

DC28/0007/2016
DRAFT BASIC ASSESSMENT REPORT
THE PROPOSED UPGRADING OF MAIN ROAD 231 BETWEEN
THE NSELENI INTERCHANGE (N2-29) AND RICHARDS BAY





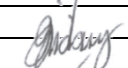
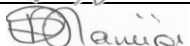
JUNE 2016

PREPARED BY:

PREPARED FOR: KZN DEPARTMENT OF TRANSPORT



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 HENWOOD & NXUMALO CONSULTING ENGINEERS		DC28/0007/2016 : THE PROPOSED UPGRADING OF MAIN ROAD 231 BETWEEN THE NSELENI INTERCHANGE (N2-29) AND RICHARDS BAY		
Date:		June 2016		
Report Status:		Draft (BAR)		
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QUALITY VERIFICATION: This report has been prepared under the controls established by a quality management system that meets the requirements of ISO9001: 2008 which has been independently certified. Registration Number LS 4729.				
				
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VERIFICATION	CAPACITY	NAME	SIGNATURE	DATE
By Author:	Senior Scientist	Ms. J. Girdary		June 2016
Checked by:	n/a	n/a		
Authorized by:	Project Director/Supervisor	Ms. P. Dlamini		June 2016

KEY DETAILS

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environmental affairs

Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

(For official use only)

File Reference Number:

Application Number:

Date Received:

Basic assessment report in terms of the Environmental Impact Assessment Regulations, 2014, promulgated in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended.

Kindly note that:

1. This **basic assessment report** is a standard report that may be required by a competent authority in terms of the EIA Regulations, 2014 and is meant to streamline applications. Please make sure that it is the report used by the particular competent authority for the activity that is being applied for.
2. This report format is current as of **08 December 2014**. It is the responsibility of the applicant to ascertain whether subsequent versions of the form have been published or produced by the competent authority.
3. The report must be typed within the spaces provided in the form. The size of the spaces provided is not necessarily indicative of the amount of information to be provided. The report is in the form of a table that can extend itself as each space is filled with typing.
4. Where applicable **tick** the boxes that are applicable in the report.
5. An incomplete report may be returned to the applicant for revision.
6. The use of "not applicable" in the report must be done with circumspection because if it is used in respect of material information that is required by the competent authority for assessing the application, it may result in the rejection of the application as provided for in the regulations.
7. This report must be handed in at offices of the relevant competent authority as determined by each authority.
8. No faxed or e-mailed reports will be accepted.
9. The signature of the EAP on the report must be an original signature.
10. The report must be compiled by an independent environmental assessment practitioner.
11. Unless protected by law, all information in the report will become public information on receipt by the competent authority. Any interested and affected party should be provided with the information contained in this report on request, during any stage of the application process.
12. A competent authority may require that for specified types of activities in defined situations only parts of this report need to be completed.
13. Should a specialist report or report on a specialised process be submitted at any stage for any part of this application, the terms of reference for such report must also be submitted.
14. Two (2) colour hard copies and one (1) electronic copy of the report must be submitted to the competent authority.
15. Shape files (.shp) for maps must be included in the electronic copy of the report submitted to the competent authority.

SECTION A: ACTIVITY INFORMATION

Has a specialist been consulted to assist with the completion of this section?

YES	NO
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If YES, please complete the form entitled "Details of specialist and declaration of interest" for the specialist appointed and attach in Appendix I.

1. PROJECT DESCRIPTION

a) Describe the project associated with the listed activities applied for

KZN Department of Transport proposes to undertake the 4.6 km upgrade of Main Road 231 (R619) from an existing single carriageway two lane road to a dual carriageway four lane urban arterial.

This will also entail upgrading and expansion of intersections, major and minor drainage upgrades, culverts, creation of bus and truck stops, channel and realignment, and pavements.

The affected section begins roughly at the Via Davalia/R619 intersection at Aquadene/Brackenham and ends just before the N2 Nseleni interchange.

The entire extent of the study area falls within the boundaries of Ward 26 of the uMhlatuze Local Municipality, which is located north of the city's central business district.

From its junction with National Road 2-29 and Main Road 517 (Nseleni Interchange), MR 231 proceeds in a southerly then south-westerly direction over Erf No. 11472, changing to a south-easterly direction over Erf No. 11488 and Erf No. 11417 and terminates at the boundary of Reserve No. 6 of 15825 which coincides with the access road serving the local cemetery

Main Road 231 is predominantly straight with only two high standard left and right hand curves at the northern end near the N2 interchange. The terrain is relatively flat and it would not be necessary to improve the geometry of the road. Land has already been set aside for widening to take place on the eastern side of the road. The recommended alignment of the new carriageway therefore follows the geometry of the existing provincial road.

Stormwater pipes under the existing single carriageway provincial road will need to be extended under the proposed new carriageway. The new carriageway will therefore need to be positioned higher than the existing carriageway

MR 231 is to be designed as a four lane dual carriageway with additional lanes at intersections. A four lane dual carriageway has a daily traffic capacity in the region of 50 000 vehicles total flow both directions at a level of service LOS C. The initial upgrade as proposed in this project i.e. to a four lane urban arterial will have adequate capacity for the medium term.

In addition, there is one major culvert over a drainage channel, historically converted to a concrete lined channel, which will be upgraded, realigned and extended, and the concrete lining extended.

The existing road has been built across four existing, transformed wetlands, which were historically drained for urban development. Therefore the upgraded roadway will also be located within these four systems.

A design report is attached (appendix J) for detailed project description as it is too lengthy to add into the body of this report.

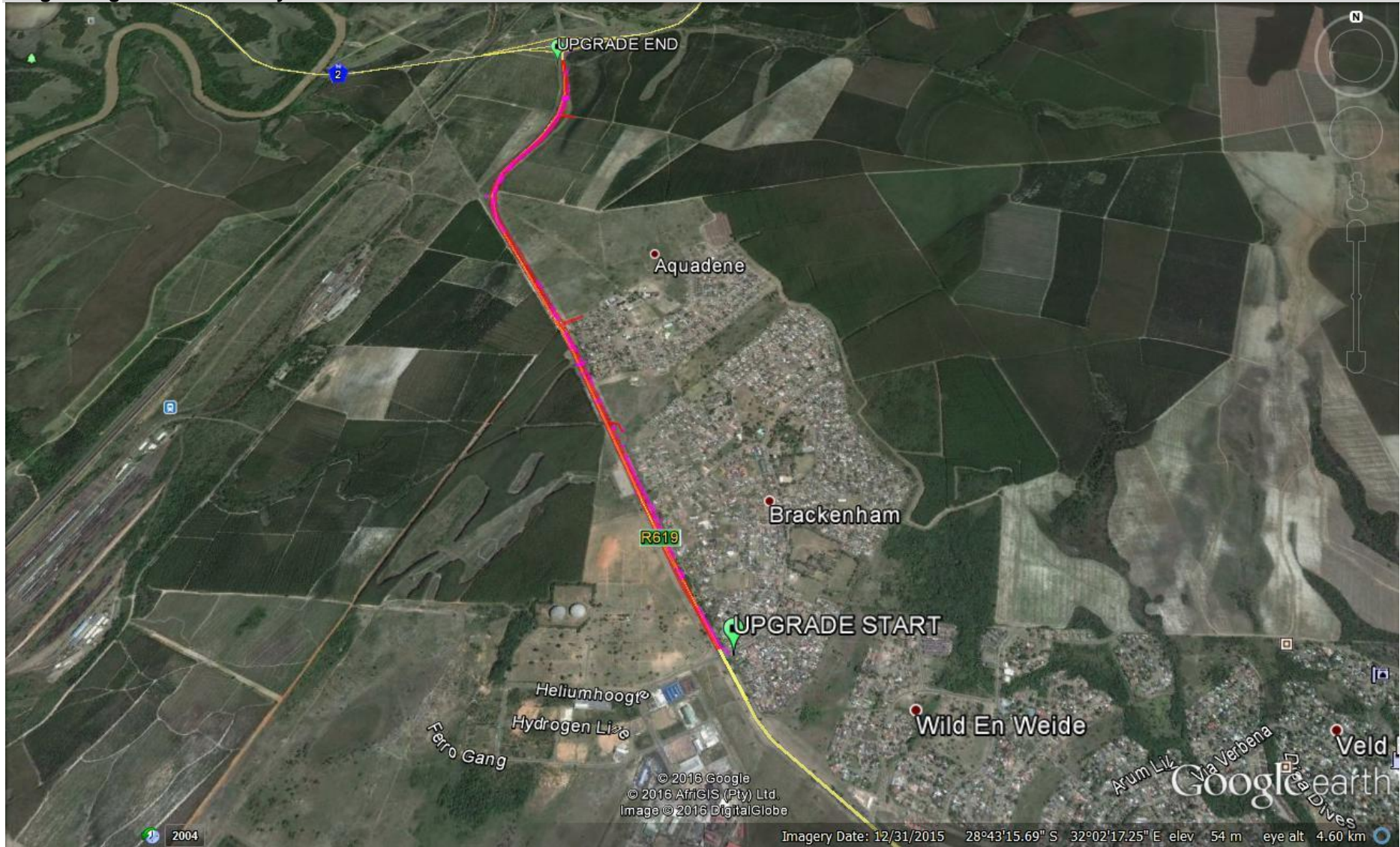


Image of road to upgraded



Image of major culvert to be upgraded, realigned and extended

Image Google Earth - Locality of road works and structures



b) Provide a detailed description of the listed activities associated with the project as applied for

Listed activity as described in GN 983, 984, 985 and 986	Description of project activity
<i>Listing Notice 1 activity 19 (i):</i> The infilling or depositing of any material of more than 5 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 5 cubic metres from a watercourse.	Four wetlands (now drained by the existing road and urban development) are traversed by the existing road; this road will be widened to a four lane road, and such expansion will occur within these wetlands; the large culvert will also be located over a drainage line/wetland. Due to the nature of the works, infilling will occur in the wetland, quantities exceeding 5 cubic meters, and excavation for the culvert will also possibly exceed 5 cubic meters.

