EAP:	Qpoint Group Pty Ltd.
Compiled by:	Norman Chetsanga
Reviewer:	Shelton Tsanga
Date:	January 2022

DRAFT BASIC ASSESSMENT REPORT (DBAR) FOR PUBLIC REVIEW

The Draft BAR was made available for download and review at the following link: https://bit.ly/3ABb0cF

The report was also available for request through sending a request email to R103@qpoint.co.za or norman@qpoint.co.za. All efforts to make it available for the public review were undertaken by the consultant.

Submission of Comments were as follows:

Please submit your comments by no later than 4 November 2021 to:

Norman Chetsanga / Kgakile Mapoulo

- **Qpoint Group Pty Ltd , 4 Camilla Close, Northwold , 2188**
- **Tel: 074 366 7048 / 067 750 8190**
- **E-mail: R103@qpoint.co.za/ norman@qpoint.co.za**

Guided by the EIA Regulations, it should be noted that registered interested and affected parties are required to disclose any direct business, financial, personal or any other interest which that party may have in the approval or refusal of the application.

OVERVIEW SUMMARY

INTRODUCTION AND LEGAL REQUIREMENTS

The South African National Roads Agency SOC Limited (SANRAL) intends to widen the R103 road and construction of a new 1,6km Greenfields link Pietermaritzburg, KwaZulu-Natal. The proposed project requires environmental authorisation from the national The Department of Environment, Forestry & Fisheries (DFFE) previously the Department of Environmental Affairs (DEA). This report is a Draft Basic Assessment Report (DBAR) for upgrades to a section of the R103 and the construction of a new 1,6km Greenfields Link Road between the Camperdown interchange and the Camperdown Overpass. The DBAR has been prepared on behalf of SANRAL by Qpoint Group (Pty) Ltd), in terms of the requirements of the Environmental Impact Assessment (EIA) Regulations of 2014 (as amended), published under the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA). The Basic Assessment process has included technical investigations and public participation in accordance with GN R. 326. This Draft BAR has been made available for public review and comment during the period 11 October to 11 November

Other environmental laws, policies and guidelines applicable to this project are listed in Table 5 of this report.

PROJECT NEED AND DESIRABILITY

The purpose of the proposed R103 road project is to provide vehicle access during the construction phase of the N3 upgrades, particularly during the proposed capacity upgrades to the N3 between the Cato Ridge Interchange (km 19,4) to Dardanelles (km 30.6), Mkhambathini Local Municipality. An Environmental Authorisation (14/12/16/3/3/1/2009) was issued by then Department of Environmental Forestry and Fisheries (DEFF) in July 2019. The proposed R103 upgrade is intended to alleviate traffic congestion and provide a diversion route from the broader N3 road upgrades for the SIP 2 national projects relevant to the said section of N3 upgrades.

Importantly, the upgrades are planned in line with South Africa's Strategic Infrastructure Projects (SIPs) as described in the National Development Plan, 2011. Specifically, the proposed capacity improvements form the backbone of SIP2, which focuses on strengthening the Durban-Free State- Gauteng logistics and industrial corridor. In line with SIP2 goals, the capacity improvements will improve access to Durban's export and import facilities. National roads are essential infrastructure supporting the economy of the country and, therefore, of benefit to all citizens of South Africa either directly or indirectly. As such, this project has been taken into account by, and is compatible with, national, provincial and municipal development and planning frameworks.

PROJECT LOCATION AND MAIN COMPONENTS

The upgrades to the R103 are required because of structural damage to the existing road surface. The total distance for the proposed R103 upgrades, including the new link road between the Camperdown Interchange and Camperdown overpass, will be approximately 3,9 km with a road reserve of 40 m.

The section of national road dealt with in this Basic Assessment is mainly situated in the Mkhambathini Local Municipality (LM) within the uMgungundlovu District Municipality (DM). The new Greenfields link road will comprise:

- 2 lane single carriageway facility;
- 3,25 m lanes;
- 1,5 m surfaced shoulders; and
- 0,5 m shoulder rounding;

The road proposed for upgrading will also include storm water management structures, guardrails, road signs, etc. to ensure the effective functioning of the road.

A locality map showing the details of the proposed road R103 construction upgrades is provided in Figure 1 below

Road sections to undergo construction

The proposed alignment starts on the R103, roughly one kilometre west of the Bishop and Doornrug Road intersection. From here it continues in a western direction past the bridge that crosses over the N3. From the bridge, the proposed road alignment continues straight and follows the northern edge of the old poultry farm boundary. To the west of the poultry farm, the alignment crosses a small drainage line before arching southwards and then north, traversing previously cultivated contoured fields. It joins the R103 around the intersection with Fairview Road.

ENVIRONMENTAL IMPACT STATEMENT

Effects of the project on the social environment and vice versa

During the construction period there will be negative impacts on the social environment, which will be experienced by both road users and adjacent property owners/occupiers on the affected sections. These include the disruption of traffic flows, road access, increased noise, increased crime risks and general construction related disturbances. Road restrictions will pose higher road safety risks to motorists, pedestrians and construction workers. Also of note are the high traffic volumes and space constraints will make it more difficult for the project team to execute construction efficiently.

Existing services in the current road will possibly be realigned/relocated and related disruptions may ensue. While these impacts will be temporary, it can be anticipated with a high level of certainty that thousands of road users and local residents will be affected on a daily basis at varying intensities over the period of construction. While the majority of the road widening will be containedwithin the existing road reserve, expropriation of adjacent land will be required and, thus, some property owners will lose parts of their land. SANRAL has entered into property acquisition processes with affected property owners and fair compensation is expected to be negotiated in line with legislated procedures.

With efficient and proper project management and implementation by SANRAL, as well as the application of the mitigation measures recommended in this report (subsequently carried over into the Environmental Management Programme (EMPr).

The positive impacts of the project on the social environment during operation will be of high significance. They can be predicted with a high level of certainty to benefit thousands of road users on a daily basis through improved road travelling conditions, including improved road safety and reduced travel times. Negative impacts during operation, such as increased traffic noise and exhaust emissions are not a result of the project but rather a result of increasing traffic volumes over time which will unavoidably affect any occupiers and users of properties adjacent to any national road. In the case of this project, the intensity of impacts will increase where the widened road brings the receivers into closer proximity to traffic. With respect to emissions, the impacts will be variable, depending on the topography and micro-climate of the location. Indeed, some areas where previously there was congestion are likely to improve with respect to emissions, as free flowing traffic is likely to decrease the concentration of exhaust emissions. SANRAL, as the road authority, is tasked with ensuring that the roads can safely and efficiently accommodate traffic growth to facilitate economic development and to do this, has to widen the road. SANRAL has taken into consideration low noise surfacing in the road design and is in the process of appointing an acoustic specialist to investigate further possible and feasible noise control measures over time.

Control of the growth of traffic volumes is a broader issue that requires high level interventions such as improved public transport and migration of freight from road to rail. These issues are being addressed but will take time. Ultimately there must also be an adaptation to prevailing conditions, i.e. a change of land use/receptors adjacent to national roads, towards those which are less sensitive to noise. With mitigation, the negative impacts on the social environment associated with operation of the widened national roads are anticipated to be of a low and medium significance.

Effect of the project on the economic/socio-economic environment

During the construction period, it is expected that some positive economic/socio-economic impacts of low significance will accrue to the local and regional community due to the provision of temporary jobs for semi-skilled and unskilled workers, the increased opportunities for local contractors and SMMEs. There is also likely to be spending nationally on specialist materials/equipment.

Economic impacts during operation will be positive. The project has marriage to SIP2 status (and as such, national priority). The primary motivation for implementing this project is to facilitate an alternative route while N3 upgrades occur. The larger N3 economic impacts will be to stimulate economic growth through improved transport infrastructure and an improved logistics/transport corridor between Durban and Gauteng. The localized impacts will also be linked to improved transport linkages within the area and thus faster means of trade.

Effects of the project on cultural heritage resources

Based on the findings of the cultural heritage assessment, Site CD001 identified in the specialist report was rated as low heritage significance with a heritage rating of IIIC. The site also has no historical value. As such, the site is deemed to be of Generally Protected C (GP. C).

The pre-mitigation impact assessment undertaken indicates that the impact of the proposed development on the site will be LOW. As the site is of low heritage significance, no mitigation measures are required. Should any be uncovered during the course of construction, AMAFA must be notified for guidance on actions required.

Effects of the project on the terrestrial and aquatic biodiversity

According to the terrestrial biodiversity report, adverse impacts likely to be linked with the construction and operation of the R103 road are expected to be of 'Very High' or 'High' significance without mitigation measures given the roads proposed route and proximity to intensive agriculture and at least two (2) watercourses. Implementation of recommended standard best practice mitigation will lower the impact significance ratings to a risk potential 'Medium' rating.

During the construction phase of the proposed R103 road upgrades and new road construction, there will be definite impacts imposed onto the watercourse, namely through excavations, general road construction activities (e.g. foundation and road surface placement, etc.), and

destruction of the stream bank. Key construction activities likely to result in degradation of the unnamed watercourse habitat include (i) undertaking bulk earthworks, (ii) increased run-off from compacted/hard surfaces, and (iii) bank erosion during higher flows, all of which may lead to scouring and erosion of the instream and riparian habitat. Road construction activities will furthermore lead to the inevitable removal of instream and riparian vegetation, potentially altering flow regime as well as the alteration of the natural topography of the watercourse. The significance of the impact was estimated as a 'moderate' impact significance for the construction and operation phase of the project, but because of the placement of the road crossing the watercourse and the inherent constant disturbance that can be associated with frequent road use (particularly for the establishment of alien invasive plant species) io, the impact risk potential even with mitigation measures remains "moderate' but with lower scores

Effects of the No Development Alternative

The No development alternative will mean that the N3 upgrades will occur without any alternative deviation route on this section. Greater traffic congestion will thus be experienced along the Durban to Gauteng route with the temporary closure of some lanes during construction. For these reasons,this alternative is not recommended.

RECOMMENDATION OF THE ENVIRONMENTAL ASSESSMENT PRACTITIONER

It is the opinion of the EAP that the information contained in this report and the documentation attached hereto is sufficient to make a decision in respect of the activity applied for, viz. the proposed capacity upgrades to the R103 and the construction of a new 1,6km Greenfields link**.**

It is recommended that the proposed activity is authorised, based on the findings of the assessment process and findings and recommendations from specialists. Great emphasis is however placed on the need to follow all mitigation measures as recommended by the specialists.

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ACRONYMS AND ABBREVIATIONS

BAR	Basic Assessment Report
BID	Background Information Document
CBA	Critical Biodiversity Area
DAFF	Department of Agriculture, Forestry and Fisheries
DFFE	Department of Environment, Forestry and Fisheries
DEDTEA	Department of Economic Development, Tourism and Environmental Affairs(KwaZulu-Natal)
DWS	Department of Water and Sanitation
EAP	Environmental Assessment Practitioner
ECO	Environmental Control Officer
EIA	Environmental Impact Assessment
EKZNW	Ezemvelo KwaZulu-Natal Wildlife
EMF	Environmental Management Framework
EMPr	Environmental Management Programme
ESA	Ecological Support Area
GN	Government Notice
ha	hectare
I&APs	Interested and Affected Parties
IDP	Integrated Development Plan
kl	Kilolitre
km	Kilometre
KZN	KwaZulu-Natal Province
LM	Local Municipality
LN	Listing Notice
m	Meter
m^3	Cubic Meter
Qpoint	Qpoint Group (Pvt) Ltd
N3	National Road 3
NEMA	National Environmental Management Act
NEMBA	National Environmental Management Biodiversity Act
NEMPAA	National Environmental Management: Protected Areas Act
PLC	Project Liaison Committees
PPE	Personal Protective Equipment
PPPFA	Preferential Procurement Policy Framework Act
R103	Regional Route 103
RRM	Routine Road Maintenance
SANRAL	South African National Roads Agency SOC Limited
SANS	South African National Standard
SIP	Strategic Infrastructure Project
SMME	Small Medium and Micro Enterprise
TOPS	Threatened or Protected Species

DETAILS AND EXPERTISE OF THE ENVIRONMENTAL IMPACT ASSESSMENT (EAP) AND SPECIALIST TEAM

Norman Chetsanga. He holds Bachelor of .Environmental Science. (Hons.) Pollution Science(2008), Bindura University of Science Education. He has 10 years of experience in the environmental management field. Vast experience in environmental impact assessments review, approval and associated environmental compliance inspections. Well experienced in environmental legislation interpretation and compliance thereof. Has also attained auditing skills in Health and Safety matters during his career. He is registered as a Professional Natural Scientist with the South African Council for Natural Scientific Professions (SACNASP).

Details and CVs of specialists are contained in Appendices A1 to A4. Details and CVs of the EAP & Affirmation is contained in Appendix G.

ADHERENCE TO REQUIREMENTS OF APPENDIX 1 OF THE 2014 NEMA EIA REGULATIONS

Table 1 below details how the legal requirements of APPENDIX 1 of the 2014 EIA Regulations (as amended, GNR326) have been addressed within this report.

Table 1: Required content of Basic Assessment Report according to GNR 326 (7 April 2017)

Appendix 1: CONTENT OF BASIC ASSESSMENT REPORTS	**Cross-reference in this BAR report**
Scope of assessment and content of basic assessment reports	
3. (1) A basic assessment report must contain the information that is necessary for the competent authority to consider and come to a decision on the application, and must include— **(a)** details of— (i) the EAP who prepared the report; and (ii) the expertise of the EAP, including a curriculum vitae;	Appendix G
(b) the location of the activity, including: 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 t boundary of the property or properties;	Section 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- 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;	Appendix C & Appendix D
(d) a description of the scope of the proposed activity, including— i. all listed and specified activities triggered and being applied for; and ii a description of the activities to be undertaken including associated structures and infrastructure;	Section 1
(e) a description of the policy and legislative context within which the development is proposed including— iii. 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 iv. how the proposed activity complies with and responds to the legislation and policy context, plans, guidelines, tools frameworks, and instruments;	Section 2
(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;	Section 1
(g) a motivation for the preferred site, activity and technology alternative;	Section 4
(h) a full description of the process followed to reach the proposed preferred alternative within the site, including— 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;	Section 8

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— (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, significance, consequences, extent, duration and probability of potential environmental impacts and risks associated with the alternatives; 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; viii. the possible mitigation measures that could be applied and level of residual risk; ix. the outcome of the site selection matrix; x. if no alternatives, including alternative locations for the activity were investigated, the motivation for not considering such; and xi. a concluding statement indicating the preferred alternatives, including preferred location of the activity;	
(i) 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— (i) a description of all environmental issues and risks that were identified during the environmental impact assessment process; and (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;	Section 7
(j) an assessment of each identified potentially significant impact and risk, including— (i) cumulative impacts; (ii) the nature, significance and consequences of the impact and risk; (iii) the extent and duration of the impact and risk; (iv) the probability of the impact and risk occurring; (v) the degree to which the impact and risk can be reversed; (vi) the degree to which the impact and risk may cause irreplaceable loss of resources; and (vii) the degree to which the impact and risk can be avoided, managed or mitigated;	Section 8
(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;	Section 9, Appendix A1- A4
(l) an environmental impact statement which contains— (i) a summary of the key findings of the environmental impact assessment; (ii) a map at an appropriate scale which superimposes the proposed activity and it associated structures and infrastructure on the environmental sensitivities of the preferred site indicating any areas that should be avoided, including buffers; and (iii) a summary of the positive and negative impacts and risks of the proposed activity and identified alternatives;	Section 7, 9,10 Appendix A1- A4

(m) based on the assessment, and where applicable, impact management measures from specialist reports, the recording of the proposed impact management outcomes for the development for inclusion in the EMPr;	Section 10
(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 8
(o) a description of any assumptions, uncertainties, and gaps in knowledge which relate to the assessment and mitigation measures proposed;	Chapter 5
(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 8 (Section 8.4)
(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 requirements finalised;	10 years
(r) an undertaking under oath or affirmation by the EAP in relation to— (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; and	Appendix G1
(s) where applicable, details of any financial provision for the rehabilitation, closure, and ongoing post decommissioning management of negative environmental impacts;	N/A
(t) any specific information that may be required by the competent authority[1]; and	N/A
(u) any other matters required in terms of section 24(4)(a) and (b) of the Act.	N/A
(2) Where a government notice *gazetted* by the Minister provides for the basic assessment process to be followed, the requirements as indicated in such a notice will apply	N/A