2. FEASIBLE AND REASONABLE ALTERNATIVES

“**alternatives**”, in relation to a proposed activity, means different means of meeting the general purpose and requirements of the activity, which may include alternatives to—

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

Describe alternatives that are considered in this application as required by Appendix 1 (3)(h), Regulation 2014. Alternatives should include a consideration of all possible means by which the purpose and need of the proposed activity (NOT PROJECT) could be accomplished in the specific instance taking account of the interest of the applicant in the activity. The no-go alternative must in all cases be included in the assessment phase as the baseline against which the impacts of the other alternatives are assessed.

The determination of whether site or activity (including different processes, etc.) or both is appropriate needs to be informed by the specific circumstances of the activity and its environment. After receipt of this report the, competent authority may also request the applicant to assess additional alternatives that could possibly accomplish the purpose and need of the proposed activity if it is clear that realistic alternatives have not been considered to a reasonable extent.

The identification of alternatives should be in line with the Integrated Environmental Assessment Guideline Series 11, published by the DEA in 2004. Should the alternatives include different locations and lay-outs, the co-ordinates of the different alternatives must be provided. The co-ordinates should be in degrees, minutes and seconds. The projection that must be used in all cases is the WGS84 spheroid in a national or local projection.

a) Site alternatives

Alternative 1 (preferred alternative)		
Description	Lat (DDMMSS)	Long (DDMMSS)
<p>The proposed site is the existing MR231 (R619) located in an urban area, as per co-ordinates below. The road is an existing two lane road, which will be widened to a four lane arterial. The urban development in the area comprises existing road network, infrastructure, housing, schools, commercial, silviculture, sub station and cemetery. There are also some trees planted on the road verge (approximately 80), which will need to be removed. The site is transformed and exhibits limited ecological importance, despite the presence of the wetlands along the existing roadway which are also transformed.</p> <p>The co-ordinates are as listed under linear activities below.</p>		
Alternative 2		
Description	Lat (DDMMSS)	Long (DDMMSS)
N/A		
Alternative 3		
Description	Lat (DDMMSS)	Long (DDMMSS)
N/A		

In the case of linear activities:
Start co-ordinates (Road):

Latitude /Longitude	Degrees	Minutes	Seconds
South	28	43	54.32
East	32	02	20.94

Middle co-ordinates (Road)

Latitude /Longitude	Degrees	Minutes	Seconds
South	28	42	54.83
East	32	01	50.13

End co-ordinates (Road)

Latitude /Longitude	Degrees	Minutes	Seconds
South	28	41	43.96
East	32	01	45.03

Culvert to be upgraded, extended and realigned:

Latitude /Longitude	Degrees	Minutes	Seconds
South	28	43	54.32
East	32	02	20.94

SEE CO-ORDINATE LIST ABOVE

Alternative:

Alternative S1 (preferred)

- Starting point of the activity (road)
- Middle/Additional point of the activity
- End point of the activity (road)

Latitude (S):

Longitude (E):

Alternative S2 (if any) **N/A**

- Starting point of the activity
- Middle/Additional point of the activity
- End point of the activity

Alternative S3 (if any) **N/A**

- Starting point of the activity
- Middle/Additional point of the activity
- End point of the activity

For route alternatives that are longer than 500m, please provide an addendum with co-ordinates taken every 250 meters along the route for each alternative alignment.

Co-ordinate list will be provided with the final BAR.

In the case of an area being under application, please provide the co-ordinates of the corners of the site as indicated on the lay-out map provided in Appendix A of this form.

b) Lay-out alternatives

Alternative 1 (preferred alternative)		
Description	Lat (DDMMSS)	Long (DDMMSS)
The preferred layout is that described above in this application. The road will be widened to a four lane dual carriageway, location as per co-ordinates stated above.		
Alternative 2		
Description	Lat (DDMMSS)	Long (DDMMSS)
No further alternatives have been proposed.		
Alternative 3		
Description	Lat (DDMMSS)	Long (DDMMSS)

c) Technology alternatives

Alternative 1 (preferred alternative)		
No technology alternatives.		
Alternative 2		
Alternative 3		

d) Other alternatives (e.g. scheduling, demand, input, scale and design alternatives)

Alternative 1 (preferred alternative)		
In terms of input alternatives, materials to be used during construction consist of concrete and reinforced steel for the drainage and the major culvert, as well as various grades of fill material and tar for road layer works. No other alternatives are available at this stage. Design alternatives are as per layout alternatives.		

Alternative 2
N/A
Alternative 3
N/A

e) No-go alternative

MR 231 is to be designed as a four lane dual carriageway with additional lanes at intersections. A four lane dual carriageway has a daily traffic capacity in the region of 50 000 vehicles total flow both directions at a level of service LOS C. The initial upgrade as proposed in this project i.e. to a four lane urban arterial will have adequate capacity for the medium term.

With climate change often resulting in an increase in flood and storm events, ageing structures and road surfaces will erode and will need increased repair and maintenance interventions. Improving the road network will cater for increases in both traffic and runoff, will enhance adaptability and further promote socio-economic development. Reducing the need and frequency of maintenance interventions will free funds that may be used elsewhere for socio-economic growth.

The upgrade of the road will enable the network to withstand increased traffic as well as runoff from increased storm events during peak rainfall periods and additional hardened surfaces.

Should the proposed project not be undertaken, then the current status quo will remain. The traffic volume increases will result in congestion and eventual damage to the existing road surface. This option is therefore not recommended. The upgrade of the road will still be an eventuality.

Paragraphs 3 – 13 below should be completed for each alternative.

3. PHYSICAL SIZE OF THE ACTIVITY

a) Indicate the physical size of the preferred activity/technology as well as alternative activities/technologies (footprints):

See above project description for details

Alternative:

- Alternative A1¹ (preferred activity alternative)
- Alternative A2 (if any)
- Alternative A3 (if any)

Size of the activity:

	m ²
	m ²
	m ²

or, for linear activities:

Alternative:

Length of the activity

¹ "Alternative A.." refer to activity, process, technology or other alternatives.

Alternative A1 (preferred activity alternative)

Alternative A2 (if any)

Alternative A3 (if any)

Length of road 4.25m
Width of widened road total excluding median/island: 10m
Width of walkway: 3m
Total shoulders: 3m
m

b) Indicate the size of the alternative sites or servitudes (within which the above footprints will occur):

Alternative:

Alternative A1 (preferred activity alternative)

Alternative A2 (if any)

Alternative A3 (if any)

Size of the site/servitude:

m ²
m ²
m ²

4. SITE ACCESS

Does ready access to the site exist?

If NO, what is the distance over which a new access road will be built **N/A**

<input checked="" type="checkbox"/> YES	<input type="checkbox"/> NO
N/A m	

Describe the type of access road planned:

The existing road (MR231) to be upgraded will be used to access the site.

Include the position of the access road on the site plan and required map, as well as an indication of the road in relation to the site.

5. LOCALITY MAP

LOCALITY MAP IS ATTACHED AS APPENDIX A

An A3 locality map must be attached to the back of this document, as Appendix A. The scale of the locality map must be relevant to the size of the development (at least 1:50 000. For linear activities of more than 25 kilometres, a smaller scale e.g. 1:250 000 can be used. The scale must be indicated on the map.). The map must indicate the following:

- an accurate indication of the project site position as well as the positions of the alternative sites, if any;
- indication of all the alternatives identified;
- closest town(s);
- road access from all major roads in the area;
- road names or numbers of all major roads as well as the roads that provide access to the site(s);
- all roads within a 1km radius of the site or alternative sites; and
- a north arrow;
- a legend; and
- locality GPS co-ordinates (Indicate the position of the activity using the latitude and longitude of the centre point of the site for each alternative site. The co-ordinates should be in degrees and decimal minutes. The minutes should have at least three decimals to ensure adequate accuracy. The projection that must be used in all cases is the WGS84 spheroid in a national or local projection).

6. LAYOUT/ROUTE PLAN

LOCALITY MAP/LAYOUT PLAN IS ATTACHED AS APPENDIX A

A detailed site or route plan(s) must be prepared for each alternative site or alternative activity. It must be attached as Appendix A to this document.

The site or route plans must indicate the following:

- the property boundaries and numbers of all the properties within 50 metres of the site;
- the current land use as well as the land use zoning of the site;
- the current land use as well as the land use zoning each of the properties adjoining the site or sites;
- the exact position of each listed activity applied for (including alternatives);
- servitude(s) indicating the purpose of the servitude;
- a legend; and
- a north arrow.

7. SENSITIVITY MAP

Refer to specialist study

The layout/route plan as indicated above must be overlain with a sensitivity map that indicates all the sensitive areas associated with the site, including, but not limited to:

- watercourses;
- the 1:100 year flood line (where available or where it is required by DWS);
- ridges;
- cultural and historical features;
- areas with indigenous vegetation (even if it is degraded or infested with alien species); and
- critical biodiversity areas.

The sensitivity map must also cover areas within 100m of the site and must be attached in Appendix A.

8. SITE PHOTOGRAPHS

PHOTOS ATTACHED AS APPENDIX B

Colour photographs from the centre of the site must be taken in at least the eight major compass directions with a description of each photograph. Photographs must be attached under Appendix B to this report. It must be supplemented with additional photographs of relevant features on the site, if applicable.

9. FACILITY ILLUSTRATION

THE LAYOUT/DESIGN PLAN WILL SERVE AS THE FACILITY ILLUSTRATION

A detailed illustration of the activity must be provided at a scale of at least 1:200 as Appendix C for activities that include structures. The illustrations must be to scale and must represent a realistic image of the planned activity. The illustration must give a representative view of the activity.

10. ACTIVITY MOTIVATION

Motivate and explain the need and desirability of the activity (including demand for the activity):

1. Is the activity permitted in terms of the property's existing land use rights?	X YES	NO	Please explain
The existing land use rights will permit the upgrade. Road works and culvert construction will occur within the existing road, so both current zonings are applicable. However, one area may be zoned as open space, however, due to the transformed nature of the area in general, impacts will not be significant.			
2. Will the activity be in line with the following?			
(a) Provincial Spatial Development Framework (PSDF)	X YES	NO	Please explain
This is an infrastructure upgrade and expansion project thus it can be considered to be part of the psdf, by virtue of increasing commutability, safety and improving road network.			
(b) Urban edge / Edge of Built environment for the area	X YES	X NO	Please explain
The activity is located in an urban area (Aquadene).			
(c) Integrated Development Plan (IDP) and Spatial Development Framework (SDF) of the Local Municipality (e.g. would the approval of this application compromise the integrity of the existing approved and credible municipal IDP and SDF?).	X YES	NO	Please explain
The approval of this application will not compromise the IDP or the SDF but will serve as key enabling support to these plans. Threat to the infrastructure capacity in residential areas by increasing population density has been identified; thus the road upgrade will remove some of the impending capacity problems foreseen in future for the MR231.			
(d) Approved Structure Plan of the Municipality	X YES	NO	Please explain
Infrastructure improvement is listed under the IDP (2012-2017) development strategy 2 to 'Improve Public transport such that land and transport planning is integrated with the land development plans to enhance the effective and efficient functioning of the city and rural areas, giving priority to public transport than private transport to support pedestrian friendly city centres and reduce the social wage'			
(e) An Environmental Management Framework (EMF) adopted by the Department (e.g. Would the approval of this application compromise the integrity of the existing environmental management priorities for the area and if so, can it be justified in terms of sustainability considerations?)	YES	X NO	Please explain
The project does not lie within any conservancy area or a CBA. It will contribute to community sustainability in the long term by increasing road and transport infrastructure and connectivity. The wetlands traversed by the existing road is considered to be of limited functionality and value and thus expansion of the road will not result in compromises to the conservation goals in the region. The area is further earmarked for either residential or agriculture and commercial.			
(f) Any other Plans (e.g. Guide Plan)	YES	X NO	Please explain
n/a			

3. Is the land use (associated with the activity being applied for) considered within the timeframe intended by the existing approved SDF agreed to by the relevant environmental authority (i.e. is the proposed development in line with the projects and programmes identified as priorities within the credible IDP)?	<input checked="" type="checkbox"/> YES	<input type="checkbox"/> NO	Please explain
The project (road widening and upgrade), being an infrastructure related aspect, is mentioned as a goal/action plan in the IDP, for the 2012/2017 year.			
4. Does the community/area need the activity and the associated land use concerned (is it a societal priority)? (This refers to the strategic as well as local level (e.g. development is a national priority, but within a specific local context it could be inappropriate.)	<input checked="" type="checkbox"/> YES	<input type="checkbox"/> NO	Please explain
The local community will benefit on a local scale as it will ease future traffic congestion resulting from future developments (housing, commercial etc) with the current roadway reaching carrying capacity.			
5. Are the necessary services with adequate capacity currently available (at the time of application), or must additional capacity be created to cater for the development? (Confirmation by the relevant Municipality in this regard must be attached to the final Basic Assessment Report as Appendix I.)	<input checked="" type="checkbox"/> YES	<input type="checkbox"/> NO	Please explain
Since this is a road upgrade project, no capacity requirements are affected. There is land set aside for the widening.			
6. Is this development provided for in the infrastructure planning of the municipality, and if not what will the implication be on the infrastructure planning of the municipality (priority and placement of services and opportunity costs)? (Comment by the relevant Municipality in this regard must be attached to the final Basic Assessment Report as Appendix I.)	<input checked="" type="checkbox"/> YES	<input type="checkbox"/> NO	Please explain
This aspect (infrastructure) is stated in the IDP. Note however that this project is funded by KZN DoT and not Umhlathuze municipality.			
7. Is this project part of a national programme to address an issue of national concern or importance?	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO	Please explain
This is an arterial road upgrade project, but it will not address an issue of national importance or concern in the short term. However, the NDP identifies road infrastructure as a priority growth area. In addition MR231 (R619) may become a road of national concern with further economic growth.			
8. Do location factors favour this land use (associated with the activity applied for) at this place? (This relates to the contextualisation of the proposed land use on this site within its broader context.)	<input checked="" type="checkbox"/> YES	<input type="checkbox"/> NO	Please explain
In context, the road is existing and will be widened. The drainage is existing and will be extended under the new roadway. Thus the land use is suitable for the widening. In future, there may be housing projects and economic activities that will benefit from this road upgrade.			

9. Is the development the best practicable environmental option for this land/site?	X YES	NO	Please explain
<p>Given that the road is existing and no green fields development will occur as a result, the option of the upgrade is practicable. Significant loss of biodiversity or wetlands is not expected as a result of the upgrade.</p>			
10. Will the benefits of the proposed land use/development outweigh the negative impacts of it?	X YES	NO	Please explain
<p>The proposed upgrade will make commuting in the area easier by way of additional lanes and bus stops/bays. In that regard, the development will outweigh the temporary negative impacts resulting from the construction phase.</p>			
11. Will the proposed land use/development set a precedent for similar activities in the area (local municipality)?	YES	X NO	Please explain
<p>There are other roads/culverts/drainage in this area, so a precedent for similar activities has already been set.</p>			
12. Will any person's rights be negatively affected by the proposed activity/ies?	YES	X NO	Please explain
<p>It is unlikely that people's rights will be negatively affected by the project. Land set aside for the widening has been done in conjunction with land owners, and is now owned by DoT.</p>			
13. Will the proposed activity/ies compromise the "urban edge" as defined by the local municipality?	YES	X NO	Please explain
<p>The development is part of the urban area.</p>			
14. Will the proposed activity/ies contribute to any of the 17 Strategic Integrated Projects (SIPS)?	YES	X NO	Please explain
<p>According to the Strategic Integrated Projects (SIPS) this project may possibly fall within the SIP6.</p>			
15. What will the benefits be to society in general and to the local communities?	Please explain		
<p>MR 231 is to be designed as a four lane dual carriageway with additional lanes at intersections. A four lane dual carriageway has a daily traffic capacity in the region of 50 000 vehicles total flow both directions. The initial upgrade as proposed in this project i.e. to a four lane urban arterial will have adequate capacity for the medium term. Thus traffic volume increases will not result in congestion and damage to the existing road surface.</p>			
<p>During construction, temporary job opportunities will arise as a result of the works. Sub contracting and buying of material for work will stimulate general supplier markets.</p>			
16. Any other need and desirability considerations related to the proposed activity?	Please explain		
<p>As above</p>			

17. How does the project fit into the National Development Plan for 2030?	Please explain
<p>The National Development Plan 2030 (NDP) aims to eliminate poverty and reduce inequality by 2030. As a plan for the whole country, some of its mentioned goals are; improving the quality of public services as critical to achieving transformation, increasing employment, shaping budget allocation and growing the economy.</p> <p>The proposed project thus fits into the NDP as this project will entail the improvement of quality of public infrastructure i.e. roadway. Improved road networks assist in growing economies.</p> <p>Temporary employment will be created during construction thus contributing to a reduction in poverty and reducing inequality.</p>	
18. Please describe how the general objectives of Integrated Environmental Management as set out in section 23 of NEMA have been taken into account.	
<p>NEMA S23 general objectives have been considered as below:</p> <ul style="list-style-type: none"> ○ The affected communities, the general public, authorities and state Departments have been engaged and consulted with in the BA process from the onset thus far (via notices placed on site, BID and newspaper advert). ○ Potential environmental, historical/cultural and socio-economic risks and impacts have been assessed and assigned significance ratings. ○ Lodging of an application for environmental authorisation as required will be done. ○ The 'Duty of Care' principle is incorporated into the EMPr. ○ Mitigation measures, informed by specialist studies, have been incorporated into the EMPr for all potential impacts. 	
19. Please describe how the principles of environmental management as set out in section 2 of NEMA have been taken into account.	
<p>According to section 2 of NEMA:</p> <p>Environmental principles guide stakeholders in the way in which they manage the environment. It is imperative that Environmental management put people and their needs first and also serve their cultural, social, physical, psychological and developmental interests fairly. NEMA section 2 talks about development in the sense that it must be environmentally, socially and economically sustainable.</p> <p>As per no 18 above:</p> <ul style="list-style-type: none"> ○ The affected communities, the general public, authorities and state departments have been engaged and consulted with in the BA process from the onset. ○ Potential environmental, cultural and socio-economic risks and impacts have been assessed and assigned significance ratings. ○ Lodging of an application for environmental authorisation as required. ○ The 'polluter pays' principle is incorporated into the EMPr, and S24 NEMA. ○ Mitigation measures incorporated into the EMPr for all potential impacts. 	