Table 2: Regulatory requirement for public participation in a Basic Assessment Process according to Chapter 6 of GNR 326 (7 April 2017)

			Public Participation Process (Chapter 6 of GNR 326, 7 April 2017)	**Undertaken duringthe Basic Assessment**
41(1)			This regulation only applies in instances where adherence to the provisionsof these regulations specifically required.	
2			The person conducting a public participation process must take into account any relevant guidelines applicable to public participation as contemplated in section 24J of the Act and must give notice to all potential interested and affected parties of an application or proposed application which is subjected to public participation by—	
	a		fixing a notice board at a place conspicuous to and accessible by the public at the boundary, on the fence or along the corridor of—	Appendix E1
		I & ii	the site where the activity to which the application or proposed application relates is or is to be undertaken; and ii any alternative site any alternative site	Appendix C
	b		giving written notice, in any of the manners provided for in section 47D of the Act to—	

		i	the occupiers of the site and, if the proponent or applicant is not the owner or person in control of the site on which the activity is to be undertaken, theowner or person in control of the site where the activity is or is to be undertaken and to any alternative site where the activity is to be undertaken	Appendix E2, E4
		ii	owners, persons in control of, and occupiers of land adjacent to the site where the activity is or is to be undertaken and to any alternative site where the activity is to be undertaken;	
		iii	the municipal councillor of the ward in which the site and alternative site is situated and any organisation of ratepayers that represent the community in the area;	
		iv	the municipality which has jurisdiction in the area	
		v	any organ of state having jurisdiction in respect of any aspect of the activity; and	
		vi	any other party as required by the competent authority;	
	c		placing an advertisement in—	
		i	one local newspaper; or	Appendix E1
		ii	any official Gazette that is published specifically for the purpose of providing public notice of applications or other submissions made in terms of these Regulations;	
	d		placing an advertisement in at least one provincial newspaper or national newspaper, if the activity has or may have an impact that extends beyond the boundaries of the metropolitan or district municipality in which it is or will be undertaken: Provided that this paragraph need not be complied with if	
	e		an advertisement has been placed in an official Gazette referred to inparagraph (c)(ii); and	
			using reasonable alternative methods, as agreed to by the competent authority, in those instances where a person is desirous of but unable to participate in the process due to—	
			i. illiteracy; ii. disability; or iii. any other disadvantage.	
3			A notice, notice board or advertisement referred to in subregulations (2) must—	Appendix E1
	a		give details of the application or proposed application which is subjected to public participation; and	
	b		state—	
		i	whether basic assessment or S&EIR procedures are being applied to theapplication;	
		ii	the nature and location of the activity to which the application relates;	
		iii	where further information on the application or proposed application can be obtained; and	

		iv	the manner in which and the person to whom representations in respect of the application or proposed application may be made	
4			A notice board referred to in subregulation (2) must—	
	a		be of a size of at least 60cm by 42cm; and	Appendix E1
	b		display the required information in lettering and in a format as may bedetermined byte competent authority.	
5			Where public participation is conducted in terms of this regulation for an application or proposed application, subregulation (2)(a), (b), (c) and (d) need not be complied with again during the additional public participationprocess contemplated in regulations 19(1)(b) or 23(1)(b) or the public participation process contemplated in regulation 21(2)(d), on condition that—	
	a		such process has been preceded by a public participation process whichincluded compliance with subregulations (2)(a), (b), (c) and (d); and	N/A
6			When complying with this regulation, the person conducting the publicparticipation process must ensure that—	
	a		information containing all relevant facts in respect of the application or proposed application is made available to potential interested and affected parties; and	This DBAR
	b		participation by potential or registered interested and affected parties is facilitated in such a manner that all potential or registered interested and affected parties are provided with a reasonable opportunity to comment on the application or proposed application.	Section 6.3;Appendix E1, E2. E3, E4b
7			Where an environmental authorisation is required in terms of these Regulations and an authorisation, permit or licence is required in terms of aspecific environmental management Act, the public participation process contemplated in this Chapter may be combined with any public participationprocesses prescribed in terms of a specific environmental management Act, on condition that all relevant authorities agree to such combination of processes.	Noted. The public were given the opportunity in this public review process, to review all documents and air their concerns

1. INTRODUCTION

1.1 Background

This report is a Basic Assessment Report (DBAR) for part of the South African National Roads Agency SOC Limited's (SANRAL) proposed capacity improvements to existing sections of the R103 road in KwaZulu-Natal. It has been prepared on behalf of SANRAL by Qpoint Group (Pvt) Ltd, in terms of the requirements of the Environmental Impact Assessment (EIA) Regulations of 2014 (as amended), published under the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA). The details of the Environmental Assessment Practitioner (EAP) team are provided in Appendix G.

This Basic Assessment will be submitted to the Department of Forestry, Fisheries and the Environment (DFFE) as part of the requirements of the application for environmental authorisation.

1.2 Project purpose, need and desirability

The purpose of the proposed R103 road project is to provide vehicle access during the construction phase of the N3 upgrades, particularly during the proposed capacity upgrades to the N3 between the Cato Ridge Interchange (km 19,4) to Lvnnfield Park (km 30.6), eThekwini Outer West and Mkhambathini Local Municipalities. An Environmental Authorisation (14/12/16/3/3/1/2009) was issued by then Department of Environmental Forestry and Fisheries (DEFF) in July 2019. The proposed capacity improvements, which are divided into sections and covered ultimately by several engineering work packages, will be implemented at different stages according to timing priorities and factors related to funding availability (albeit the reality is that therewill be overlapping construction periods between the different work packages). The proposed capacityimprovements will improve safety and accommodate traffic growth to 2047.

Importantly, the upgrades are planned in line with South Africa's Strategic Infrastructure Projects (SIPs) as described in the National Development Plan, 2011. Specifically, the proposed capacity improvements form the backbone of SIP2, which focuses on strengthening the Durban-Free State- Gauteng logistics and industrial corridor. In line with SIP2 goals, the capacity improvements will improve access to Durban's export and import facilities. National roads are essential infrastructure supporting the economy of the country and, therefore, of benefit to all citizens of South Africa either directly or indirectly. As such, this project has been taken into account by, and is compatible with, national, provincial and municipal development and planning frameworks.

1.3 Location and scope of proposed capacity upgrades

The upgrades to the R103 are required because of structural damage to the existing road surface. The total distance for the proposed R103 upgrades, including the new link road between the Camperdown Interchange and Camperdown overpass, will be approximately 3,9 km with a road reserve of 40 m.

The section of national road dealt with in this Basic Assessment is mainly situated in the Mkhambathini Local Municipality (LM) within the uMgungundlovu District Municipality (DM). The new Greenfields link road will comprise:

- 2 lane single carriageway facility;
- 3,25 m lanes;
- 1,5 m surfaced shoulders; and
- 0,5 m shoulder rounding;

The road proposed for upgrading will also include stormwater management structures, guardrails, road signs, etc. to ensure the effective functioning of the road.

A locality map showing the details of the proposed road R103 construction upgrades is provided in **Figure 1**.

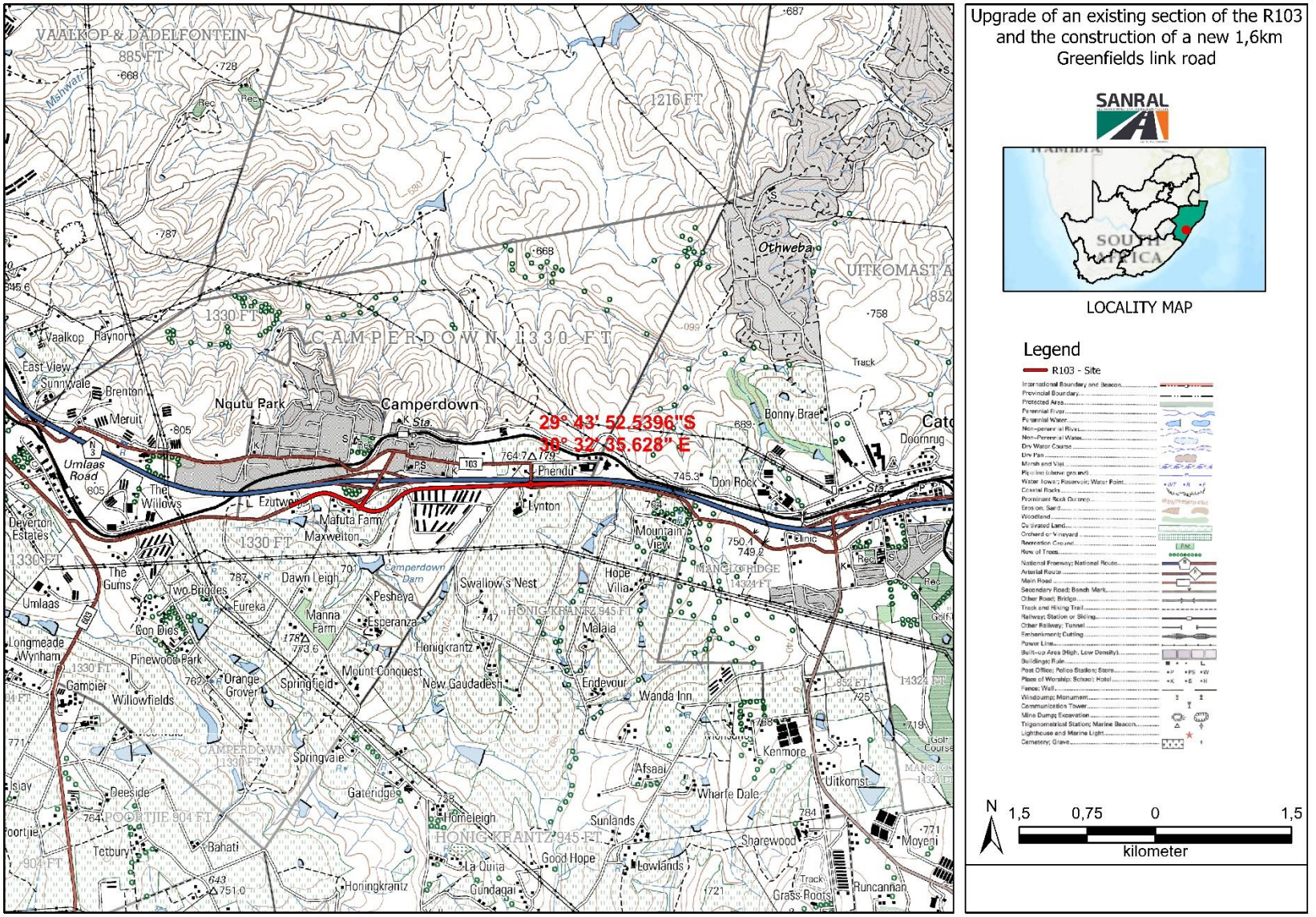


Figure 1: Location of proposed capacity upgrades to the R103

Table 3: Municipalities and wards affected by the project

Province	KwaZulu-Natal
District Municipality	uMgungundlovu
Local Municipality	Mkhambathini
Ward Number(s)	3

Table 4: Geographical co-ordinates of the existing and proposed linear road sections affected by the project

Study Area Coordinates	**Northernmost point:** S 29.730985 E 30.540502	**Easternmost point:** S 29.730984 E 30.562449
	Southernmost point: S 29.733811 E 30.538556	**Westernmost point:** S 29.733921 E 30.525891
Location	The proposed development is located immediately south of the town of Camperdown and is situated in the Mkhambathini Local Municipality, Umgungundlovu District Municipality, KwaZulu-Natal	
Property	Erf 106 (Remaining Extent of Portions 0 and 2) Camperdown Erf 109 (Remaining Extent of Portions 0, 10 and 29) Camperdown Erf 115 (Portion 8) Camperdown, and Portions 2, 45, 99 and 100 of the Farm Honig Krantz 945 FT	
Study Area Extent	The study area is a linear development and is approximately 3,26 km in length.	

1.4 Environmental authorisation requirements and listed activities triggered by the project

The proposed project is subject to the requirements of the Environmental Impact Assessment Regulations (2014 EIA Regulations) in terms of the National Environmental Management Act (NEMA, Act 107 of 1998, as amended). NEMA is national legislation that provides for the authorisation of certain controlled activities known as “listed activities”. In terms of Section 24(1) of NEMA, the potential impact on the environment associated with these listed activities must be considered, investigated, assessed, and reported on to the competent authority (the decision-maker) charged by NEMA with granting of the relevant environmental authorisation.

The South African National Roads Agency (SANRAL) SOC Limited is a state owned company and requires an Environmental Authorisation from the National Department of Forestry, Fisheries and Environment (DFFE) to be applied for through a Basic Assessment (BA) process based on the triggered activities as per the listing notices under the NEMA EIA 2014 Regulations, as amended. SANRAL has therefore appointed Q-Point Group as the independent Environmental Assessment Practitioner to undertake the BA process on behalf of the organisation.

In terms of sections 24(2) and 24D of the National Environmental Management Act (Act No. 107 of 1998), as read with the

Environmental Impact Assessment (EIA) Regulations of GNR 326, 327, 325 & 324 (as amended), a Basic Assessment process is required for the proposed project. **Table 4a** contains the listed activities in terms of the EIA Regulations (as amended) and includes a description of those project activities which relate to the applicable listed activities.

Table 4a: Activities triggered by the project

Activity No(s):	**Provide the relevant Basic Assessment Activity(ies) as set out in Listing Notice 1 of the EIA Regulations, 2014 as amended**	**Describe the portion of the proposed project to which the applicable listed activity relates.**
12	The development of— (ii) infrastructure or structures with a physical footprint of 100 square metres or more; where such development occurs— (a) within a watercourse; (b) in front of a development setback; or (c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse	The development of the road and sections to be upgraded will occur within wetlands or within 32m of wetlands.
14	The development and related operation of facilities or infrastructure, for the storage, or for the storage and handling, of a dangerous good, where such storage occurs in containers with a combined capacity of 80 cubic metres or more but not exceeding 500 cubic metres.	There is a probability that the Contractor may store fuel (80 cubic metres or more but not exceeding 500 cubic metres.) at the site camp for the refuelling of construction vehicles and/or other equipment.
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;	The proposed road upgrades and construction of the new section of the road will take place within wetlands as well as within 32m of the wetlands. For this reason, it is anticipated that there will be dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10 cubic metres from the wetlands
24	The development of a road— (ii) with a reserve wider than 13,5 meters, or where no reserve exists where the road is wider than 8 metres;	The proposed road reserve is 40m wide and the entire length of the road and will occupy a total distance of approximately 3.9km with a road reserve of 40m.

Basic assessment process and requirements

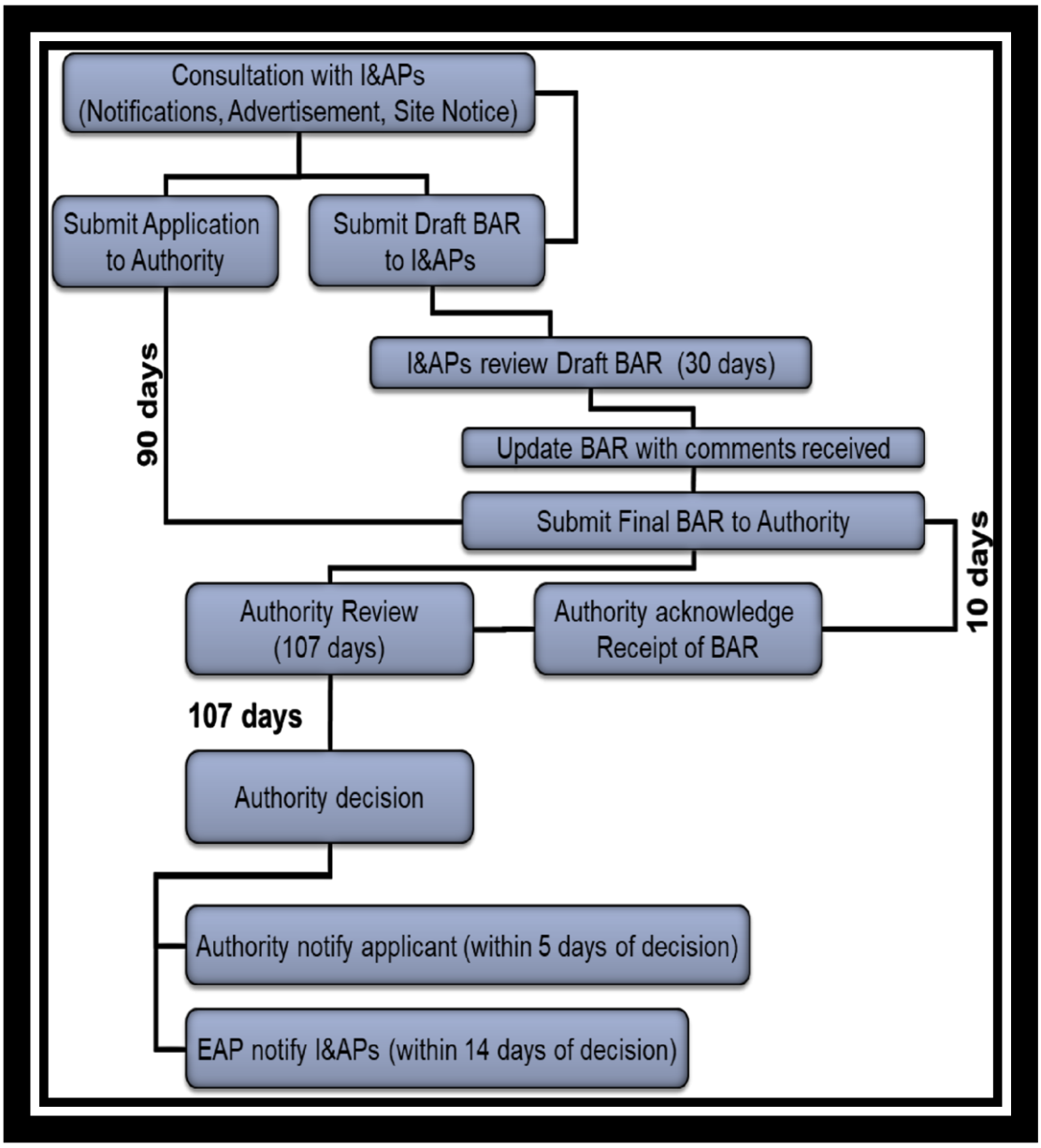
The application for environmental authorisation requires a Basic Assessment to be undertaken in accordance with regulations 19 and 20 of GN No. 326 (07 April 2017).

Contents of a Draft Basic Assessment Report (DBAR)

A DBAR must contain the information set out in Appendix 1 of GN No. 326. Table 1 of this report indicates where in this DBAR this information is provided.

Public participation process during the Basic Assessment

Public participation is to be undertaken in accordance with Chapter 6 of GN No. 326 (refer to Table 2). A detailed description of public participation undertaken for this project is provided in Chapter 6 of this DBAR.



2. LEGISLATIVE FRAMEWORK

Further to the regulatory process for environmental authorisation outlined in Section 1.4, the environmental legislation applicable to this project includes but is not limited to that indicated in Table 5. The project is also part of the larger national roads upgrades of planned SIP2 projects. The proposed capacity improvements to the national roads have been taken into account by, and are in line with national, provincial and municipal development goals and planning frameworks.

Table 5: Applicable legislation, policies and guidelines

Title of legislation, policy or guideline	Applicability to the project	Administering authority	Date
The Constitution of the Republic of South Africa, 1996 (Act No. 108 of 1996) (as amended)	The Environmental Clause, Access to Information,Fair Administrative Action, Enforcement of Rights and Administrative Review.	Government o South Africa	1996
National Environmental Management Act, 1998 (Act No. 107 of 1998)	Management of activities that may have a significant impact on the environment. Principles include: • The sustainability principle. • The life-cycle, cradle-to-grave principle. • The 'polluter pays' principle. • The precautionary principle. • The duty of care principle. • Fair and transparent public consultation.	Department of Environment, Forestry and Fisheries	1998
National Environmental Management: Biodiversity Act, 2004 (Act No 10 of 2004)	The conservation of natural habitats, fauna and flora. Permits required to remove or relocate protected plant species.	Department of Environment, Forestry and Fisheries	2004
National Environmental Management: Protected Areas Act, 2003 (Act No57 of 2003)	To provide for the protection and conservation of ecologically viable areas representative of South Africa's biological diversity and its natural landscapes and seascapes. Permission to construct a road within a protected area will be required by SANRAL from the protected area'smanagement authority.	Department of Environment, Forestry and Fisheries	2003
National Environmental Management: Waste Act, 2008 (Act No.59 of 2008)	Management of activities that generate waste.	KZN Departmentof Economic Development, Tourism and Environmental Affairs	2008

KwaZulu-Natal	Nature Conservation Management Act, 1997		
Natal Nature Conservation Ordinance (Act No. 15 of 1974).	For plants designated as 'specially protected' under the Natal Nature Conservation Ordinance (Act No. 15 of 1974), an application must be submitted to EKZNW to clear or translocate these plants.	Ezemvelo KZN Wildlife	1974
Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983)	The conservation of agricultural resources. Protection of soils.	Department of Agriculture, Land Reform and Rural Developmen	1983
National Forests Act, 1998 (Act No. 84 of 1998)	The conservation of natural forests. Permitsrequired to remove or cut protected tree species.	Department of Agriculture, Land Reform and Rural Developmen	1998
National Heritage Resources Act, 1999 (Act No. 25 of 1999)	The protection of cultural heritage resources and the management of activities that may have a significant impact on cultural heritage resources.	South African Heritage Resources Agency	1999
KwaZulu-Natal HeritageAct, 2008 (Act No. 4 of 2008)	The protection of cultural heritage resources and the management of activities that may have a significant impact on cultural heritage resources (specifically within KZN).	Amafa aKwaZulu-Natali	1997
Environment Conservation Act, 1989 (Act No 73 of 1989)	National Noise Control Regulations (GN R154dated 10 January 1992).	Department of Environment, Forestry and Fisheries	1989
National Water Act, 1998(Act No 36 of 1998)	Legislation regulating and protecting water resources in South Africa which includes non- consumptive water uses such as the impeding or diverting of water in a water course or altering of beds, banks or characteristics of a watercourse. Also regulates abstraction of large volumes of water from natural water bodies.	Department of Water and Sanitation Provincial Officeof Water and Sanitation	1998
National Environmental Management: Air Quality Act, 2004 (Act No 39 of 2004)	Measures in respect to air quality.	District Municipalities	2004

Title of legislation, policy or guideline	Applicability to the project	Administering Authority	Date
The South African National Roads Agency Limited and National Roads Act 7 of 1998	To make provision for a national roads agency for the Republic to manage and control the Republic's national roads system and take charge, amongst others, of the development, maintenance and rehabilitation of national roads within the framework of government policy.	National Department of Transport	1998
Promotion of Access to Information Act, 2000 (Act No 2 of 2000)	All requests for access to information held by the state or private bodies are provided for in the Act under Section 11.	Department of Justice and Constitutional Development	2000
Promotion of Administration Justice Act,2000 (Act No 3 of 2000)	In terms of Section 3, the Government is required to act lawfully and take procedurally fair, reasonable, and rational decisions. Interested and affected parties have a right to be heard.	Department of Justice and Constitutional Development	2000
Infrastructure Development Act, 2014 (Act No. 23 of 2014)	To provide for the facilitation and co-ordination of public infrastructure development which is of significant economic or social importance to the Republic.	Department of Economic Affairs Presidential Infrastructure Coordinating Commission	2014
Public Participation Guideline in Terms of the National Environmental Management Act, 1998 and Environmental Impact Assessment Regulations	The guideline provides information and guidance for proponents or applicants, I&APs, competent authorities and Environmental Assessment Practitioners on the public participation requirements of the Act. It further provides information on the characteristics of a rigorous and inclusive public participation process.	Department of Environment, Forestry and Fisheries	2017

Guideline Series 5: Companion to the Environmental Impact Assessment Regulationsof 2010 Guideline Series 7: Public Participation in the Environmental Impact Assessment Process Guideline Series 9: Need and Desirability in terms ofthe Environmental ImpactAssessment Regulatio nsof 2010 (Draft) DEA Alternativ esGuideline 5 DEA Guidelines for EMPs	These guidelines provide information and guidance on the requirements of the EIA Regulations and various associated aspects of the environmental impact assessment process.	Department of Environment, Forestry and Fisheries	2010

3. DESCRIPTION OF THE PROPOSED ACTIVITY

The project is proposed within Ward 3 of the Mkhambathini Local Municipality which falls within the Umgungundlovu District Municipality within the Kwa-Zulu Natal Province of South Africa. Refer to Figure 1 for an aerial image showing the project in context. The properties that will be directly affected by the project are erven 0, 2,8,10 and 29 Camperdown as well as portions 2,45,71,99,100 of the Farm Honig Krantz 945 FT.

The purpose of the proposed road project is to provide an alternative route to the N3 as well as vehicle access, where necessary, during the construction phase of the N3 upgrades, particularly the proposed capacity upgrades to the N3 from the Cato Ridge Interchange (km 19.4) to Lynnfield Park (km 30.6), Ethekwini Outer West and Mkhambathini Local Municipalities, KwaZulu-Natal Province for which an Environmental Authorisation (14/12/16/3/3/1/2009) was issued by then Department of Environmental Forestry and Fisheries (DEFF) in July 2019.

The total distance for the proposed upgrade as well as the new link road between Camperdown Interchange and Camperdown overpass will be approximately 3.9km with a road reserve of 40m. The upgrade is required due to the existing road due to structural damage. The new greenfields link road will comprise:

- 2 lane single carriageway facility;
- 3,25m lanes;
- 1,5m surfaced shoulders; and
- 0,5m shoulder rounding;

The road proposed for upgrading will also include storm water management structures, guardrails, road signs, etc. to ensure the effective functioning of the road.

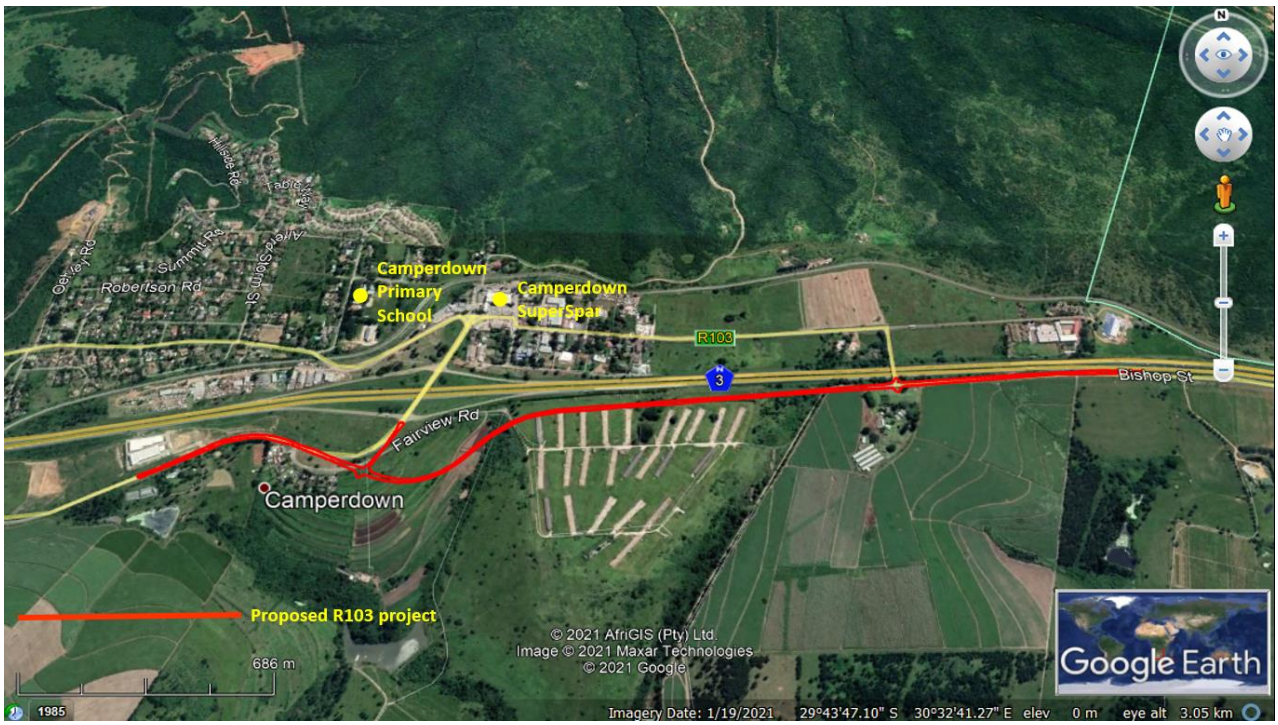


Figure 2: Arial image showing proposed R103 project and context

3.1 Construction phase activities

Access to construction sites

All access for construction will be via existing roads, No additional haul roads will be built.

Relocation of services

Some services along the proposed road reserve will require relocation and adjustments to facilitate the construction of the road. Co-ordination between the affected service providers and SANRAL's appointed engineers and contractors is undertaken toeffect this, with detailed services investigation and preparation of relocation of services plans. Further details of the service to be affected will be supplied by the engineering team.

Contractors' site offices and stockpile areas

Contractors' site offices and stockpile areas will be located on the existing area for the broader N3 upgrades from Cato ridge to Dardanelles. Siting and establishment has thus been completed and will follow the recommendations of the existing specifications in the Environmental Management Programme (EMPr).

Waste management

Solid waste

Solid waste will be produced during construction. However, there will be no waste management activities requiring a permit in terms of the Waste Regulations under the National EnvironmentalManagement: Waste Act. Wherever possible, inert waste will be re-used in construction.

The project will generate demolition rubble consisting of reinforced concrete, when buildings undergo demolition The inert material will be re-used as fill, re-used in pavement layers; while excess and unwanted may be sold outside the scope of the project or used for the larger N3 roads upgrade and/or disposed at licensed landfill sites.

Asphalt and possibly tar from the older sections of the original roadway resulting from removal of pavements will be generated as well as other general waste such as cement bags, packaging, plastic and used metal canisters. It is intended that general waste, including any excess inert waste, will be disposed at the nearest licensed municipal landfill site. The milled off asphalt is to be stockpiled for use in new asphalt on some sections of this R103 as may be necessary.

The project will also generate a large amount of surplus cut material from earthworks. However, this will not be waste as it is SANRAL's intention to use this on other sections of the road

Liquid effluent/waste water

The project will not produce effluent other than normal sewage. Rented portable chemicaltoilets will be used for staff at the site of works, to be serviced regularly by the contractor's appointed service provider.

There will be no waste water generated by the project that can be recycled. Batching plants will not be on site (unless authorised in a separate application). It is envisaged that concrete as wellas asphalt will be obtained from commercial sources; however, should the contractor establish on site, a separate approval will be required.

Emissions

There will be no emissions other than exhaust and dust emissions. Dust will be controlled during construction. However, if Contractors elect to erect mobile asphalt batching plants on site, that have emissions, they will be applied for under a separate licensing process.

Borrow pits and quarries

Materials will be sourced from commercial sources and/or existing SANRAL borrowpits/quarries as well as from within the road reserve. Should new borrow pits or quarries need tobe established, these will be applied for under a separate licensing process.

Water use

Water will be obtained from the existing authorized abstraction point (Umngeni river) under the larger N3 road upgrades. Should the Contractor wish to abstract from a watercourse elsewhere, the Contractor will be required to ensure that this is done in accordance with the National Water Act and any applicable General Authorisation or requirement for a water use license from the Department of Water and Sanitation (DWS).

The risk assessment followed the approach prescribed by the Department of Water and Sanitation (DWS) Notice 509 of 2016 [i.e. General Authorisation in terms of Section 39 of the National Water Act 36 of 1998 for water uses as defined in Section 21 (c) and (i)]. A single riverine unit will likely receive impacts from the activities associated with the proposed WWTW upgrades and was therefore considered for the risk assessment process.

Energy use

During construction, conventional sources of energy will be used (e.g. municipal electrical supply, generators, and conventional fuels and oils).

The re-use of ashphalt milled off the existing road may contribute towards energy saving (as compared with no recycling of asphalt).

Demolition

There will be areas that require demolition and appropriate steps should be taken to ensure this is done in an adequate manner will be taken. Demolition will take place at the following sites:

- Existing buildings on site of RCL 1.

The production and handling of demolition rubble is discussed in section 3.2.4. Demolition sites will be restored to a safe and neat condition.