11. APPLICABLE LEGISLATION, POLICIES AND/OR GUIDELINES

List all legislation, policies and/or guidelines of any sphere of government that are applicable to the application as contemplated in the EIA regulations, if applicable:

Title of legislation, policy or guideline	Applicability to the project	Administering authority	Date
National Environmental Management Act (No 107 of 1998; as amended)	The EIA Regulations are under NEMA and give rise to the need for an EIA for specific projects. The listed activities under here are subject to EIA	Provincial and National	1998
EIA Regulations of 2014	Listed activities herein are triggered.	National and Provincial	2014
NEMA Biodiversity Act (10 of 2004)	Protection of any chance biodiversity features, permitting requirements.	Provincial and National	1998
National Water Act (No. 36 of 1998)	protection of watercourses and permit/licence requirements before working in/near watercourses	Provincial and National	1998
National Heritage Resources act (Act 25 of 1999)	Excavations/drilling may occur which will expose substrates and possibly impact on heritage effects. Should archaeological artefacts be uncovered accidentally, then the contractor must stop work and inform Amafa, so that these may be preserved.	Provincial and National	1999
NEMA Waste Act (Act 59 of 2008 as amended)	Safe and correct, legal disposal of waste generated on site, by the generator of waste.	Provincial and National	2008
Conservation of Agricultural Resources Act (Act 43 of 1983)	The project must implement erosion controls to stabilize soil.	Provincial and National	1983
Hazardous Substances Act (Act 15 of 1973)	The contractor may be storing chemicals and fuel on site.	National and Provincial	1973
National Spatial Biodiversity Assessment (2011)	This assessment hopes to inform all private and public sector activities and provides tools for use in planning.	National (Sanbi)	2011
EMF/SDF for Uthungulu and umhlathuze	All projects to be guided by these documents.	Local	2012
All local and provincial regulations and by municipal by laws	The contract must identify, consider and adhere to all relevant laws (possibly via a legal register).	Local and Provincial	Current
Construction Regulations	The contractor will construct according to these laws.	Provincial and National	Current
Occupational Health and Safety Act	The contractor will comply with all requirements of the OHSACT.	Provincial and National	Current

12. WASTE, EFFLUENT, EMISSION AND NOISE MANAGEMENT

a) Solid waste management

Will the activity produce solid construction waste during the construction/initiation phase?

XYES	NO
------	----

 If YES, what estimated quantity will be produced per month?

	1m ³
--	-----------------

How will the construction solid waste be disposed of (describe)?

Solid waste will be produced during the construction phase and re-used on site for backfill. Other waste will be disposed via bins/skips or designated storage area on site, and then taken to municipal facilities for disposal.

Where will the construction solid waste be disposed of (describe)?

Via nearest municipal or legal facilities. The contractor appointed for the work will confirm the area for disposal.

Will the activity produce solid waste during its operational phase?

YES	X NO
-----	------

 If YES, what estimated quantity will be produced per month?

	m ³
--	----------------

 How will the solid waste be disposed of (describe)?

N/A- no solid waste will be produced during the operational phase.

If the solid waste will be disposed of into a municipal waste stream, indicate which registered landfill site will be used.

N/A

Where will the solid waste be disposed of if it does not feed into a municipal waste stream (describe)?

N/A

If the solid waste (construction or operational phases) will not be disposed of in a registered landfill site or be taken up in a municipal waste stream, then the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.

Can any part of the solid waste be classified as hazardous in terms of the NEM:WA?

YES	X NO
-----	------

If YES, inform the competent authority and request a change to an application for scoping and EIA. An application for a waste permit in terms of the NEM:WA must also be submitted with this application.

Is the activity that is being applied for a solid waste handling or treatment facility?

YES	X NO
-----	------

If YES, then the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA. An application for a waste permit in terms of the NEM:WA must also be submitted with this application.

b) Liquid effluent

Will the activity produce effluent, other than normal sewage, that will be disposed of in a municipal sewage system?

YES	X NO
-----	------

 If YES, what estimated quantity will be produced per month?

	m ³
--	----------------

Will the activity produce any effluent that will be treated and/or disposed of on site?

YES	X NO
-----	------

If YES, the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.

Will the activity produce effluent that will be treated and/or disposed of at another facility?

YES	X NO
-----	------

If YES, provide the particulars of the facility:

Facility name:	N/A		
Contact person:	N/A		
Postal address:	N/A		
Postal code:	N/A		
Telephone:	N/A	Cell:	N/A
E-mail:	N/A	Fax:	N/A

Describe the measures that will be taken to ensure the optimal reuse or recycling of waste water, if any:

Grey water will be re-used for dust suppression on site where applicable.

c) Emissions into the atmosphere

Will the activity release emissions into the atmosphere other than exhaust emissions and dust associated with construction phase activities?

X	NO
YES	

If YES, is it controlled by any legislation of any sphere of government?

YES	X NO
-----	------

If YES, the applicant must consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.

If NO, describe the emissions in terms of type and concentration:

During construction, CO₂ emissions from construction vehicles will occur. Dust entrainment from construction vehicles and activities will also occur. The concentration will be low-moderate, and will be temporary and limited to the construction work area, for the duration of the construction phase.

d) Waste permit

Will any aspect of the activity produce waste that will require a waste permit in terms of the NEM:WA?

YES	X NO
-----	------

If YES, please submit evidence that an application for a waste permit has been submitted to the competent authority

e) Generation of noise

Will the activity generate noise?

X	NO
YES	

If YES, is it controlled by any legislation of any sphere of government?

YES	X NO
-----	------

Describe the noise in terms of type and level:

Low level noise will result from construction vehicles and machinery, and is not expected to exceed the occupational health and safety levels. Noise generated at the sites as a result of construction activity will be temporary.

13. WATER USE

Please indicate the source(s) of water that will be used for the activity by ticking the appropriate box(es):

X Municipal	Water board	Groundwater	X River, stream, dam or lake	Other	The activity will not use water
-------------	-------------	-------------	------------------------------	-------	---------------------------------

If water is to be extracted from groundwater, river, stream, dam, lake or any other natural feature, please indicate the volume that will be extracted per month:

Does the activity require a water use authorisation (general authorisation or water use licence) from the Department of Water Affairs? **An application for a water use licence will be submitted once the EA is received.**

If YES, please provide proof that the application has been submitted to the Department of Water Affairs.

litres	
X YES	NO

14. ENERGY EFFICIENCY

Describe the design measures, if any, which have been taken to ensure that the activity is energy efficient:

The activity involves the expansion and upgrade of a road, so in terms of design, energy efficiency is not required. Further, construction will be confined to daylight hours to reduce the need for night time lighting.

Describe how alternative energy sources have been taken into account or been built into the design of the activity, if any:

Construction will be confined to daylight hours and generators will be used where feasible to serve as an energy source.

SECTION B: SITE/AREA/PROPERTY DESCRIPTION
Important notes:

- For linear activities (pipelines, etc) as well as activities that cover very large sites, it may be necessary to complete this section for each part of the site that has a significantly different environment. In such cases please complete copies of Section B and indicate the area, which is covered by each copy No. on the Site Plan.

 Section B Copy No. (e.g. A):

- Paragraphs 1 - 6 below must be completed for each alternative.

- Has a specialist been consulted to assist with the completion of this section? YES NO

If YES, please complete the form entitled "Details of specialist and declaration of interest" for each specialist thus appointed and attach it in Appendix I. All specialist reports must be contained in Appendix D.

**Property description/
physical address:**

Province	KwaZulu-Natal
District Municipality	Uthungulu District Municipality
Local Municipality	Umhlathuze Local Municipality
Ward Number(s)	04
Farm name and number	Erf 11 472 Erf 11 443 Erf 11 442 Erf 11 488 Reserve No. 6 of 15 825
Portion number	N/A
SG Code	N/A

Where a large number of properties are involved (e.g. linear activities), please attach a full list to this application including the same information as indicated above.

Current land-use zoning as per local municipality IDP/records:

The road is zoned as road and road reserve
--

In instances where there is more than one current land-use zoning, please attach a list of current land use zonings that also indicate which portions each use pertains to, to this application.

 Is a change of land-use or a consent use application required? YES NO

1. GRADIENT OF THE SITE

Indicate the general gradient of the site.