Generation of noise

During construction, construction activities are expected to slightly elevate existing noise levels over and above those already generated by traffic on R103. The area of effect will fluctuate according to the activities at any given time. Although construction noise will be temporary and confined mostly to daylight hours, there may be some need to work at night, due to other reasons that may come up in the course of the project.

Accommodation of traffic during construction

Traffic will be managed according to a Traffic Management Plan approved by SANRAL largely derived from the existing versions for the N3 upgrade. The contractors will be required to submit the final Traffic Management Plan for approval by the engineers prior to implementation.

General construction activities

The main construction activities for the R103 capacity upgrades are presented hereunder.

Site preparation

- covered with already existing site camp

Road and bridge widening

- Accommodation of traffic according to an approved final Traffic Management Plan.
- Demolition.
- Excavation with heavy plant.
- Stockpiling of spoil for building and levelling on site or other parts of the proposed R103 upgrades.
- Stockpiling of demolition rubble for building and levelling on site or other parts of the proposed R103 upgrades, as well as for use in the new road layers.
- Disposal of excess spoil/rubble to licensed landfill sites and/or use on adjacent contracts,where feasible.
- Provision of drainage structures where crossing drainage lines and watercourses.
- Haulage and placement of materials with heavy plant.
- Water abstraction from existing and authorized water abstraction point
- Water spraying.
- Rolling and compaction with heavy plant.
- Construction, jacking, lengthening and/or repair of bridges
- Retaining walls/other stabilisation/erosion control structures (as required).
- Erection of lighting, guardrails, barriers, road signs, and/or road lane markings.
- Relocation of existing traffic management infrastructure if any (cameras, etc.).

Re-instatement and rehabilitation

- Reinstatement of slopes.
- Reinstatement of topsoil.
- Revegetation.
- Erosion control.
- Alien plant control.

Employment opportunities

Contractors, with their skilled labour, will be appointed in accordance with the procurement policies of SANRAL. Unskilled labour will be sourced by the contractors involved in the work. A portion of these will be semi-skilled and unskilled labour. It is anticipated that the contractor may use their own skilled personal and, thus, direct employment opportunities for people from the surrounding communities may be predominantly for unskilled and semi-skilled jobs. This may vary depending on the skills search and recruitment process. The number of job opportunities will, however, vary on a month to month basis and will be dependent on the stage in the construction process

Communication with land owners and stakeholders

This is a linear development with several affected land owners over and above the applicant themselves (SANRAL). Consultation with directly affected property owners will be initiated by the land acquisition team as part of the land acquisition process. This process is believed to be currently underway as envisaged for under the current N3 upgrades. The design engineers have notified service owners with respect to the relocation of services and utilities in the road reserve.All key stakeholders including as many as possible of the adjacent property owners have been and will be notified and given an opportunity to consult with the project team as part of the public participation process conducted for this application for environmental authorisation. During construction, SANRAL and its appointed contractor(s) will be responsible for keeping roadusers and adjacent landowners informed of relevant planned construction activities (e.g. road closures, deviations, etc.).

3.2 Operation phase activities

Vehicle traffic

The main activity of the R103 during operation acting as a traffic diversion for the main N3 upgrades which comes with noise related impacts. These are largely controlledby road design (including the road reserve which acts as a buffer between the road and surrounding land), speed restrictions, signage, monitoring by camera, traffic policing and emergency services, as needed.

Road maintenance

During operation, SANRAL will conduct routine maintenance activities which include:

- Maintenance of vegetation in the road reserve, e.g. trimming of grass and shrubs, weedremoval and control of alien invasive plants.
- Erosion control in the road reserve.
- Clean-up of litter from the carriageway and road reserve.
- Keeping drains and culverts free of vegetation and litter.
- Checking and repairing/resurfacing of the road surface, as required.
- Checking and repair of road related infrastructure as required (barriers, guard rails,signage, etc.).
- Operation of speed cameras, variable messaging system, etc.

SANRAL will appoint a Routine Road Maintenance (RRM) Engineer for each section of road to advise on the physical maintenance that is required on the travelled road surface, so that tenders and contracts for the work can be set up as required. Contracts for road reserve maintenance (mowing, etc.) are longer term. All maintenance activities will remain in place during construction.

Waste generation

During operation, most waste is generated by road users who throw out litter from their vehicles and this accumulates on the roadsides. The road reserves are also maintained and this produces grass cuttings and other 'waste' vegetation. This waste is collected on a regular basis by SANRAL's RRM contractors and disposed at the closest licensed municipal landfill sites.

Generation of noise

During operation, noise will generally increase along the R103 because there will be more traffic than normal because of diversion from the main N3 works. Most actions for noise management are to be derived from the already existing and authorized N3 upgrades noise management strategy.

4. PROJECT ALTERNATIVES

Given that this project entails the upgrade of an existing R103 and further works within a largely small space, alternatives will largely revolve around technical engineering issues (road design, materials, etc.). Alternatives that have been considered during the course of SANRAL's planning are discussed below. No additional feasible alternatives have been put forward by SANRAL.

4.1 Property/location/route alternatives

Early in the planning process, SANRAL's decision was to make use of the regional road medianto contain the extra lanes as far as possible within SANRAL's existing road reserve, rather than having to expand on the outer edges of the road, which may require the acquisition of much more additional adjacent land. Similarly, through road design, acquisition of adjacent properties has been minimised.

As this is an upgrade of an existing road and existing interchanges, route alternatives were not considered.

4.2 Design/layout alternatives

This project has undergone a preliminary engineering design phase followed by detailed design. It has taken several years and numerous reviews of different options and iterations to arrive at acceptable design proposals that meet cost, safety and technical requirements. The design proposals were based on numerous engineering factors and models, taking into accountthe results of Traffic Analyses, forecasts of future traffic loads based on predicted developmentsand land use changes, the existing and required road standards, road gradients, geological conditions and other factors. Based on this information, the optimal number of lanes and lane configurations, and corresponding interchange layouts were proposed.

It is beyond the scope of this environmental report to provide a detailed engineering motivation for each iteration that has played out during the design process, nor to assess these alternatives. However, it can be said that the various interchanges have been designed (within the individual confines and restrictions of the surrounding physical environment) for optimal traffic flow of forecast traffic on approach and exit lanes, and to accommodate the number of additional lanes on the main carriageway.

Taking into consideration the above, it must be noted that SANRAL has put forward one final recommended layout proposal for environmental authorisation. For a project of this scale and nature, which constitutes an *in situ* upgrade, it would be impractical to assess additional alternatives for authorisation, that are not recommended by SANRAL and which they cannot implement.

4.3 Technology alternatives

Aspects *such* as pavement structure, retaining structures, lighting, signage, barriers, etc. have also been subjected to a process whereby various design proposals have been investigated and the optimal design selected based on technical engineering, road safety and cost criteria.

A key *operational* aspect taken into account has been noise management/reduction. SANRAL has considered the use of ultra-thin friction course or semi-open graded surfacing. This type of asphalt surfacing has been proven to be quieter than conventional asphalt and concrete surfacing and can also be used to overlay the sections of the R103. SANRAL's design consultant will use different surfacing types according to the requirements of the different sections of road, taking into account the proximity of noise sensitive receptors.

4.4 The no-go alternative

The No-Go (no-development) alternative implies that the *status quo* remains and no upgrade to the R103 and no new construction of Greenfields link will occur. If no project occurs, no listed activities will be triggered, for example, the clearance of indigenous vegetation or construction within or near wetlands and riparian channels. The resultant impacts of construction on vegetation, riparian areas and wetlands along the R103 sections of interest will, thus, be avoided. The N3 road upgrades will however be left with the burden of increased traffic control and management during its whole construction period. This scenario is definitely unwanted in support of South Africa's Strategic Infrastructure Projects (SIP2 status) is an indication of its importance and priority.

The No-Go Alternative is, therefore, not considered to be a feasible alternative.

While the no-development option is not preferred, it forms the baseline against which all other options are assessed.

5. DESCRIPTION OF THE RECEIVING ENVIRONMENT

5.1 Current land use and zoning

The project is proposed within Ward 3 of the Mkhambathini Local Municipality which falls within the Umgungundlovu District Municipality within the Kwa-Zulu Natal Province of South Africa. Refer to Figure 1 for an aerial image showing the project in context.

5.2 Land ownership and affected properties

5.2.1 Land ownership

This is a linear development located primarily within the proclaimed R103 road reserve belonging to SANRAL were upgrades and widening will occur. However the link will definitely new land owner areas which will need to be acquired in certain areas. These areas include private and institutionally owned properties. SANRAL undertakes a land acquisition process whereby negotiations are entered into with property owners to purchase the land at market based values and to take into consideration other financial impacts. The newly acquired land will be proclaimed as road reserve.

5.2.2 Property names and numbers

The properties that will be directly affected by the project are erven 0, 2,8,10 and 29 Camperdown as well as portions 2,45,71,99,100 of the Farm Honig Krantz 945 FT.

5.3 The social/socio-economic environment

While the road upgrades will take place within Mkhambathini Local Municipality, the socio-economic conditions and land-use patterns of the receiving environment can be considered similar throughout the study. A summary of the socio-economic character of the receiving environment is provided below.

Demographics

The Mkhambathini Local Municipality covers an area of approximately 917 km² with a total population of approximately 63,142 people. This equates to a population density of 69 people/km², lower than the provincial average of 109 people/km² (Mkhambathini IDP, 2016).The population is characterised by a high proportion of people under the age of 35, with 70% of the population aged between 0 and 34 years (31% under 15 and 39% between 15 and 34). (StatsSA, 2012).

Economic profile

Unemployment in the municipality is reported to be 12%, well below unemployment levels for KZN, which is reported to be 33%, and the District Municipality, reported to be 16% (Stats SA, 2011). While these figures appear relatively good, Mkhambathini has a high portion of the population of working age (51%) classified as 'not economically active' or 'discouraged work seekers' which implies that despite a low level of unemployment, a high number of the potentially economically active population are not economically active and are, thus, dependant on a small base of employed people (Mkhambathini IDP, 2016).

5.4 Cultural heritage resources

PGS Heritage (Pty) Ltd were appointed to assess potential impacts of the project on heritage resources within the study area.

An overlay of all the archaeological and heritage sites identified during the fieldwork over the proposed development footprint areas was made to assess the impact of the proposed development on these identified archaeological and heritage sites. Using this information, impact assessments were undertaken.

The impact of the proposed development on heritage, including palaeontology, is expected to be of low significance. As a result, and on the condition that the recommendations made in this report are adhered to, no heritage reasons can be given for the development not to continue.

Features that were identified within the present study area from the Second Edition of the 2930DA Cato Ridge Topographical Sheet**.**

Table 6: Cultural Heritage Resources on site

Feature	Coordinates	Description
Feature 1	S 29.731995 E 30.552513	Two buildings / structures forming part of the Lynton farm.
Feature 2	S 29.731514 E 30.545072°	A cluster of large and small buildings / structures forming part of the Maxwelton farm. Again, these structures appear to form part of a chichen farm.
Feature 3	S 29.731270 E 30.529810	Two structures as part of the Chez Nous farmstead.
Feature 4	S 29.732459 E 30.525242	Two structures as part of the Gelderstones farmstead.
Feature 5	S 29.732803 E 30.534308	Three structures located to the south of the project area.

5.5 The biophysical environment Geological conditions along the route

The geotechnical information in this section has been provided from preliminary geotechnical reports for the different engineering contracts and can be made available on request.

The eastern section of the proposed Camperdown Road development is underlain by dolerite while the western portion is underlain by the Dwyka Group (Karoo Supergroup). Dolerite is igneous in origin and does not contain fossils while the Dwyka Group is known for its track ways and coprolites. Body fossils consists of gastropods, invertebrates, and marine fish, as well as fossil plants. According to the PalaeoMap on the South African Heritage Resources Information System (SAHRIS) database, the Palaeontological Sensitivity of the dolerite is zero while that of the Dwyka Group is moderate (Almond and Pether 2008, SAHRIS website).

The soil mantle overlying the tillite bedrock is generally very thinly developed, on average around 1.5 metres thick. The transported soil component of the soil mantle generally comprises silty clayey sand to sandy clay and is suitable as a general fill material. Residual tillite soils are very thinly developed in this area and do not provide sufficient volumes of material for use in construction.

Soil erosion has not been identified as a major risk; however, soils will need careful management at the river and wetland crossings. The route has been investigated by the geotechnical team to inform engineering design and specific recommendations have been made.

Table 7: Summary of geological conditions along the route

Abbreviation	Group/Formation (Fm)	Lithology
Q		Alluvium, landslip rubble
Jd	Jurassic Dolerite	Igneous rocks
Pp	Pietermaritzburg Formation, Ecca Group, Karoo Supergroup	Dark-grey shale, siltstone, subordinate sandstone
C-Pd	Dwyka Group, Karoo Supergroup	Diamictite, subordinate varved shale and boulder shale
Q-Sn	Natal Group	Red-brown coarse grained arkosic sandstone, quartz arenite micaceous sandstone, small pebble conglomerate, subordinate silt- and mudstone

5.5.1 Rivers and wetlands

The National Freshwater Ecosystem Priority Areas (NFEPA) project aims to:

1. Identify Freshwater Ecosystem Priority Areas (FEPAs) to meet national biodiversity goals for freshwater ecosystems; and
2. Develop a basis for enabling effective implementation of measures to protect FEPAs, including free-flowing rivers (Nel et al. 2011).

The project was developed to respond to the threats to water resources in South Africa including river, wetland and estuarine ecosystems and provides strategic spatial priorities for conserving freshwater ecosystems as well as supporting sustainable use of water resources. The strategic spatial priorities are known as Freshwater Ecosystem Priority Areas (FEPAs) (Net et al. 2011).

There are several small impoundments (i.e. dams) in the vicinity of the road construction site, but it appears that most are primarily used for irrigation in commercial and small-scale farming and small-scale domestic livestock farming. There are no wetlands have been identified as wetland FEPAs on the NFEPA coverage, but it

appears that a small wetland area is present 150m to the South of the road construction site within the pre-existing Rainbow Chickens facility

The Sub Quaternary Reach (SQR) within which the site is located was ***not*** identified as a River FEPA in terms of the National FEPA coverage. There was one watercourse identified in the vicinity of the proposed R103 road upgrades that will receive impacts from the construction of the R103 upgrades. The watercourse is already heavily impacted, whereby it has been canalised to receive storm water run-off from the N3, has extensive thickets of alien invasive plant species along its course and has high volumes of solid waste. The unnamed stream would potentially receive direct impacts from construction activities such as bank destruction, further loss of riparian vegetation, receive increased surface flow from storm water run-off from compacted and hardened surfaces, receive increased sedimentation and further degradation of water quality

The very low volume of surface water inhibited all biotic assessments and water quality sampling. An Intermediate Index of Habitat Integrity Assessment (IIHIA) was conducted on-site and found that the instream and riparian habitats of the unnamed watercourse were critically modified (Class 'F').

Impacts likely to result from construction and operation of the proposed upgrades to the R103 road upgrades and new road construction were grouped into the following broad categories for ease of assessment in terms of impact significance: (a) loss of freshwater habitat and biota, (b) degradation of freshwater habitat and (c) water & soil pollution. The assessment results indicate that both the construction and operational phases of will have a "moderate" impact significance the watercourse habitat, both with and without mitigation measures.

An assessment by Afzelia Environmental Consultants (Pty) Ltd indicated that all the above sites are in a largely to critically modified state, indicating little to no provision of ecosystem goods or services. None of the sites indicates any sensitivity, quality or ecological importance that would require additional licensing requirements outside of SANRAL's generally authorized activities (Government Notice 509 of 2016, Appendix D2). Risks were assessed as low for all sites.

Further detailed information is provided in the attached aquatic riparian specialist report (Appendix A1).

5.5.2 Vegetation types

Plant species are often affiliated to specific habitats based on their morphological and physiological traits (Coles-

Ritchie et al., 2007). Hence, spatial and temporal variability of habitats is often represented in changes to vegetation. The National Vegetation Map of South Africa (VEGMAP), developed by Mucina and Rutherford (2018), is a geographical classification of plant communities across South Africa that is constantly updated to keep record of changes to the boundaries of vegetation units and their threat status, which is often determined by land use.

According to Figure 3 below, the study area is located within one (1) national vegetation type, namely the Dry Coast Hinterland Grassland (Gs 19) which has been regarded as "Vulnerable". Two (2) other vegetation types namely the KwaZulu-Natal Hinterland Thornveld and Eastern Valley Bushveld do exist nearby, but as these vegetation types are not affected by the proposed development they will not be discussed further

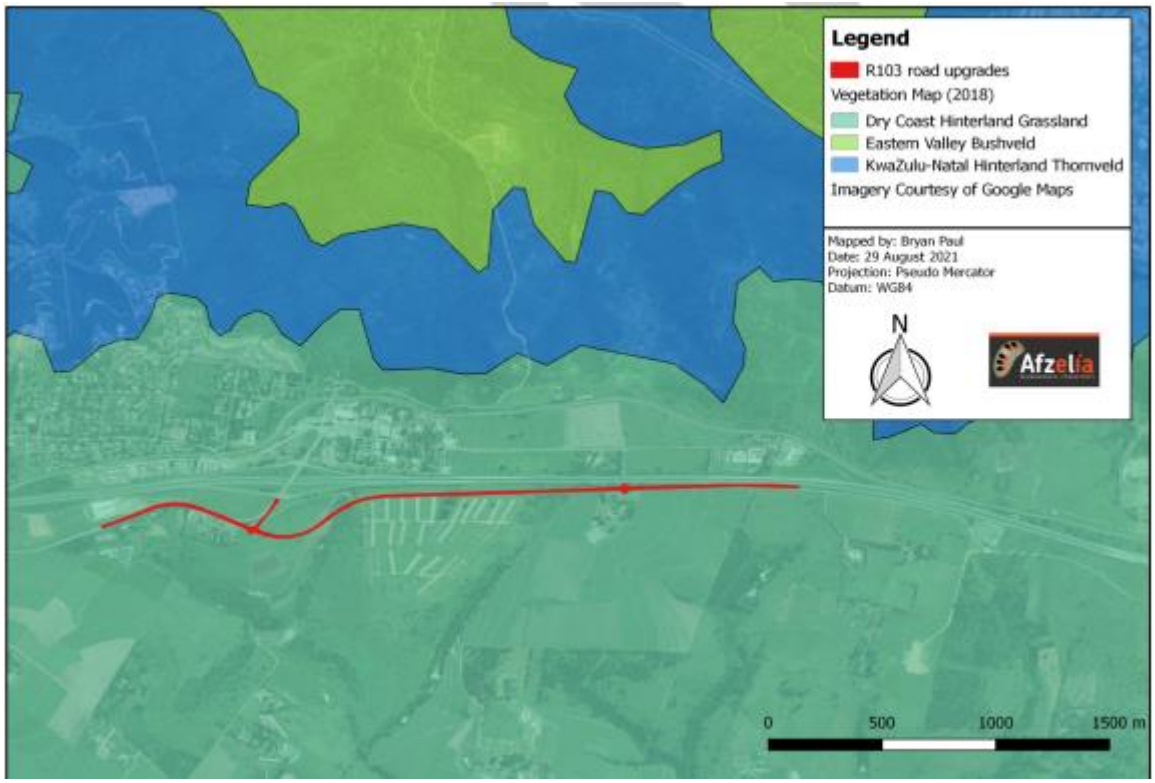


Figure 3: Visual representation of the national vegetation types associated within the study area (Mucina and Rutherford, 2018)

National and Provincial Conservation Guidelines

Ezemvelo KZN Wildlife's Systematic Conservation Assessment (SCA) identifies area that varies in terms of conservation importance as identified and mapped under the KwaZulu-Natal (KZN) biodiversity spatial planning terms and processes (EKZNW, 2016). According to this assessment, areas within KZN are subdivided into Planning Units (PUs) of varying spatial scales each associated with biodiversity features (e.g. vegetation types, ecosystems and species of conservation importance etc.). The SCA classifies area of biodiversity value/ importance using two main categories, namely Critical Biodiversity Area's (CBA's) and Ecological Support Areas (ESA's). CBAs comprise of two subcategories, as described by EKZNW (2016), namely CBA: Irreplaceable and CBA: Optimal. ESA's other hand are not subdivided, but represent areas that support and sustain the ecological functioning of the CBAs thereby ensuring the persistence and maintenance of biodiversity patterns and ecological processes.

Table 8: Summarised results of national and provincial conservation guidelines.

Legislation	Definition
CBA: Irreplaceable	Represent the only localities where conservation targets for specific biodiversity features can be met under the current conservation planning scenario. From a conservation perspective, these areas are considered "irreplaceable" in terms of maintaining biodiversity targets and should ideally be avoided.
CBA: Optimal	Represent the best localities that provide critical linkages for CBA: Irreplaceable areas.
Natural Biodiversity Areas	All natural areas not already included in the above categories.
Modified	Areas with no significant natural vegetation remaining and therefore regarded as having a low biodiversity value (e.g. areas under cultivation)
Ecological Support Areas (ESAs)	These areas represent portions of the study area which are functional, but are not necessarily regarded as areas which are naturally intact. They are however required to ensure the persistence and maintenance of biodiversity patterns and ecological processes within Critical Biodiversity Areas.
Ecological Support Areas: Species Specific	Terrestrial modified areas that provide a critical support function to a threatened or protected species, for example agricultural land or dams associated with nesting / roosting sites.
Ecological Support Areas: Buffers	Terrestrial areas identified as requiring land-use management guidance not necessarily due to biodiversity prioritisation, but in order to address other legislation/ agreements which the biodiversity sector is mandated to address

Vegetation on site

The list of known plant species to potentially occur within the Camperdown region of KwaZulu-Natal and the details of which plant species were found on site is detailed in Table 5.7 of the Terrestrial Ecological Impact Assessment (Appendix A2). The route of the proposed upgrades to the R103 road can be divided into three distinct areas, namely 'West end', 'Middle' and 'East end'. Each area assessed is described below. A detailed vegetation community map is provided in Figure 4 below.

Construction upgrades within the West end assessment area of the R103 upgrades primarily surrounds the upgrading of the existing tar road. The surrounding vegetation is primarily roadside grassland, dominated by Melanis repens, Digitaria eriantha and Panicum maximum. Towards the western edge of the road upgrades, the existing tarred road cuts through the hillside, dominate by Melanis repens, Aristida junciformis, Digitaria eriantha and Panicum maximum

The Middle section assessment area of the proposed R103 upgrades will suffer the greatest impact to the vegetation community. The western portion of the Middle section was previously part of the Rainbow Chickens farm, and is dominated by thick mats of Pennisetum clandestinum (Kukuyu grass) and Cynodon dactylon, interspersed with clumps of Tagetes minuta (Khakibos) and Solanum mauritanum

Similar to the West end assessment area, a large portion of the construction activities surrounding the R103 road within the East end assessment area are directly associated with the upgrading of the existing R103 tarred road. The eastern portion of the East end assessment area (i.e. directly adjacent to the middle section) is a mixed grass-woody species vegetation community, dominated by alien invasive species (Figure 4). The grass community is dominated by Pennisetum clandestinum, interspersed with Melanis repens and Tagetes minuta. The alien invasive species identified on site include, Solanum mauritanum (bugweed), Lantana camara, Senna didymobotrya (Peanut butter Cassia), and Melia azedarach (Syringa), forming dense, impassable thickets (

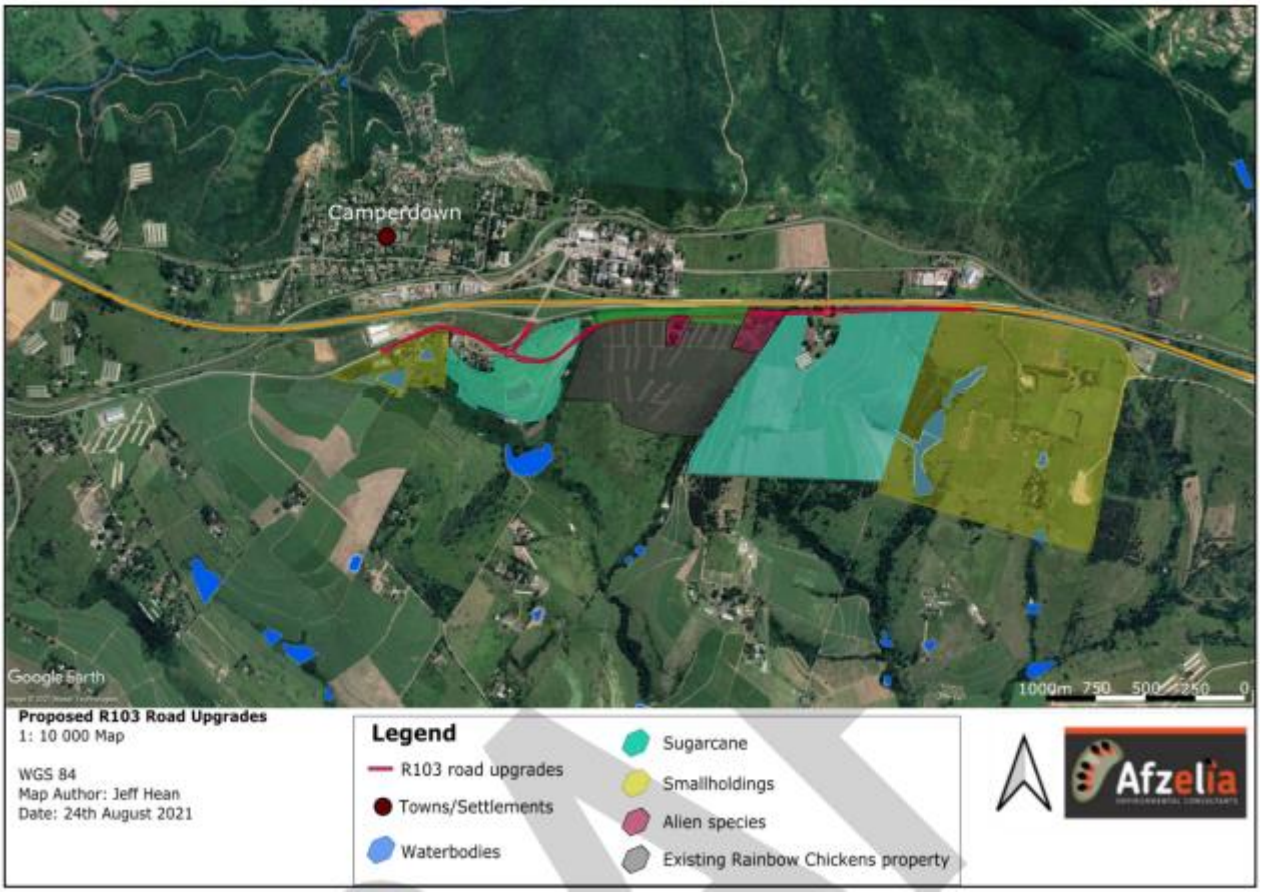


Figure 4: Mapping of the vegetation community in the vicinity of the proposed site of the R103 road upgrades.

5.6 Assumptions, limitations and gaps in knowledge

5.6.1 General assumptions, limitations and gaps in knowledge

- It is assumed that technical data supplied by the applicant and its appointed engineers are correct and valid at the time of compilation of the DBAR.
- It is assumed that data supplied by external institutions were correct and valid at the time of compilation of the specialist reports and the DBAR.
- It is assumed that the widespread advertising, public notices, would serve to notify the public at large.

5.6.2 Specialist assumptions, limitations and gaps in knowledge

The assumptions, limitations and gaps in knowledge stated in the specialist reports are listed below.

- The project will not undergo decommissioning and, as such, impacts during decommissioning have not been considered.
- The information provided herein will be adequate for effective decision-making in the EIA process.

Cultural Heritage Resources Impact Assessment

The following assumptions and limitations regarding the study and report exist:

- Not detracting in any way from the comprehensiveness of the fieldwork undertaken, it is necessary to realise that the heritage resources located during the fieldwork do not necessarily represent all the possible heritage resources present within the area. In fact, due to the dense vegetation and steep topographic gradients found within the study area, it is highly likely for the present identified heritage sites not be a complete record of all the archaeological and heritage resources located within the study area. Such observed or located heritage features and/or objects may not be disturbed or removed in any way until such time that the heritage specialist has been able to assess as to the significance of the site (or material) in question. This applies to graves and cemeteries as well. In the event that any graves or burial places are located during the development, the procedures and requirements pertaining to graves and burials will apply as set out below.
- Should the development footprints change or be altered in any way, these changes must be assessed in the field by a heritage specialist/archaeologist before construction commences.

Terrestrial Ecological Impact Assessment

The following assumptions and limitation are applicable to the terrestrial ecological study:

- Desktop delineation was undertaken using 5 m contours, latest aerial imagery and the latest

Google Earth Imagery.

Any vegetation changes may have influenced the accuracy of the delineation.

- The slope gradient was calculated using 5 m contour lines which might not be very accurate.
- The handheld GPS device used has an accuracy of 3 m.
- All literature and datasets used were accurate at the time of compiling this report.
- Vegetation descriptions provided for each wetland unit are not comprehensive but serve to provide a general description of the wetland habitat.
- An important limitation here is that the field survey was undertaken in winter and therefore, geophytes would be challenging to locate and/or identify. Although it was indicated that the vegetation has been impacted through overgrazing and trampling, there may still be the possibility that some species may be present. A follow-up botanical survey conducted prior to the commencement of the construction phase has been recommended to ensure this limitation has no additional impacts to the surrounding environment.
- To accurately record the species on site, long-term field assessments would have to be conducted to consider seasonal and temporal variations and provide more accuracy. This assessment however, is considered appropriate for the scale and nature of the proposed development

Aquatic Ecological Impact Assessment

The following limitations applied to the study:

- The findings, results, observations, conclusions and recommendations given in this report are based on the author's best scientific and professional knowledge.
- Information pertaining to the location and technical specifications of access and temporary diversion roads was not made available at the time of report writing.
- Only watercourses that are likely to be impacted by proposed construction activities were assessed in the field. Other watercourses located within a 500m radius of the site, but not in a position within the landscape to be measurably affected by the R103 road upgrades were not considered as part of this assessment.

Palaeontological Desktop Assessment

Assumptions and limitations

When conducting a PIA several factors can affect the accuracy of the assessment. The focal point of geological maps is the geology of the area and the sheet explanations were not meant to focus on palaeontological heritage. Many inaccessible regions of South Africa have not been reviewed by palaeontologists and data is generally based on aerial photographs. Locality and geological information

of museums and universities databases have not been kept up to date or data collected in the past have not always been accurately documented.

Comparable Assemblage Zones in other areas is used to provide information on the existence of fossils in an area which was not yet been documented. When similar Assemblage Zones and geological formations for Desktop studies is used it is generally assumed that exposed fossil heritage is present within the footprint.

6. PUBLIC PARTICIPATION PROCESS

6.1 Objectives

In terms of the requirement of Chapter 6 of the EIA Regulations of December 2014, the following key public participation tasks are required to be undertaken:

- Fixing a notice board at a place conspicuous to the public at the boundary or on the fence of—
  - (i) the site where the activity to which the application relates is or is to be undertaken; and
  - (ii) any alternative site mentioned in the application;
- Giving written notice to:
  - (i) the owner or person in control of that land if the applicant is not the owner or person in control of the land;
  - (ii) the occupiers of the site where the activity is or is to be undertaken or to any alternative site where the activity is to be undertaken;
  - (iii) owners and occupiers of land adjacent to the site where the activity is or is to be undertaken or to any alternative site where the activity is to be undertaken;
  - (iv) the municipal councillor of the ward in which the site or alternative site is situated and any organisation of ratepayers that represent the community in the area;
  - (v) the municipality which has jurisdiction in the area;
  - (vi) any organ of state having jurisdiction in respect of any aspect of the activity; and
  - (vii) any other party as required by the competent authority.
- Placing an advertisement in:
  - (i) one local newspaper; and
  - (ii) in at least one provincial newspaper.
- Open and maintain a register/ database of interested and affected parties and organs of state.
  - Release of a Draft EIA Report for Public Review
  - Preparation of a Comments and Responses Report which documents all of the comments received and responses from the project team.

In compliance with the requirements of Chapter 6 of the EIA Regulations, 2014, the following summarises the key public participation activities conducted to date.

6.2 Stakeholder/I&AP profile

Table 9 lists the sectors of society registered on the database (Appendix E2) and Table 10 lists the organs of state that have been identified as key stakeholders. The database contains individuals and groups associated with the R103 upgrades and the new Greenfields link road.