Alternative S1:

Flat	X	1:50 – 1:20	1:20 – 1:15	1:15 – 1:10	1:10 – 1:7,5	1:7,5 – 1:5	Steeper than 1:5
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Alternative S2 (if any): N/A

2. LOCATION IN LANDSCAPE

Indicate the landform(s) that best describes the site:

2.1 Ridgeline	<input type="checkbox"/>	2.4 Closed valley	<input type="checkbox"/>	2.7 Undulating plain / low hills	<input checked="" type="checkbox"/>
2.2 Plateau	<input type="checkbox"/>	2.5 Open valley	<input checked="" type="checkbox"/>	2.8 Dune	<input type="checkbox"/>
2.3 Side slope of hill/mountain	<input type="checkbox"/>	2.6 Plain	<input type="checkbox"/>	2.9 Seafront	<input type="checkbox"/>
2.10 At sea	<input type="checkbox"/>				

3. GROUNDWATER, SOIL AND GEOLOGICAL STABILITY OF THE SITE

Is the site(s) located on any of the following?

	Alternative S1:		Alternative S2 (if any): N/A		Alternative S3 (if any): N/A	
Shallow water table (less than 1.5m deep)	X YES	NO	YES	NO	YES	NO
Dolomite, sinkhole or doline areas	YES	X NO	YES	NO	YES	NO
Seasonally wet soils (often close to water bodies)	X YES	NO	YES	NO	YES	NO
Unstable rocky slopes or steep slopes with loose soil	YES	X NO	YES	NO	YES	NO
Dispersive soils (soils that dissolve in water)	YES	X NO	YES	NO	YES	NO
Soils with high clay content (clay fraction more than 40%)	YES	X NO	YES	NO	YES	NO
Any other unstable soil or geological feature	YES	X NO	YES	NO	YES	NO
An area sensitive to erosion	X YES	NO	YES	NO	YES	NO

If you are unsure about any of the above or if you are concerned that any of the above aspects may be an issue of concern in the application, an appropriate specialist should be appointed to assist in the completion of this section. Information in respect of the above will often be available as part of the project information or at the planning sections of local authorities. Where it exists, the 1:50 000 scale Regional Geotechnical Maps prepared by the Council for Geo Science may also be consulted.

The attached site plan, Figure 1, indicates the position of the proposed structure relative to the existing bridge on the P263. The river flanks are of low relief in the site vicinity. The most proximal land feature is the boulder-strewn koppie that begins to rise some 120m northwest of the site.

River channel embankments are in the order of 3,5 to 4,5m high. Minor drainage channels (eroded with limited seepage) mark the eastern flank of the proposed structure. Bedrock is exposed within the river bed.

According to preliminary design report, in terms of the geology, the study area forms part of the Zululand coastal plain whose geological history follows the rise and fall of the sea levels. Along the coastal strip only sediments of the cretaceous, tertiary and quaternary age are present. These rocks lie unconformably on Baenet granite-gneiss of the Tugela complex. Overlying the cretaceous and Miocene sediments is the Port Durnford formation where sediments are made up of old dune, beach and swamp deposits laid down during the Pleistocene period (less than 2 million years ago). Recent unconsolidated dune sands unconformably overlie the Port Durnford formation. The dune sand is recent in age and is mostly orange, yellowish brown and grey, and varies in thickness with the changes in topography. The Miocene strata include a lower coquina, a calcarenite and a sandy siltstone.

Due to the presence of the recent unconsolidated dune sands and its proximity to mean sea level the site is characterized by a relatively high water table. This high water table needs to be taken into consideration during the design and construction phases.

4. GROUND COVER

Please refer to Specialist Study

Indicate the types of groundcover present on the site. The location of all identified rare or endangered species or other elements should be accurately indicated on the site plan(s).

Natural veld - good condition ^E	X Natural veld with scattered aliens ^E	Natural veld with heavy alien infestation ^E	X Veld dominated by alien species ^E	Gardens
Sport field	Cultivated land	X Paved surface	X Building or other structure	Bare soil

If any of the boxes marked with an “^E” is ticked, please consult an appropriate specialist to assist in the completion of this section if the environmental assessment practitioner doesn’t have the necessary expertise.

5. SURFACE WATER

Please refer to Specialist Study

Indicate the surface water present on and or adjacent to the site and alternative sites?

Perennial River	YES	NO	UNSURE
Non-Perennial River	YES	NO	UNSURE
Permanent Wetland	YES	X NO	UNSURE
Seasonal Wetland	X YES	NO	UNSURE
Artificial Wetland	YES	X NO	UNSURE
Estuarine / Lagoonal wetland	YES	X NO	UNSURE

If any of the boxes marked YES or UNSURE is ticked, please provide a description of the relevant watercourse.

The specialist study has confirmed wetlands exist along the existing roadway, although these have been transformed by the roadway and drained previously for urban development and silviculture. Wetlands are show below as per map from specialist study:



6. LAND USE CHARACTER OF SURROUNDING AREA

Indicate land uses and/or prominent features that currently occur within a 500m radius of the site and give description of how this influences the application or may be impacted upon by the application:

Natural area	Dam or reservoir	Polo fields
X Low density residential Few houses were noted in the area.	Hospital/medical centre	Filling station ^H
X Medium density residential Nuisance impacts (traffic, noise and dust); and possibly safety impacts. Mitigation as per EMPr	X School Nuisance impacts and possibly safety impacts for scholars. Mitigation as per EMPr	Landfill or waste treatment site
X High density residential Nuisance impacts and possibly safety impacts for scholars. Mitigation as per EMPr	Tertiary education facility	X Plantation Mondi exotic plantation is present (silviculture). Nuisance impacts and possibly safety impacts. Mitigation as per EMPr
Informal residential ^A	Church	Agriculture
X Retail commercial & warehousing Nuisance impacts and possibly safety impacts. Mitigation as per EMPr	Old age home	X River, stream or wetland The existing roadway lies within wetlands which have been drained or canalised. The expansion will thus unavoidably occur within these transformed wetlands. Mitigation as per EMPr
Light industrial	Sewage treatment plant ^A	Nature conservation area
Medium industrial ^{AN}	Train station or shunting yard ^N	Mountain, koppie or ridge
Heavy industrial ^{AN}	Railway line ^N	Museum
X Power station Nuisance impacts and possibly safety impacts. Mitigation as per EMPr	Major road (4 lanes or more) ^N	Historical building
X Office/consulting room Nuisance impacts and possibly safety impacts. Mitigation as per EMPr	Airport ^N	Protected Area
Military or police base/station/compound	Harbour	X Graveyard Nuisance impacts and possibly safety impacts. Mitigation as per EMPr
Spoil heap or slimes dam ^A	Sport facilities	Archaeological site
Quarry, sand or borrow pit	Golf course	Other land uses (describe)

If any of the boxes marked with an "N" are ticked, how this impact will / be impacted upon by the proposed activity? Specify and explain:

N/A

If any of the boxes marked with an "AN" are ticked, how will this impact / be impacted upon by the proposed activity? Specify and explain:

N/A

If any of the boxes marked with an "H" are ticked, how will this impact / be impacted upon by the proposed activity? Specify and explain:

N/A

Does the proposed site (including any alternative sites) fall within any of the following:

Critical Biodiversity Area (as per provincial conservation plan)	YES	X NO
Core area of a protected area?	YES	X NO
Buffer area of a protected area?	YES	X NO
Planned expansion area of an existing protected area?	YES	X NO
Existing offset area associated with a previous Environmental Authorisation?	YES	X NO
Buffer area of the SKA?	YES	X NO

If the answer to any of these questions was YES, a map indicating the affected area must be included in Appendix A.

7. CULTURAL/HISTORICAL FEATURES

Please refer to specialist study

Are there any signs of culturally or historically significant elements, as defined in section 2 of the National Heritage Resources Act, 1999, (Act No. 25 of 1999), including Archaeological or paleontological sites, on or close (within 20m) to the site? If YES, explain:	YES	X NO
	Uncertain	

The heritage specialist study concluded that ‘no heritage resources and structures older than 60 years were identified within 30m of the study area and thus no further permitting processes are required.

However, caution must be taken during construction as there is an existing cemetery although located beyond the 30m developmental corridor at A: 28°43'48.7"S, 32°02'15.2"E, B: 28° 43'49.9"S; 32° 02' 16.2"E, C: 28°43'53.6"S; 32°02'18.0"E (cemetery fence coordinates) in Brackenham suburb not to impact on the graves. However this is a formal fenced cemetery with access control in place and the actual graves even much further away from the developmental corridor. The fence of the gravesite occurs over approximately 80m from the proposed developmental corridor of 30m from the existing road edge.

It is recommended that the proposed Road P231 Upgrade proceed from a heritage point of view as no heritage resources were identified within 30m of the proposed route upgrade, with acceptance of the following conditions:

Construction activities should be limited to the proposed construction corridor of 30m from the outer edge of the existing road edge. If the size of the construction corridor is increased at a later stage, a heritage specialist should be involved in order to assess how the increase in the corridor width will affect heritage resources.'

If uncertain, conduct a specialist investigation by a recognised specialist in the field (archaeology or palaeontology) to establish whether there is such a feature(s) present on or close to the site. Briefly explain the findings of the specialist:

A specialist study is attached.

Will any building or structure older than 60 years be affected in any way? YES X NO

Is it necessary to apply for a permit in terms of the National Heritage Resources Act, 1999 (Act 25 of 1999)?

YES	X NO
-----	------

 If YES, please provide proof that this permit application has been submitted to SAHRA or the relevant provincial authority.

8. SOCIO-ECONOMIC CHARACTER

a) Local Municipality

Please provide details on the socio-economic character of the local municipality in which the proposed site(s) are situated.

Level of unemployment:

According to the Umhlathuze IDP (2012-2017), 'the unemployment rate is sitting at an estimated 40%. Manufacturing, which is the dominant economic sector in the uThungulu District, is centred in the City of uMhlathuze, with only 24% of people employed work within this sector. uMhlathuze has 5.9 dependents per one person employed'.

Economic profile of local municipality:

The Umhlathuze IDP (2012-2017) presents the following information:

'The City of uMhlathuze has an estimated 349 576 total population and about 82 972 households.

Richards Bay falls within the fastest growing provincial economies at an average rate of 4,3% per annum. The Port of Richards Bay is one of the two largest and busiest Ports in Africa creating a drive for the area to be one of the major industrial investment opportunities. The Port plays an important economic role not only for this province but for the whole of South Africa (SA).

The area is the third most important in KZN in terms of economic production, contributing 16.7% to national Gross Domestic Product (GDP) whilst also the third most important primary manufacturing area in KwaZulu Natal (KZN) in terms of economic production. Manufacturing is highly specialized export orientated, largely concentrated on basic iron and steel, paper and printing as well as food and beverages. The sector characterized by highly sophisticated manufacturing processes. The large scale industrial strengths of the uMhlathuze centre comprise of a varied industrial base of coal terminals and aluminium smelters, coupled with an impressive number of industries including mining companies and paper mills, forestry, production of materials handling equipment, as well as fertiliser and special chemicals production.

The City of uMhlathuze is rich in mineral resources. The mining of these minerals meets all of South Africa's (S.A) demand for titanium dioxide, zircon and almost all of the country's pig iron requirements. Most of the industrial and commercial activities are vested in Richards Bay, Empangeni and Felixton (specifically the industrial development nodes of the City of uMhlathuze). The manufacturing sector employs the majority of population. Manufacturing contributes 29% of the national GDP. The advent of the Richards Bay Industrial Development Zone within the vicinity of Richards Bay harbor serves to boost economic activity and to attract international investors wishing to take advantage of the advantage on offer.

Other natural advantages are the diverse and intensifying agriculture production, including the rich land of sugarcane and forestry. The cane and forestry sectors have been at the forefront of assisting emerging farmers. The agricultural sector is a dual economy, consisting of commercial agriculture on one hand and traditional agriculture on the other. Agricultural activity is more concentrated in the former Lower Umfolozi magisterial area. Traditional agriculture is practiced on most of the Traditional Council lands in the district. The development of this sector is hindered by a low skills base and a lack of organised bodies to provide financial assistance; access to markets and market chan-

nels. An Agricultural Development Plan has been prepared for the uThungulu District Municipality (UDM). This plan identifies specific programmes and projects to address rural poverty.

uMhlathuze’s Economy has the following components: Local Economic Development, Agriculture, Tourism. Other sectors include mining, construction and manufacturing

Key issues that we have seen that relate to the Economy: Increase in unemployment; 41, 8% of population subject to conditions associated with poverty; Little or no diversity in the economy; declining resource base and the impacts of climate change.’

Level of education:

According to Umhlathuze IDP (2012-2017), ‘the percentage of the population that was older than 20 with higher education was 8.45%. There is then a drop in the system of people that complete Grade 12. It is after Grade 12 that the community is unable to continue with their studies. The above could be attributed to immigration of skilled workers into the area.

The percentage of people with a level of education less than Grade 12 was very high at 52.4%. Education levels have shown a decrease while demand for skills has increased’.

b) Socio-economic value of the activity

What is the expected capital value of the activity on completion?	R 154 470 690.87
What is the expected yearly income that will be generated by or as a result of the activity?	R 6 716 116.99
Will the activity contribute to service infrastructure?	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
Is the activity a public amenity?	<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO
How many new employment opportunities will be created in the development and construction phase of the activity/ies?	17
What is the expected value of the employment opportunities during the development and construction phase?	R7m
What percentage of this will accrue to previously disadvantaged individuals?	90%
How many permanent new employment opportunities will be created during the operational phase of the activity?	10
What is the expected current value of the employment opportunities during the first 10 years?	1m
What percentage of this will accrue to previously disadvantaged individuals?	90%

9. BIODIVERSITY

Please note: The Department may request specialist input/studies depending on the nature of the biodiversity occurring on the site and potential impact(s) of the proposed activity/ies. To assist with the identification of the biodiversity occurring on site and the ecosystem status consult <http://bgis.sanbi.org> or BGIShelp@sanbi.org. Information is also available on compact disc (cd) from the Biodiversity-GIS Unit, Ph (021) 799 8698. This information may be updated from time to time and it is the applicant/ EAP’s responsibility to ensure that the latest version is used. A map of the relevant biodiversity information (including an indication of the habitat conditions as per (b) below) and must be provided as an overlay map to the property/site plan as Appendix D to this report.

a) Indicate the applicable biodiversity planning categories of all areas on site and indicate the reason(s) provided in the biodiversity plan for the selection of the specific area as part of the specific category)

Systematic Biodiversity Planning Category	If CBA or ESA, indicate the reason(s) for its selection in biodiversity plan
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Critical Biodiversity Area (CBA)	Ecological Support Area (ESA)	Other Natural Area (ONA)	X No Natural Area Remaining (NNR)	According to the specialist study, the site has been highly transformed for plantation and urban development. While the Kwambonambi grasslands is critically endangered in the area, the project construction will not result in significant losses to this.

b) Indicate and describe the habitat condition on site

Habitat Condition	Percentage of habitat condition class (adding up to 100%)	Description and additional Comments and Observations (Including additional insight into condition, e.g. poor land management practises, presence of quarries, grazing, harvesting regimes etc).
Natural	0%	The roadway, urban development and the surrounding plantation as well as the housing and commercial centres have served to transform the site and immediate surrounds.
Near Natural (includes areas with low to moderate level of alien invasive plants)	0%	The roadway, urban development and the surrounding plantation as well as the housing and commercial centres have served to transform the site and immediate surrounds.
Degraded (includes areas heavily invaded by alien plants)	10%	The roadway and the surrounding plantation as well as the housing and commercial centres have served to transform the site and immediate surrounds.
Transformed (includes cultivation, dams, urban, plantation, roads, etc)	90%	The roadway, urban development and the surrounding plantation as well as the housing and commercial centres have served to transform the site and immediate surrounds.

c) Complete the table to indicate:

- (i) the type of vegetation, including its ecosystem status, present on the site; and
- (ii) whether an aquatic ecosystem is present on site.

Terrestrial Ecosystems		Aquatic Ecosystems						
Ecosystem threat status as per the National Environmental Management: Biodiversity Act (Act No. 10 of 2004)	X Critical	Wetland (including rivers, depressions, channelled and unchanneled wetlands, flats, seeps pans, and artificial wetlands)			Estuary		Coastline	
	Endangered							
	Vulnerable							
	Least Threatened	X YES	NO	UNSURE	YES	X NO	YES	X NO

- d) Please provide a description of the vegetation type and/or aquatic ecosystem present on site, including any important biodiversity features/information identified on site (e.g. threatened species and special habitats)

General Overview:

The project area comprises Kwambonambi grasslands, located with the Indian Ocean belt biome. It is considered critically endangered.

In terms of geographical location, it encompasses Richards Bay (2832CC), KwaMbonambi (2832CA), Cape St Lucia (2832CB), St Lucia Estuary (2832AD), Empangeni (2831DB), Felixton (2831DD). Ecosystem lies inland but adjacent to Kwambonambi Dune Forest threatened ecosystem (KZN 8). It incorporates the hygrophilous grasslands behind the primary dune system as well as swamp forest. It includes the Richards Bay surrounds up to the lower Umfolosi Flats.

Key biodiversity features include one amphibian species, *Hyperolius pickersgilli*; four millipede species including *Centrobolus fulgidus*, *Centrobolus richardi*, *Centrobolus rugulosus* and *Doratogonus zuluensis*; one plant species, *Kniphofia leucocephala*; and six vegetation types including KwaZulu-Natal Coastal Forest, KwaZulu-Natal Dune Forest, Mangrove Forest, Maputaland Wooded Grassland, Maputaland Coastal Belt and Swamp Forest.

Approximately 8% of the ecosystem is protected in the Enseleni Nature Reserve, Richards Bay Game Reserve, Nhlabane Nature Reserve and isiMangaliso Wetland Park

Site overview:

The study site falls within Quaternary catchment W 12J, a catchment which primarily serves the Mzingazi coastal lake system, and includes the Nkoninkha and Mzingazi systems. (Fig. 5). The catchment, according to www.dwaf/WAR/systems.html can be described as being of moderate ecological sensitivity, primarily on account of the presence of lakes Mzingazi and Nhlabane (DWAf 2013). Diederichs et al (2007) noted that the most significant land use on the Mzingazi catchment was plantation, with these forest products being primarily *Eucalyptus* spp and *Pinus* spp. 32% of the catchment was recorded in 2007 as being allocated to timber production. The next largest land use in the area was determined to be a combination of urban and peri-urban residential areas, which constitute 21% of the catchment. "Open space", which is not generally defined in Diederichs et al, is seen to constitute 15% of the catchment.

Notably Diederichs et al identify the area as becoming water stressed, particularly in respect of water quality deterioration, while the generally level nature of the area, with high water table may give rise to increased flood risk. The same authors also identify the impact of forestry on surface and sub surface flows serving the lake system.