Table 9: Sectors of society represented by I&APs on the direct mailing list

Government (National, Provincial and Local)
State owned companies (where necessary)
Utility providers with services that may be affected by the project
Transport sector (taxis, buses)
Non-Governmental Organisations/Community Based Organisations
Private and institutional adjacent landowners
Local residents and businesses
Conservation authorities
Business and industry

Table 10: Authorities and organs of state targeted as key stakeholders

Authority/Organ of State	Contact person	Tel No	e-mail	Postal address
South African National Roads Agency Limited (SANRAL)	Ms T Duma	083 328 0989	dumat@nra.co.za	48 Tambotie Avenue, Val de Grace, Pretoria, 0184
Department of Water and Sanitation	Doctor Sokhela	072 790 1926	SokhelaD@dws.gov.za	P O Box 1018 Pietermaritzburg, 3200
KZN Department of Transport	Mrs Judy Reddy	033 355 8600	Judy.Reddy@kzntransport.gov.za	224 Prince Alfred Street Private Bag X9043 Pietermaritzburg, 3200
	Michéle Schmid	033 355 0581	michele.schmid@Kzntransport.gov.za	
KZN Department of Economic Development, Tourismand Environmental Affairs (uMgugundlovu district office)	Shawn Janneker	033 347 1820	shawn.Janneker@kznedtea.gov.za	Private Bag X07, Cascades, 3202,Pietermaritzburg, KwaZulu-Natal 8 Warwick oad
DAFF- KZN Forestry Regulations & Support	Miss Karen Moodley	033 392 7741	KarenM@daff.gov.za	Private Bag X9029 Pietermaritzburg, 3200
AMAFA Heritage KwaZulu-Natal	Ms Bernadette Pawandiwa	033 394 6543	bernadetp@amafapmb.co.za	P.O. Box 2685 Pietermaritzburg3201
Eskom	Siyabonga Nsele	073 550 1572; 031 710 5264	nselesi@eskom.co.za	No. 25 Valley View Road, NGY, 3610
	Samantha Naicker	031-710 5183; '072 957 1007	NaickeSa@eskom.co.za	
mvelo kznwildlife	Andrew Blackmore	033 845 1999	andy.blackmore@kznwildlife.gov.za/andyb@kznwildlife.com	P O Box 13053, Pietermaritzburg, 3232

	Phindile Langazane	033 845 1363	Phindile.Langazane@kznwildlife.com	
Department of Rural Development and Land Reform	Ms Thembeka Ndlovu	033 355 4388	Thembeka.Ndlovu@drdlr.gov.za	200 Church St, Pietermaritzburg, 3201
Department of Human Settlements KZN	Mr Lindani Khoza	031 336 5316	Lindani.khoza@kzndhs.gov.za or Sli.zwane@kzndhs.gov.za	Legal Wise building, 199Pietermaritz St, Pietermaritzburg, 3201
Mkhambathini Local Municipality (Environmental)	Ms Elaine Donaldson	031 785 9341	DonaldsonE@mkhambathini.gov.za	Ward Councillor (ward 3)
	Patience Nonhlanhla Maphanga	073 282 2182	pnmaphanga@vodamail.co.za	Ward Councillor (ward 3)
Umgungundlovu District Municipality (Planning)	Nokulunga Nxumalo	033 897 6723	nokulunga.nxumalo@umdm.gov.za	242 Langilabalele Street PO Box 3235, Pietermaritzburg,3200
Umgeni Water	Phumi Molefe	0835811904	Phumi.Molefe@umgeni.co.za	310 Burger Street, Pietermaritzburg 3201. South Africa
	Nompilo Mbentse		Nompilo.Mbentse@umgeni.co.za	
	Shami Harichunder	033 341 1111	shami.harichunder@umgeni.co.za	
Emoyeni Country Lodge	Brenda Murdoch-Eaton	031 785 1740	brenda@emoyenilodge.com	D113 District Rd, Camperdown, 372

6.3 Project notification and invitation to participate

Notification of the project and the opportunity to participate in the Basic Assessment process was announced in April 2021 and October 2021. Notifications to I&APs were made available in two local languages, English and isiZulu. The process undertaken to date and adverts and public notifications are summarised below. All relevant documentation associated with the public participation is contained in Appendix E1 to E5.

- Direct personal notification of **directly affected property owners (where required)** is to be completed and finalized. This refers to the owners of properties which SANRAL needs to acquire, where the project cuts in their land and where the owner will be required to sell a portion of land to SANRAL. The full process will be ongoing until satisfaction has been reached by all parties.
- A **database of I&APs** (Appendix E2) identified as being potentially interested and/or affected, including authorities, municipalities, organs of state, ward councillors, conservation bodies, non-government organisations, landowners, local residents, etc. was compiled and ongoing. The registered I&APs from databases used for the N3 upgrade Cato Ridge to Dardanelles was included in the database, as relevant.
- Flighting on the Backgroung information Document was done through distribution and newspaper advert.
- **Advertisements** (Appendix E1) were placed in April 2021 in the local newspapers providing project details and contact details of where to register and obtain further information: i.e
    - The Daily Sun (English). April 2021
    - The Daily Sun (English) October 2021
- **Public notices** (A3 posters) (Appendix E1) were posted at the nearest public facilities for information to the public. SANRAL does not allow notices to be placed directly along the side of their national roads as they can cause a safety hazard (distraction to motorists), thus, it was not possible to place notices directly on the site.
- SANRAL was provided with relevant information to place on the **SANRAL website and Facebook page**.
- A project email was setup for feedback which is R103@qpoint.co.za
- Receipt of comments from I&APs and acknowledgement of comments has been ongoing since initial project announcement in April 2021. Responses to these comments are to be finalized in the **Comments and Responses Report** and attached to the Final Basic assessment report. (Appendix E3).

6.4 Summary of Issues Raised by I&APs

All issues raised by I&APs and the responses provided by the EAP are updated in the Final Basic Assessment report following the 30 day public review period. A full Comments and Responses Report will also be provided. Appendix E3. A summary of issues commented on to date is given below in Table 10a below.

Table 10a Summary of issues raised by interested and affected parties

Summary of main issues raised by I&APs	**Summary of response from EAP**
Road traversing over pipeline	**Umgeni Water Head Office** Feel that there is a change in alignment and scope of R103 to that which was presented during the consultation with Umgeni Water. They added, *"the R103 seems to be traversing a longer distance and on top of the pipelines along the former Rainbow property. This will definitely have an impact on our pipeline and we will need to engage SANRAL and or QPoint for further information prior to concluding whether there will be an impact or not arising from the revised realignment*".
Road traversing over powerline	**Eskom Distribution** Carried out an investigation and noted that there are Eskom 132-kV Overhead Lines & 11-kV Overhead Lines/Cables showing to exist on our system that traverse the application areas. The Power Lines are depicted on the attached diagram ER_INV_341/2021. Transmission Overhead Lines are also located on the areas.
Sensitivity of the environment	**Umgeni Water Technical Support Department** Impacts to the vegetation and proposed mitigation measures. Impacts to the aquatic environment and the proposed water quality monitoring for river/stream crossings. Disturbances / nuisance from the construction process such as dust pollution, noise and traffic control
Route design	**Mkhambathini municipality** had these concerns * the possible closure of the overpass and the status of the existing R103 route through town * the crossing of the zoned wetland * the impact on the residents of Fairview Road, Mafutha farm and general access to the municipal dam * the impact on the planned reticulation and pump stations associated with the proposed new WWTW on Erf 106.

6.5 Circulation of draft BAR for public review

- Stakeholders on the project database (registered stakeholders) were notified of the availability of the draft BAR & EMPr for comment, for a period of 30 days (all I&APs including authorities). Notification was done advert, email and other means possible or indicated by stakeholders.
- The documents were made available through sharing of the download link to all I&APs and and sharing mechanisms.

6.6 Public and authority review comments to be incorporated into the final BAR

Comments submitted on the draft BAR will be recorded and responded to in the DBAR Comments and Responses Report, and matters raised will be addressed in the Final BAR, where appropriate.

7 ENVIRONMENTAL ISSUES DESCRIPTION AND POTENTIAL/POSSIBLE IMPACTS

The key issues identified and assessed during this Basic Assessment were formulated under the following:

i. Economic and socio-economic benefits from the proposed upgrades to the R103.
ii. Effects the proposed upgrades to the R103 will have on adjacent properties, infrastructure and services.
iii. Effects on cultural heritage resources from the proposed upgrades to the R103.
iv. Effects on the biophysical environment and biodiversity (water, soils, riparian, wetland and terrestrial natural habitat, fauna) from the proposed upgrades to the R103.
v. Impacts of the No Development Alternative (not implementing widening/capacity improvements to the R103).

Potentially significant impacts associated with each of the above issues (including cumulative impacts) are discussed in the sections below. The assignment of significance ratings to impacts(where applicable), according to the assessment conventions is provided in Chapter 9.

7.1 Economic and socio-economic benefits from the proposed upgrades to the R103.

During the planning, design and construction phases, economic and socio-economic benefits will be more evident at a local level. There will be increased opportunities for temporary employment (albeit largely unskilled and semi-skilled positions) and capacity building for individuals, local contractors, SMMEs and service providers. In addition, opportunities will be created for informal traders, which will have positive economic impacts.

The R103 upgrades will feed into the creation of an efficient and effective road network that is critical to sustain economic growth and development. An improved road network will also be a notable benefit in the local level.

7.2 Effects that the proposed upgrades to the R103 will have on adjacent properties, infrastructure and services

A summary of impacts (including the specialist findings as applicable) is provided below, along with the recommended measures for management/mitigation of impacts.

The project will result in the permanent loss of portions of some adjacent, privately owned properties.

The effect on property values will differ according to each individual circumstance and can be influenced by multiple factors. Where land is to be acquired, SANRAL will negotiate with each land owner as part of land acquisition. The valuator takes into account individual circumstances and potential financial losses caused by acquisition. SANRAL will compensate land owners at fair market value for the land they purchase and may compensate for financial losses in line with applicable legislation, viz. The Constitution, Section 25 (3) and the Expropriation Act (Act 63 of 1975).

Disruptions in movement during the R103 upgrades may be experienced while construction is taking place. Other disruptions to be expected are to services and infrastructure close to the intended channel or R103 upgrades. Existing services and infrastructure below and on the surface of the road reserve may need to be excavated/removed disconnected and relocated, which may cause temporary disruptions to services

7.3 What effects will the proposed widening/capacity improvements to the R103 have on cultural heritage?

A single heritage site was found by the heritage specialist. The site consists of a cement and brick multi-room house. The pitched roof consists of wooden trusses with asbestos roof sheeting. As far as could be determined, the structure does not have a special relationship between the community and the surrounding environment.

The site and structures are therefore of low heritage significance and heritage rating of IIIC, with no historical value. As the site is of low heritage significance, no mitigation measures are required.

7.4 What effects will the proposed R103 upgrades have on the biophysical environment and biodiversity (water, soils, riparian, wetland and terrestrial natural habitat, fauna) during construction, operation and rehabilitation?

During the construction phase of the proposed R103 road upgrades and new road construction, there will be definite impacts imposed onto the watercourse, namely through excavations, general road construction activates (e.g. foundation and road surface placement, etc), and destruction of the stream bank. Furthermore, for the new road to traverse over the existing stream, a culvert will need to be place. The culvert, in turn, will inevitably impact the geomorphology and flow of surface water, leading to further habitat loss and a potential loss of aquatic biodiversity. These impacts have potential far reaching consequences for downstream users, such as farmers requiring water for irrigation purposes.

Key construction activities likely to result in degradation of the unnamed watercourse habitat include (i) undertaking bulk earthworks, (ii) increased run-off from compacted/hard surfaces, and (iii) bank erosion during higher flows, all of which may lead to scouring and erosion of the instream and riparian habitat. Road construction activities will furthermore lead to the inevitable removal of instream and riparian vegetation, potentially altering flow regime as well as the alteration of the natural topography of the watercourse. Local alien invasive species may rapidly encroach into areas that have been disturbed by construction activities. Alien plant species generally out-compete indigenous species for water, light, space and nutrients as they are adaptable to changing conditions and easily invade a wide range of ecological niches (Bromilow, 2010). Alien invader plant species pose an ecological threat as they alter habitat structure, lower biodiversity (both number and "quality" of species), change nutrient cycling and productivity, and modify food webs (Zedler, 2004).

During the operation phase, poor placement or design of stormwater control infrastructure, along with continued road-side disturbance of vegetation by vehicles could further cause increased erosion and sedimentation into the watercourse. The significance of the impact was estimated as a 'moderate' impact significance for the construction and operation phase of the project, but because of the placement of the road crossing the watercourse and the inherent constant disturbance that can be associated with frequent road use (particularly for the establishment of alien invasive plant species) io, the impact risk potential even with mitigation measures remains "moderate'.

Potential construction phase contaminants include hydrocarbons, oils and grease, bitumen, cement and other binding agents associated with road construction. These may enter the nearby watercourse as surface runoff, directly into the watercourse during construction of the watercourse crossing or through inadequately designed/maintained stormwater management infrastructure. Hydrocarbons and volatile compounds (e.g. bitumen) are particularly toxic to aquatic ecosystems, which ultimately significantly negatively affects the integrity/quality of the receiving riparian vegetation and aquatic ecosystem. Consequently, oil and/or chemical spills reduce the suitability of water for consumption (by humans and livestock) and for use in irrigation (applicable in this instance with surrounding agriculture). Toxic spills potentially result in fatalities of aquatic fauna sensitive to water quality changes, leading to a further shift in species composition, favouring tolerant species. Pollution during the operational phase will likely be experienced once road contaminants are washed off during a rainfall events and flushed into the adjacent watercourse.

The terrestrial ecological specialist study found the following impacts likely to be experienced as a result of the R103 road upgrades.

- Excessive sheet flow from the road surface as well as the compacted road shoulder will potentially lead to increased water flow into the adjacent terrestrial environment. The increase in sheet flow and run-off may potentially lead to erosion and donga creation in the terrestrial ecosystem. This is of particular concern regarding the surrounding commercial agricultural activities
- Exposed soil created as a consequence from clearing vegetation for the construction of the R103 road upgrades may potentially have severe impacts in the form of excessive stormwater run-off, leading to increased soil erosion in the surrounding environment. Similarly, inappropriately stockpiled topsoil/removed soil may also lead to increased scouring, run-off and sediment flow into the adjacent terrestrial ecosystem
- The Contractor will be required to clear both vegetation and soil in order to make way for the proposed upgrades. Whilst portions of the construction footprint will be rehabilitated (within the road servitude) most of the construction footprint will result if the permanent loss of vegetation and semi / subterranean habitat
- The upgrade of the road surface will result in the permanent loss of habitat which will lead to the possible displacement of fauna and the further reduction in place species diversity found along the proposed route.
- The creation of road surfaces requires the use of several chemicals, compounds and binding agents, namely asphalt bitumen and concrete. These binding agents and compounds can be toxic to the surrounding ecosystems. Additionally, once the road surface is completed, vehicles inevitably release oil and fuel onto the road surface, which may ultimately be transported into the surrounding environment. Hydrocarbons are particularly toxic to terrestrial and aquatic ecosystems alike and often have long-term impacts on ecosystems once entered
- Alien plant species are responsible for the significant degradation of native habitats and the loss ultimate loss of native species, plant and animal alike. The removal of native vegetation and/or the disturbance of the environment through construction activities provides an opportunity for alien invasive plant species to establish and proliferate. In many instances, these alien invasive species grow in dense patches, making it impossible for indigenous plant species to grow and inhibit the movement of indigenous animal species, livestock and humans. Moreover, many alien plant species are toxic to livestock and may have adverse effects on rural communities.

7.5 Impacts of the No Development Alternative (not implementing widening/capacity improvements to the R103)?

The No development alternative will mean that the N3 upgrades will occur without any alternative deviation route on this section. Greater traffic congestion will thus be experienced along the Durban to Gauteng route with the temporary closure of some lanes during construction. For these reasons, this alternative is not recommended.

8 ASSESSMENT OF THE SIGNIFICANCE OF POTENTIAL IMPACTS

8.1 Identification and assessment of significance of key issues and impacts

Issues and potential impacts of the project on the environment were identified by way of field investigations, desktop studies and interaction with I&APs. Key issues and impacts requiring further investigation were addressed by specialist studies (Appendix A1 to A4) and/or further detailed input from the environmental and technical teams. Mitigation measures were identified with inputs from I&APs, the specialists, the design engineers and the EAP team. Information was collated, evaluated and integrated. Thereafter, the significance of each impact was assessed using the assessment conventions outlined in Table 11. It should be noted that the significance of an impact is a function of all the attributes outlined in Table 11, and the relationships between them. The assessment conventions are applied qualitatively by the EAP, based on an understanding of the receiving environment, the proposed project components and activities, and the information gathered from different sources, including specialists and the public.

8.2 Methodology of the Impact Assessment

The identification of potential impacts includes impacts that may occur during the construction, operational and decommissioning phases of the proposed development. The assessment of impacts includes direct, indirect as well as cumulative impacts. In order to identify potential impacts (both positive and negative) it is important that the nature of the proposed projects is well understood so
that the impacts associated with the projects can be assessed. The process of identification and assessment of impacts includes:

- Determining the current environmental conditions in sufficient detail so that there is a baseline against which impacts can be identified and measured;
- Determining future changes to the environment that will occur if the activity does not proceed;
- Develop an understanding of the activity in sufficient detail to understand its consequences; and
- The identification of significant impacts which are likely to occur if the activity is undertaken.

The impact assessment methodology has been aligned with the requirements for BA Reports as stipulated in Appendix 1 (3) (1) (j) of the 2014 NEMA EIA Regulations (as amended), which states the following:

"A BA Report must contain the information that is necessary for the Competent Authority to consider and come to a decision on the application, and must include an assessment of each identified potentially significant impact and risk, including –

(i) cumulative impacts;

(ii) the nature, significance and consequences of the impact and risk;

(iii) the extent and duration of the impact and risk;
(iv) the probability of the impact and risk occurring;
(v) the degree to which the impact and risk can be reversed;
(vi) the degree to which the impact and risk may cause irreplaceable loss of resources; and
(vii) the degree to which the impact and risk can be mitigated".

As per the DEAT Guideline 5: Assessment of Alternatives and Impacts, the following methodology is applied to the prediction and assessment of impacts and risks. Potential impacts and risks have been rated in terms of the direct, indirect and cumulative:

- **Direct impacts** are impacts that are caused directly by the activity and generally occur at the same time and at the place of the activity. These impacts are usually associated with the construction, operation or maintenance of an activity and are generally obvious and quantifiable.
- **Indirect impacts** of an activity are indirect or induced changes that may occur as a result of the activity. These types of impacts include all the potential impacts that do not manifest immediately when the activity is undertaken or which occur at a different place as a result of the activity.
- **Cumulative impacts** are impacting that result from the incremental impact of the proposed activity on a common resource when added to the impacts of other past, present or reasonably foreseeable future activities. therefore, assuming worst case scenario.

In addition to the above, the impact assessment methodology includes the following aspects whereby the significance of the impact is calculated as follows and rating significance is explained below.

» The **nature**, a description of what causes the effect, what will be affected, and how it will be affected.

» The **extent**, wherein it is indicated whether the impact will be local (limited to the immediate area or site of development), regional, national or international. A score of between 1 and 5 is assigned as appropriate (with a score of 1 being low and a score of 5 being high).

» The **duration**, wherein it is indicated whether:

  * The lifetime of the impact will be of a very short duration (0–1 years) – assigned a score of 1;
  * The lifetime of the impact will be of a short duration (2-5 years) - assigned a score of 2;
  * Medium-term (5–15 years) – assigned a score of 3;
  * Long term (> 15 years) - assigned a score of 4; or;
  * Permanent - assigned a score of 5.

» The **magnitude**, quantified on a scale from 0-10, where a score is assigned:

  * 0 is small and will have no effect on the environment;
  * 2 is minor and will not result in an impact on processes;
  * 4 is low and will cause a slight impact on processes;
  * 6 is moderate and will result in processes continuing but in a modified way;
  * 8 is high (processes are altered to the extent that they temporarily cease); and

- 10 is very high and results in complete destruction of patterns and permanent cessation of processes.

» The **probability** of occurrence, which describes the likelihood of the impact actually occurring. Probability is estimated on a scale, and a score assigned:

- Assigned a score of 1–5, where 1 is very improbable (probably will not happen);
- Assigned a score of 2 is improbable (some possibility, but low likelihood);
- Assigned a score of 3 is probable (distinct possibility);
- Assigned a score of 4 is highly probable (most likely); and
- Assigned a score of 5 is definite (impact will occur regardless of any prevention measures).

» The **significance**, which is determined through a synthesis of the characteristics described above (refer formula below) and can be assessed as low, medium or high.

» The **status**, which is described as positive, negative or neutral.

» The degree to which the impact can be reversed.

» The degree to which the impact may cause irreplaceable loss of resources.

» The degree to which the impact can be mitigated.

The **significance** is determined by combining the criteria in the following formula:

S= (E+D+M) P; where

S = Significance weighting
E = Extent
D = Duration
M = Magnitude
P = Probability

The **significance** weightings for each potential impact are as follows:

» < **30 points**: Low (i.e. where this impact would not have a direct influence on the decision to develop in the area),

» **30-60 points**: Medium (i.e. where the impact could influence the decision to develop in the area unless it is effectively mitigated),

» **> 60 points**: High (i.e. where the impact must have an influence on the decision process to develop in the area).

8.3 Assessment of Impacts

This Chapter deals with the assessment of the significance of the potential impacts, both with and without management measures (mitigation). Impact tables, **where applicable** to the key issues discussed in this report, are provided in Tables 12-17.

The specialist findings presented in this section represents a summary of the detailed and original specialist studies contained in the relevant appendices to this report **(Appendices A1 to A4).** The current summary of specialist findings is provided in the interest of brevity and with a view to facilitating public facilitating public participation; as contemplated in the NEMA principles. The Competent Authority, with its mandate of substantive review of the EIA report, is therefore urged to also read the original specialist studies in the relevant appendices to this report with the aim of discharging its decision-making function. *Should any discrepancy occur between this summary, and the relevant detailed specialist study; the detailed specialist study will prevail.*

Table 11: Summary of impact significance tables

Table 12	Summarised impact significance results for direct impacts to the Riparian Habitat
Table 13	Summarised impact significance results for oil/chemcial pollution
Table 14	Summarised impact significance results for the degradation of freshwater habitat
Table 15	Description of construction and operation phase impacts and a summary of the impact significance results for the terrestrial ecology (flora and fauna)
Table 16	Summarised impact significance assessment results for the terrestrial ecology (flora and fauna)
Table 17	Assessment of potential impacts of the R103 on the Heritage and Palaeontology of the site area

Table 12: Summarised impact significance assessment results for the **riparian habitat.**

Impacts	Description	Construction Phase		Operational Phase	
		Without Mitigation	With Mitigation	Without Mitigation	With Mitigation
Transformation of watercourse habitat	**Direct Impacts to the Watercourse:** During the construction phase there will be definite impacts imposed onto the watercourse, namely through excavations, general road construction activates (e.g. foundation and road surface placement, etc), and destruction of the stream bank. Furthermore, for the new road to traverse over the existing stream, a culvert will need to be place. The culvert, in turn, will inevitably impact the geomorphology and flow of surface water, leading to further habitat loss and a potential loss of aquatic biodiversity. These impacts have potential far reaching consequences for downstream users, such as farmers requiring water for irrigation purposes. T	Moderate	Moderate	Moderate	Moderate
Direct disturbance of watercourse habitat		Moderate	Moderate	Moderate	Moderate
Increased flood peaks in watercourses		n/a	n/a	Moderate	Moderate
Increased sediment input and increased run-off into watercourses	**Degradation of Freshwater Habitat Impacts**: Key construction activities likely to result in degradation of the watercourse habitats include (i) undertaking bulk earthworks, (ii) increased run-off from compacted/hard surfaces, and (iii) bank erosion during higher flows, all of which may lead to scouring and erosion of the wetland, instream and riparian habitat. Road construction activities will furthermore lead to the inevitable removal of instream and riparian vegetation, potentially altering flow regime as well as the alteration of the natural topography of the watercourse. Local alien invasive species may rapidly encroach into areas that have been disturbed by construction activities. Alien plant species generally out-compete indigenous species for water, light, space and nutrients as they are adaptable to changing conditions and easily invade a wide range of ecological niches (Bromilow, 2010). Alien invader plant species pose an ecological threat as they alter habitat structure, lower biodiversity (both number and "quality" of species), change nutrient cycling and productivity, and modify food webs (Zedler, 2004).	Moderate	Moderate	Moderate	Moderate
Increased input of toxic contaminants in watercourses		Moderate	Moderate	Moderate	Moderate
Weeds and invasive alien plant proliferation in watercourses		Moderate	Moderate	Moderate	Moderate

	During the operation phase, poor placement or design of stormwater control infrastructure, along with continued road-side disturbance of vegetation by vehicles could further cause increased erosion and sedimentation into the watercourse. The significance of the impact was estimated as a 'moderate' impact significance for the construction and operation phase of the project, but because of the placement of the road crossing the watercourse and the inherent constant disturbance that can be associated with frequent road use (particularly for the establishment of alien invasive plant species), the impact risk potential even with mitigation measures remains "moderate'.				

Table 13: Summarised impact significance results for **oil/chemcial pollution.**

Impacts	**Description**	**Construction Phase**		**Operational Phase**	
		Without Mitigation	**With Mitigation**	**Without Mitigation**	**With Mitigation**
Oil/chemical spills – hydrocarbons, grease, cement, bitumen, tar, etc.	**Water and Soil Pollution Impacts:** Potential construction phase contaminants include hydrocarbons, oils and grease, bitumen, cement and other binding agents associated with road construction. These may enter the nearby watercourse as surface runoff, directly into the watercourse during construction of the watercourse crossing or through inadequately designed/maintained stormwater management infrastructure. Hydrocarbons and volatile compounds (e.g. bitumen) are particularly toxic to aquatic ecosystems ultimately significantly negatively affects the integrity/quality of the receiving riparian vegetation and aquatic ecosystem. Consequently, oil and/or chemical spills reduce the suitability of water for consumption (by humans and livestock) and for use in irrigation (applicable in this instance with surrounding agriculture). Toxic spills potentially result in fatalities of aquatic fauna sensitive to water quality changes, leading to a further shift in species composition, favouring tolerant species. Pollution during the operational phase will likely be experienced once road contaminants are washed off during a rainfall events and flushed into downstream watercourses. The potential risk of pollution was determined to be equal during the construction and operational phases of the project, indicated by a 'moderate' impact significance rating	Moderate	Moderate	Moderate	Moderate

Table 14: Summarised impact significance assessment results for **the wetland habitat.**

Impacts	Description	Construction Phase		Operational Phase	
		Without Mitigation	With Mitigation	Without Mitigation	With Mitigation
Loss of freshwater habitat and biota	Based on the location of the proposed development, it is unlikely that the proposed development will result in the transformation of any wetland habitat and mortality of aquatic biota during both the construction and operational phase of the development. Wetland Unit AW1 is located 90m away from the construction servitude. Therefore, no further investigations were done with regards to the loss of freshwater habitat and aquatic biota.	n/a	n/a	n/a	n/a
Degradation of freshwater habitat	Although Wetland Unit AW1 is located approximately 90m away from the edge of the construction servitude, there is a probability of the proposed development indirectly impacting on the wetland habitat. Impacts likely to occur include (i) sedimentation of the wetland habitat if exposed surfaces and soil stockpiles are poorly managed, (ii) spreading of invasive alien plants via wind or water and (iii) potential inundation of the wetland habitat if large quantities of stormwater are channelled into the wetland during the operational phase of the project. The impacts will have major impacts on the wetland habitat. Increased sedimentation will alter raise the level of the wetland surface and alter the movement of water resulting in alteration of soil saturation levels which will in turn influence plant species assemblage. Inundation on the other hand will favour obligate wetland plants and thus alter the species assemblage of plants.	Moderate	Low	Moderate	Low
Soil and water pollution	Poor handling of chemicals and solid waste within the construction servitude could result in them being carried by water or wind into the wetland habitat. Potential chemical contaminants include hydrocarbons, oils and grease, cement and sewage from chemical toilets. These contaminants have will affect the water quality of affected water recourses. Anticipated impacts include (i) compromised suitability of water for consumption by humans and livestock, (ii) mortality of aquatic fauna sensitive to water quality changes. Potential operation phase contaminants are likely to be considerably lower and of less concern than construction phase contaminant risks. Pollution during the operational phase will likely be experienced once road contaminants are washed off during a rainfall event and flushed into adjacent watercourses. Operational phase water quality impacts are unlikely to have a significant impact on the watercourse.	Low	Low	Low	Low

IMPACTS MITIGATION:

The following mitigation measures are recommended for implementation during the construction and operational phases of the proposed R103 Road development:

Working within/near Watercourses

i. all work to be done within sensitive riparian and instream habitats, if any, should be carried out at a time of low flow conditions (winter to early spring). It is prudent however to be prepared for increased flows by scheduling work according to the weather forecast and to be adequately prepared for unexpectedly large runoff from a sudden storm.
ii. During the placement of the culvert/road crossing infrastructure, activities within the streambed should be limited to an absolute minimum. Moreover, the movement of heavy machinery and/or vehicles within 10m of the watercourse should be limited in number and occurrence in an attempt to preserve riparian vegetation and minimise indirect impacts into the watercourse.
iii. iii. The method statement provided by SANRAL does not specify the method in which the new road will traverse the watercourse (i.e. bridge, culvert, etc) – nevertheless, in any instance, if any volume of substrate is required to be removed from the watercourse, it should eb kept to an absolute minimum.
iv. iv. Any disturbed watercourse habitat should be rehabilitated as soon as construction in an area is complete or near complete and not left until the end of the project to be rehabilitated.
v. A wetland and riverine rehabilitation and monitoring plan with a focus on erosion and alien vegetation management should be compiled for the R103 Road development

Construction Footprint Limit & Demarcation

i. All construction activities must be limited to the construction servitude.
ii. All stockpiled soil/building material should be placed in areas where potential run-off is limited.
iii. Laydown, site offices and other storage areas must be clearly demarcated and located at least 30m from the boundary of any riverine or wetland habitat, ideally on flat surfaces. No incursions, work-related activities or placement of any infrastructure / equipment is permitted within wetland habitat.
iv. The use of existing access routes to the construction site must be prioritised as far as possible

Soil Erosion and Sedimentation Control Measures

i. Sediment barriers should be installed in areas sensitive to erosion such as near water supply points, slopes, actively eroding streambanks or recently disturbed streambanks. These measures include but are not limited to - the use of sandbags, hessian sheets, silt fences, geotextiles, rock gabions, etc.
ii. The silt fence / curtain must be maintained regularly to ensure continual functionality during the construction phase.
iii. After every rainfall event, the contractor must check the site for erosion damage and immediately repair any damage recorded.
iv. Unnecessary clearing of natural areas should be kept to a minimum in order to make use of natural erosion suppressors such as good grassland cover.

Pollution Prevention Measures

i. Any soil contaminated by hydrocarbons (fuel and oils), grease, bitumen's, cement or any other binding agent used in road construction must be removed and the affected area and the site rehabilitated immediately.
ii. Fuels, chemical and binding agents must be stored in a bunded structure with a roof. The bund must be able to contain at least 110% of the volume of the liquid stored.
iii. Mixing and/or decanting of all chemicals and hazardous substances must take place on a tray, shutter boards or on an impermeable surface.

iv. Drip trays should be utilised at all dispensing areas.
v. A chemical spill kit must be always present onsite and once used it must be disposed of at a registered hazardous landfill site.
vi. All solid waste must be collected and placed in bins.

Invasive Alien Plant Control

i. The control and eradication of a listed invasive species must be carried out in areas that are disturbed directly during the road construction phase, using methods that are appropriate for the species concerned and the environment within which it occurs.
ii. All invasive alien plants must be removed from the construction footprint, including the site camp.
iii. Mechanical control methods such as digging, hoeing, pulling out of weeds and invasive plants are recommended.
iv. Use of chemical treatment methods must be kept to a minimum.
v. Where chemical treatment methods are used, the contractor must ensure the utilisation of watercourse friendly herbicides.
vi. The methods employed to control and eradicate a listed invasive species must also be directed at the new growth, propagating material and re-growth of such invasive species in order to prevent such species from producing offspring, forming seed, regenerating or re-establishing itself in any manner.