In terms of site ecology, the area under consideration, existing MR231 (R619) encompasses an aeolian derived sand, which was established during the last marine transgression. These

sands have only recently been stabilized with the natural vegetation cover being a grassland - palmveld mosaic (the KwaMbonambi Grasslands), which has since been largely replaced by plantation and urban settlement. A more clayey Miocene sediment underlies these sands and this generally impermeable horizon is responsible for the maintenance of wetland environments, where it lies proximal to the natural ground level. The availability of groundwater in the area has however, been compromised by the planting of commercial timbers in the area, which have served to establish a lens depression in the area. The bio physical state of the Aquadene area which is traversed by the R619 can be considered to be highly transformed, primarily on account of silvicultural and urban expansion activities. One culvert will be upgraded, located over a tributary of the Nkonika stream. Note that five, largely extant or completely transformed and drained wetlands were identified within a 500m radius of the site, and as such, a water use licence will be applied for (SDP, 2016).

It is evident that the wetland systems directly affected by the proposed road upgrade are limited, having been subject to significant and temporally regular disturbance and change. The nature of the Aquadene area, whereby high rainfall events are generally common occurrence, the water table lies proximal to natural ground level and the generally level nature of the area gives rise to a necessity to alter and improve drainage if infrastructure is to be established in this area. In turn, such drainage serves to reduce and alter the functional state of wetlands.

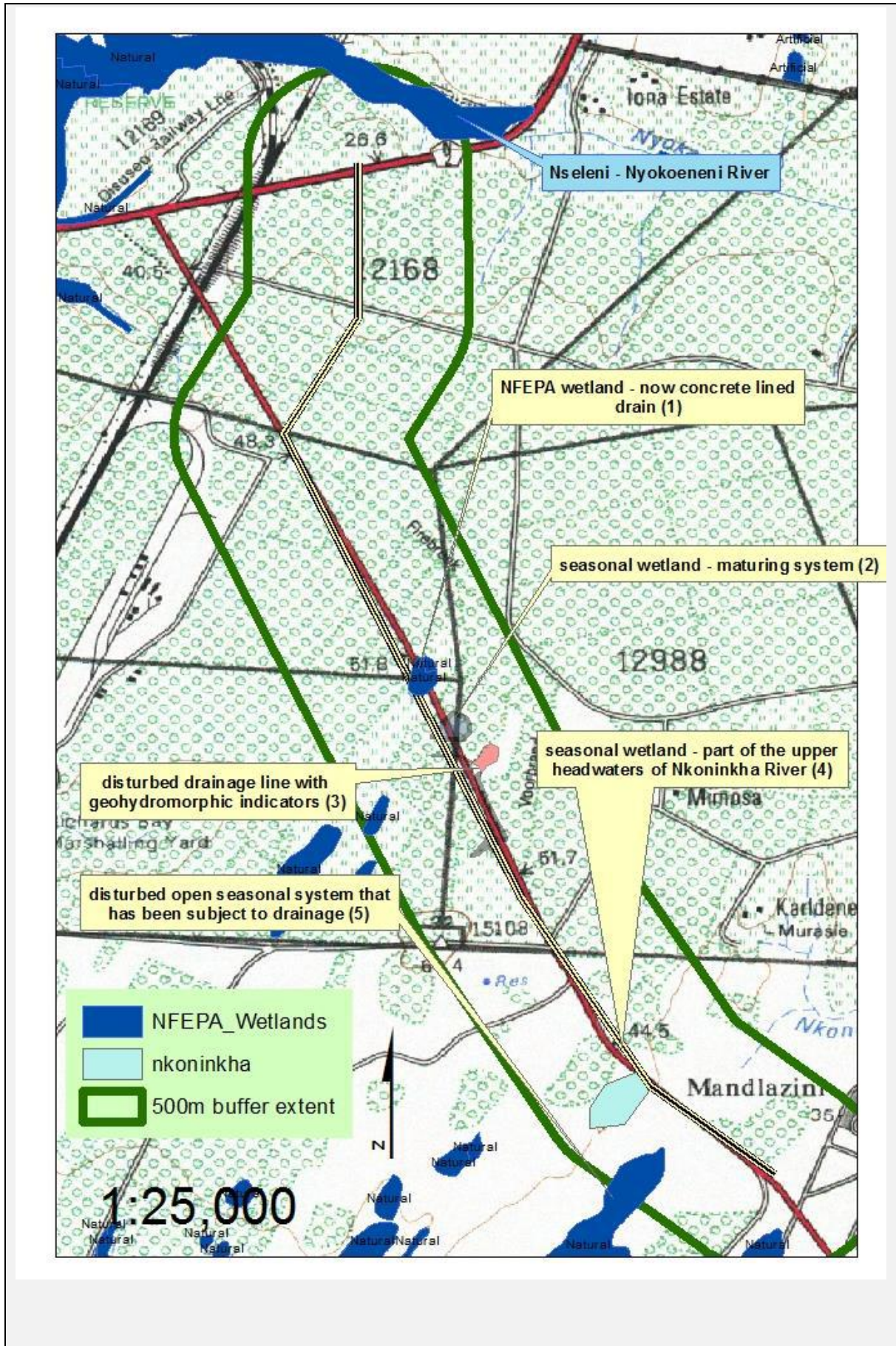
The road upgrade 'will affect primarily existing transformed lands presently under silviculture and urban settlement. The route will traverse 4 identified wetland systems including a concrete sluice. It is proposed that minimal impact will arise on the existing wetland systems on account of :

- The highly transformed nature of the systems.
- The ongoing maintenance of these systems as drainage channels for the area.
- The limited expansion of the roadway

In summary, the bio physical state of the Aquadene area which is traversed by the R619 can be considered to be highly transformed, primarily on account of silvicultural and urban expansion activities. The area is, however, of some hydrological significance on account of its proximity and connectivity with Lake Mzingazi, a major water resource serving the Richards Bay urban complex.

Five wetland environments were noted to lie within 500m of the proposed road upgrade.

Four such wetland systems were identified as being traversed by the existing roadway, while a third system lay approximately 2050m from the roadway, as shown below:



Summary of ecological conditions and recommendations:

- The proposed upgrade route along the R619, indicates that the project area will intersect with four wetland systems. One such system has been transformed into a concrete sluice to facilitate drainage, while the three remaining systems have been subject to varying levels of disturbance and transformation.
- The Nseleni / Nyokoneni River to the north of the site is considered to not interface with the project area in any manner on account of topography and other factors.
- A further wetland system, lies to the south of the project area and has been subject to significant drainage and transformation.
- The wetland systems identified along the proposed route of the R619 that is subject to upgrade and expansion, are primarily closed, endoreic systems that have been transformed to effect improved drainage. The most functional system (wetland 2) is a relatively intact depression, that shows limited emergence of early seral species, following the cessation of silviculture practices on site.
- Wetlands 3 and 4 have been subject to excavation and ongoing maintenance and effectively act as drainage canals for infrastructure in and around the Aquadene area. These systems both score a “moderately low” functional state.
- Given the above, it is evident that some management of the roadway upgrade must be applied to site, particularly around wetland and general drainage systems. The placement of camps and mobile asphalt plants at site should take consideration of the presence of these various landscape components and take a risk averse approach to the operations of these facilities.
- Suitable sculpting and reinstatement of affected points around wetland systems should be undertaken immediately after construction. The management of flow, stabilization of embankments and other factors should be taken into account.
- Exotic weed control should be practiced along the roadway following construction/upgrade
- Implementation of rehab program compiled by SDP attached as annexure B of ecological study
- Protection of watercourses from sedimentation or erosion during construction, as well as exotic weed encroachment

SECTION C: PUBLIC PARTICIPATION

1. ADVERTISEMENT AND NOTICE

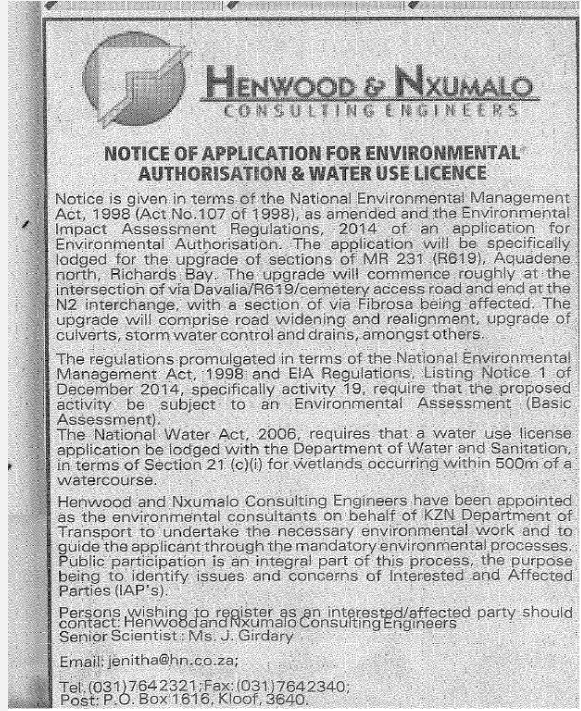
Publication name	The Mercury	
Date published	10 May 2016	
Site notice position	Latitude	Longitude
	No latitude or longitude was obtained, however, on site notices were placed along the MR231 (R619); on a pole signboard outside the school on Via Ammania; near a guesthouse on a pole at Via Fibrosa, outside a liquor a commercial centre on Bullion Boulevard; at a bus stop on R619, and at the mall in a Checkers Store news board	