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Table 15: Description of construction and operation phase impacts and a summary of the impact significance results for the **terrestrial ecology (flora and fauna)**

Impacts	**Description**	**Construction Phase**		**Operational Phase**	
		Without Mitigation	**With Mitigation**	**Without Mitigation**	**With Mitigation**
Potential for increased run off from compacted and/or hard surfaces	Excessive sheet flow from the road surface as well as the compacted road shoulder will potentially lead to increased water flow into the adjacent terrestrial environment. The increase in sheet flow and run-off may potentially lead to erosion and donga creation in the terrestrial ecosystem. This is of particular concern regarding the surrounding commercial agricultural activities	Moderate	Low	Moderate	Low
Potential for increased sediment run-off into the surrounding environment, causing scouring and erosion	Excessive sheet flow from the road surface as well as the compacted road shoulder will potentially lead to increased water flow into the adjacent terrestrial environment. The increase in sheet flow and run-off may potentially lead to erosion and donga creation in the terrestrial ecosystem. This is of particular concern regarding the surrounding commercial agricultural activities	Moderate	Low	Moderate	Low
Stripping of topsoil, sub-soil and vegetation for the road	Exposed soil created as a consequence from clearing vegetation for the construction of the R103 road upgrades may potentially have severe impacts in the form of excessive stormwater run-off, leading to increased soil erosion in the surrounding environment. Similarly, inappropriately stockpiled topsoil/removed soil may also lead to increased scouring, run-off and sediment flow into the adjacent terrestrial ecosystem	Moderate	Low	Moderate	Low
Displacement and reduction in species diversity	Exposed soil created as a consequence from clearing vegetation for the construction of the R103 road upgrades may potentially have severe impacts in the form of excessive stormwater run-off, leading to increased soil erosion in the surrounding environment. Similarly, inappropriately stockpiled topsoil/removed soil may also lead to increased scouring, run-off and sediment flow into the adjacent terrestrial ecosystem	Moderate	Low	Moderate	Low
Oil/chemical and/or toxic construction material spills	The Contractor will be required to clear both vegetation and soil in order to make way for the proposed upgrades. Whilst portions of the construction footprint will be rehabilitated (within the road servitude) most of the construction footprint will result if the permanent loss of vegetation and semi / subterranean habitat.	Moderate	Low	Moderate	Low

Alien invasive plant introductions throughout the proposed site of the R103 road upgrades	The Contractor will be required to clear both vegetation and soil in order to make way for the proposed upgrades. Whilst portions of the construction footprint will be rehabilitated (within the road servitude) most of the construction footprint will result if the permanent loss of vegetation and semi / subterranean habitat.	High	Low	Moderate	Low

IMPACTS MITIGATION:

The following mitigation measures are recommended for implementation during the construction and operational phases of the proposed R103 Road development:

Stormwater Management

In order to best manage road related stormwater risks and impacts to the adjacent environment, the following key design
considerations for road stormwater management are recommended (where not already included in the SANRAL Drainage
Manual):

i. All stormwater discharges into the terrestrial environment must be attenuated at discharge points prior, where discharge points are absent, in areas where the flow channelled stormwater can be dissipated quickly.
ii. Swales/side drains must be vegetated or use stones and used to convey stormwater rather than concrete lined channels or V-drains. These features should be well vegetated/incorporate large rocks/stones with appropriate species and stabilized with reno mattresses or rock packs to prevent erosion and vertical incision.
iii. Road runoff must be discharged into the terrestrial habitat at regular intervals to reduce the risk of soil erosion at discharge points.

Construction Footprint Limit & Demarcation

i. Prior to the carrying out of any works, the water user must ensure that all persons entering the construction site, including contractors and casual labourers, are made fully aware of the conditions and related management measures specified in the GA, Environmental Authorisation (EA) and Environmental Management Programme (EMPr).
ii. Prior to commencement of construction, the construction footprint within the terrestrial habitat must be demarcated using wooden pegs and an orange safety net.
iii. The demarcation fence must be signed off by the Environmental Control Officer (ECO).
iv. The fence must be maintained throughout the construction phase.
v. Once demarcated, construction activities should not further impede into the adjacent grassland
vi. Any protected species that may appear within the development footprint during the growing season must be relocated to the adjacent grassland. A permit must be obtained from Ezemvelo KZN Wildlife prior to relocation.
vii. During the construction phase of the project, the developer must appoint an Environmental Control Officer to undertake bi-monthly site visits (one to undertake an environmental audit and another to check on progress). The environmental audit report must discuss non-compliances of the GA, EA and the approved EMPr
viii. During the construction phase of the project, the appointed Environmental Control Officer must take bi-monthly fixed-point photographs

Soil Erosion Control Measures

i. Prior to commencement of construction, silt fence / sediment curtains must be installed progressively down the hillside/slope of the construction footprint
ii. The silt fence / curtain must be maintained regularly to ensure that they function effectively.
iii. After every rainfall event, the contractor must check the site for erosion damage and immediately repair any damage recorded.

Soil Management

i. Prior to commencing with earthworks, the topsoil must be stripped and stockpiled separately from subsoil.
ii. Bulb bearing plant species (if found) must not be removed from topsoil during the clearing of topsoil.
iii. Topsoil must be kept for use during rehabilitation of disturbed areas.

iv. Topsoil must be stockpiled in stockpiles not exceeding 2m in height.
v. Topsoil removed during the initial cut must be stockpiled preferably on a flat / gently sloping surface to minimize run-off during rain events and away from the active construction site
vi. All stockpiles must be kept free of weeds and invasive alien plants.
vii. If at risk of being eroded, all stockpiles must be secured with sandbags around the base of the soil stockpile.

Pollution Prevention Measures

i. Any soil contaminated by hydrocarbons (fuel and oils), asphalt bitumens, binding agents, concrete and/or any other chemical must be removed and the affected area rehabilitated immediately.
ii. Chemical toilets must be provided to workers during the construction phase. A single chemical toilet must be provided for every 10 employees.
iii. Chemical toilets must be serviced regularly by a registered service provider and waybills must be retained as proof of servicing.
iv. Fuel must be stored in a bunded structure with a roof. The bund must be able to contain at least 110% of the volumes of fuel.
v. Mixing and/or decanting of all chemicals and hazardous substances must take place on a tray, shutter boards or on an impermeable surface.
vi. Drip trays should be utilised at all dispensing areas.
vii. A chemical spill kit must be present onsite at all times and once used it must be disposed of at a registered hazardous landfill site.
viii. All solid waste must be collected and placed in bins.

6.2.6 Invasive Alien Plant Control

i. The control and eradication of a listed invasive species must be carried out by means of methods that are appropriate for the species concerned and the environment in which it occurs in for the duration of the construction period and for a minimum of six (6) months post completion of the road construction
ii. All invasive alien plants must be removed from the construction area.
iii. Mechanical control methods such as digging, hoeing, pulling out of weeds and invasive plants are recommended.
iv. Use of chemical treatment methods must be kept to a minimum unless completely necessary.
v. Where chemical treatment methods are used, the contractor must ensure that he/she uses environmentally friendly herbicides.
vi. The methods employed to control and eradicate a listed invasive species must also be directed at the new growth, propagating material and re-growth of such invasive species in order to prevent such species from producing offspring, forming seed, regenerating or re-establishing itself in any manner.

Dust Control and Suppression

i. The control and suppression of dust emanating from the construction zone is of critical importance Watering of the constructed road surface must take place twice a day to keep the topsoil moist and minimise the flocculation of dust from the construction site
ii. The movement of heavy vehicles must on the road surface (prior to tarring) should be kept to a minimum and only when necessary
iii. Care must be taken to not apply excessive water to the road surface during dust suppression exercises, to ensure that sediment run-off and erosion of the road surface is kept to a minimum

Table 16: Assessment of potential impacts of the R103 on the **Heritage and Palaeontology** of the site area

Impacts	**Description**	**Construction Phase**		**Operational Phase**	
		Without Mitigation	**With Mitigation**	**Without Mitigation**	**With Mitigation**
Loss or damage to sites, features or objects of cultural heritage significance	Historical Structure Site CD001 was rated as low heritage significance with a heritage rating of IIIC. The site also has no historical value. As such, the site is deemed to be of Generally Protected C (GP. C).	Low	Low	Low	Low
Impact on Paleontological Resources	The PDA for the project indicates that the eastern section of the proposed project area is underlain by dolerite while the western portion is underlain by the Dwyka Group (Karoo Supergroup). The palaeontological sensitivity of the dolerite is zero while that of the Dwyka Group is moderate. The palaeontological specialist also indicated that no mitigation would be required for palaeontology.	Low	Low	Low	Low

IMPACTS MITIGATION:

Measures Required for the Buildings at site CD001
Site **CD001** was assessed to have a low heritage significance (**Generally Protected C (GP. C**). The pre-mitigation impact assessment on the site was also calculated to be low. As a result, no mitigation measures would be required for site **CD001.**

Measures Required for Paleontological Resources
The paleontological specialist recommends that no further paleontological heritage studies, ground-truthing and/or specialist mitigation are required pending the discovery of newly discovered fossils. As a result, no mitigation is required for paleontology.

9 ENVIRONMENTAL IMPACT STATEMENT

9.1 Effects of the project on the social environment

During the construction period there will be negative impacts on the social environment, which will be experienced by both road users and adjacent property owners/occupiers on the affected sections. These include the disruption of traffic flows, road access, increased noise, increased crime risks and general construction related disturbances. Road restrictions will pose higher road safety risks to motorists, pedestrians and construction workers. Also of note are the high traffic volumes and space constraints will make it more difficult for the project team to execute construction efficiently.

Existing services in the current road will possibly be realigned/relocated and related disruptions may ensue. While these impacts will be temporary, it can be anticipated with a high level of certainty that thousands of road users and local residents will be affected on a daily basis at varying intensities over the period of construction. While the majority of the road widening will be contained within the existing road reserve, expropriation of adjacent land will be required and, thus, some property owners will lose parts of their land. SANRAL has entered into property acquisition processes with affected property owners and fair compensation is expected to be negotiated in line with legislated procedures.

With efficient and proper project management and implementation by SANRAL, as well as the application of the mitigation measures recommended in this report (subsequently carried over into the Environmental Management Programme (EMPr).

The positive impacts of the project on the social environment during operation will be of high significance. They can be predicted with a high level of certainty to benefit thousands of road users on a daily basis through improved road travelling conditions, including improved road safety and reduced travel times. Negative impacts during operation, such as increased traffic noise and exhaust emissions are not a result of the project but rather a result of increasing traffic volumes over time which will unavoidably affect any occupiers and users of properties adjacent to any national road. In the case of this project, the intensity of impacts will increase where the widened road brings the receivers into closer proximity to traffic. With respect to emissions, the impacts will be variable, depending on the topography and micro-climate of the location. Indeed, some areas where previously there was congestion are likely to improve with respect to emissions, as free flowing traffic is likely to decrease the concentration of exhaust emissions.

SANRAL, as the road authority, is tasked with ensuring that the roads can safely and efficiently

accommodate traffic growth to facilitate economic development and to do this, has to widen the road. SANRAL has taken into consideration low noise surfacing in the road design and is in the process of appointing an acoustic specialist to investigate further possible and feasible noise control measures over time. Control of the growth of traffic volumes is a broader issue that requires high level interventions such as improved public transport and migration of freight from road to rail. These issues are being addressed but will take time. Ultimately there must also be an adaptation to prevailing conditions, i.e. a change of land use/receptors adjacent to national roads, towards those which are less sensitive to noise. With mitigation, the negative impacts on the social environment associated with operation of the widened national roads are anticipated to be of a low and medium significance.

9.2 Effect of the project on the economic/socio-economic environment

During the construction period, it is expected that some positive economic/socio-economic impacts of low significance will accrue to the local and regional community due to the provision of temporary jobs for semi-skilled and unskilled workers, the increased opportunities for local contractors and SMMEs. There is also likely to be spending nationally on specialist materials/equipment.

Economic impacts during operation will be positive. The project has marriage to SIP2 status (and as such, national priority). The primary motivation for implementing this project is to facilitate an alternative route while N3 upgrades occur. The larger N3 economic impacts will be to stimulate economic growth through improved transport infrastructure and an improved logistics/transport corridor between Durban and Gauteng. The localized impacts will also be linked to improved transport linkages within the area and thus faster means of trade.

9.3 Effects of the project on cultural heritage resources

Based on the findings of the cultural heritage assessment, Site CD001 identified in the specialist report was rated as low heritage significance with a heritage rating of IIIC. The site also has no historical value. As such, the site is deemed to be of Generally Protected C (GP. C).

The pre-mitigation impact assessment undertaken indicates that the impact of the proposed development on the site will be LOW. As the site is of low heritage significance, no mitigation measures are required. Should any be uncovered during the course of construction, Amafa must be notified for guidance on actions required.

9.4 Effects of the project on the terrestrial and aquatic biodiversity

According to the terrestrial biodiversity report, adverse impacts likely to be linked with the construction

and operation of the R103 road are expected to be of 'Very High' or 'High' significance without mitigation measures given the roads proposed route and proximity to intensive agriculture and at least two (2) watercourses. Implementation of recommended standard best practice mitigation will lower the impact significance ratings to a risk potential 'Medium' rating.

During the construction phase of the proposed R103 road upgrades and new road construction, there will be definite impacts imposed onto the watercourse, namely through excavations, general road construction activities (e.g. foundation and road surface placement, etc.), and destruction of the stream bank. Key construction activities likely to result in degradation of the unnamed watercourse habitat include

(i) undertaking bulk earthworks,

(ii) increased run-off from compacted/hard surfaces, and

(iii) bank erosion during higher flows, all of which may lead to scouring and erosion of the instream and riparian habitat. Road construction activities will furthermore lead to the inevitable removal of instream and riparian vegetation, potentially altering flow regime as well as the alteration of the natural topography of the watercourse. The significance of the impact was estimated as a 'moderate' impact significance for the construction and operation phase of the project, but because of the placement of the road crossing the watercourse and the inherent constant disturbance that can be associated with frequent road use (particularly for the establishment of alien invasive plant species) ie, the impact risk potential even with mitigation measures remains "moderate' but with lower scores

9.5 Effects of the No Development Alternative

The No development alternative will mean that the N3 upgrades will occur without any alternative deviation route on this section. Greater traffic congestion will thus be experienced along the Durban to Gauteng route with the temporary closure of some lanes during construction. For these reasons, this alternative is not recommended.

10 RECOMMENDATION OF THE ENVIRONMENTAL ASSESSMENT PRACTITIONER

It is the opinion of the EAP that the information contained in this report and the documentation attached hereto is sufficient to make a decision in respect of the activity applied for, viz the proposed capacity upgrades to the R103 and the construction of anew 1,6km Greenfield Link road**.**

It is the opinion of the EAP that the proposed activity can be authorised, based on the findingsof the assessment process and conditional on the following:

- Compliance with the SANRAL Generic EMP and project specific EMPr.
- Financial provision must be made for environmental management of the contract in accordance with the specifications of the Environmental Management Programme and associated subsidiary plans. This includes provision for:
    - Alien plant control.
    - Plant rescue and rehabilitation of specified sensitive areas.
    - Public liaison to ensure timeous notification to the public and affected landowners, particularly regarding requirements in the Noise Management Plan.
    - Noise mitigation. SANRAL must engage acoustic engineering specialists to better understand noise abatement measures. Should such measures prove beneficial and provided they are affordable, specific noise hot spots in urban areas along thissection of the R103 should be mitigated during the projected lifespan of the upgradedroad.
    - Water quality monitoring.
- SANRAL is to compile a detailed plan for the re-use and/or disposal of demolition rubble and excess inert material, and the relevant specifications are to be included in the contract documents.
- Crime is rife and the costs of crime to the victims and to the municipality and province arefar reaching. During construction, the integrity of boundary fences of adjacent propertiesis to be maintained and/or other contingency measures put in place to ensure that security is not compromised due to construction activities. This must be priced by contractors as part of their tenders.
- SANRAL is to ensure that close liaison is maintained with the provincial and municipal Road Transport Authorities to ensure that the relevant authorities and public are kept informed of road closures and deviations that affect provincial and municipal roads.

11 CONCLUDING REMARKS

This draft BAR has been submitted to the competent authority, DFFE, after application for environmental authorisation. This DBAR has been made available for public review and willbe finalised after consideration of comments submitted. Thereafter, the final report will be submitted to DFFE for decision making. Registered I&APs will be kept informed of all further submissions and DFFE's decision making with respect to the issuing of an Environmental Authorisation, as well as the appeal procedure which should be followed should a member of the public or the applicant wishto appeal the EA.

NORMAN CHETSANGA

NAME OF EAP

SIGNATURE OF EAP

18 January 2022

DATE

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