Date placed

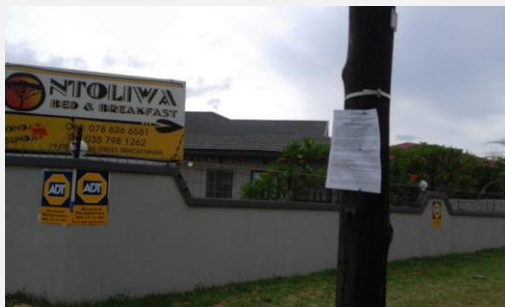
18 February 2016

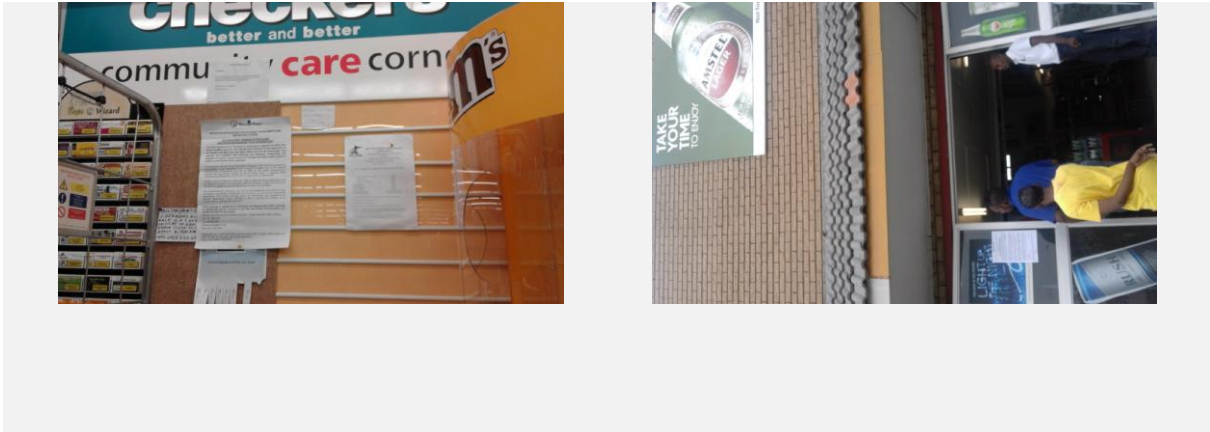
Include proof of the placement of the relevant advertisements and notices in Appendix E1.

Proof of newspaper adverts



Proof of notices placed at project area





2. DETERMINATION OF APPROPRIATE MEASURES

Provide details of the measures taken to include all potential I&APs as required by Regulation 41(2)(e) and 41(6) of GN 733.

Key stakeholders (other than organs of state) identified in terms of Regulation 41(2)(b) of GN 733

SEE COMPLETE CR TABLE ATTACHED

Title, Name and Surname	Affiliation/ status	key stakeholder	Contact details (tel number or e-mail address)
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Include proof that the key stakeholder received written notification of the proposed activities as Appendix E2. This proof may include any of the following:

- e-mail delivery reports;
- registered mail receipts;
- courier waybills;
- signed acknowledgements of receipt; and/or
- or any other proof as agreed upon by the competent authority.

3. ISSUES RAISED BY INTERESTED AND AFFECTED PARTIES

SEE COMPLETE CR TABLE ATTACHED

Summary of main issues raised by I&APs	Summary of response from EAP
--	------------------------------

4. COMMENTS AND RESPONSE REPORT

SEE COMPLETE CR TABLE ATTACHED

The practitioner must record all comments received from I&APs and respond to each comment before the Draft BAR is submitted. The comments and responses must be captured in a comments and response report as prescribed in the EIA regulations and be attached to the Final BAR as Appendix E3.

5. AUTHORITY PARTICIPATION**SEE COMPLETE CR TABLE ATTACHED**

Authorities and organs of state identified as key stakeholders:

Authority/Organ of State	Contact person (Title, Name and Surname)	Tel No	Fax No	e-mail	Postal address
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Include proof that the Authorities and Organs of State received written notification of the proposed activities as appendix E4.

In the case of renewable energy projects, Eskom and the SKA Project Office must be included in the list of Organs of State.

6. CONSULTATION WITH OTHER STAKEHOLDERS**SEE COMPLETE CR TABLE BELOW**

Note that, for any activities (linear or other) where deviation from the public participation requirements may be appropriate, the person conducting the public participation process may deviate from the requirements of that sub-regulation to the extent and in the manner as may be agreed to by the competent authority.

Proof of any such agreement must be provided, where applicable. Application for any deviation from the regulations relating to the public participation process must be submitted prior to the commencement of the public participation process.

A list of registered I&APs must be included as appendix E5.

Copies of any correspondence and minutes of any meetings held must be included in Appendix E6.

ROLEPLAYER/IAP/AUTHORITY/STAKEHOLDER & CONTACT DETAILS	COMMENT	EAP RESPONSE
Department of Agriculture, Forestry, and Fisheries <i>J. Maivha</i> Tel: 033 392 7721 JeffreyMAI@daff.gov.za NandiphaS@daff.gov.za	<u>Comment on BID</u> -The department will have no concerns with the upgrade provided no natural forests or tree species in terms of the NFA will be impacted upon.	-Noted. There will be around 80 trees to be removed. However a permit application will be lodged with DAFF prior to removal of trees.
Department of Water and Sanitation		
<i>N.T. Terry</i> Tel: 031 336 2809 ndout@dws.gov.za P.O Box 1018 Durban 4000	<u>Comments on BID</u> - Reference is made to the above – mentioned document received by this Department. This Department has the following comments with regards to the proposed project:	

	<p>-The document submitted to this office does not provide sufficient information for the Department to provide comments. The applicant is requested to submit fully detailed recommendations with this regards to the project. The report should include, but not limited to, layout plan, spill contingency plans, Geotechnical investigation. Storm Water management plan and Environmental Management Plan</p>	<p>This was the BID. You will be given a copy of the draft BAR to comment on.</p>
	<p>The Applicant is also requested to address the issue of surface water quality in detail as identified in the BID and also identify possible pollution impacts and proposed mitigation measure to protect such water resource</p>	<p>Measures to protect water quality during construction are stated in the EMP.</p>
	<p>The BID also indicated that there will be an upgrade of one culvert over the Nkonika Stream. The document further indicate that a WULA will be applied for in terms of Section 21(c) & (i) of the National Water Act .The Applicant is required to identify all the water uses in terms of Section 21 of the National Water Act (Act 36 of 1998). Please note that any development within 500 m radius from the boundary of a wetland constitutes a Section 21(c) & (i) water use in terms of the National Water Act,1998 (Act 36 of 1998), and as such a water Use Authorization would need to be applied for.</p>	<p>The delineation has been done, the existing road intersects with four wetland systems which have historically been transformed and drained by development and agriculture.</p> <p>Wetland 4 was, prior to the construction of the R619 and the urban settlement of Aquadene, part of the upper catchment of the Nkoninkha River, which feeds into the Mzingazi lake. Urban development has since severed surface linkage between these two systems. Note that this system lies at the substation site, and the road upgrade will not occur on that side.</p> <p>A water use license will be applied for.</p>
	<p>Sewage treatment and disposal (i.e. wastewater management) should also include the following :</p> <ul style="list-style-type: none"> • Type of toilet facilities to be provided for con- 	<p>Included in EMP.</p>

	<p>struction workers.</p> <ul style="list-style-type: none"> Alternative types of sewage treatment and disposal options be identified and evaluated with a view to utilising the Best Practical Environmental option (BPEO). 	
	<p>Soil erosion on site must be prevented at all times, i.e. pre,-during- and post construction activities. Erosion control measures to be implemented in areas sensitive to erosion such as near water supply points, edges of slope, etc. These measures could include the use of sand bags, hessian sheets retention or replacement of vegetation</p>	Included in EMP.
	<p>All storage facilities for hazardous materials must be located on an impermeable or concrete surface area to prevent both ground and surface water pollution. In the event of spillages, the affected area must immediately be remediated to the satisfaction of the Department and polluted to this Department within 24 hours</p>	Included in EMP.
	<p>A proper storm-water management plan and other mitigation measure (prevention of erosion and sedimentation) to avoid run –off and infiltration on surface and ground water resources, respectively are required. The applicant is also advised to refer to Best Resource Protection in the South African Mining Industry” (DWAF, 2008).</p>	Measures to control storm water are included in EMP. Proper drainage will be extended into the upgraded road section.

	Should there be any removal of indigenous trees, the Applicant must obtain authorisation obtained from the Department Economic Development, Tourism and Environmental Affairs (DEDTEA)	DAFF will be engaged regarding permit requirements prior to tree removal as required.
	Notwithstanding the above, the responsibility rests with the applicant to identify any resource or potential sources of pollution from his undertaking and to take appropriate measures to prevent any pollution of the environment. Failure to comply with the requirements of the National Water Act, 1998 (Act 36 of 1998) could lead to legal action being instituted against the Applicant. Please do not hesitate to contact this office should you have any concern, comments or queries.	Noted.
Amafa Heritage KZN		
<i>B.Pawandiwa</i> Tel: 033 394 6543 Fax: 342 6097 Email: bernadetp@amafapmb.co.za P. O. Box 2685 Pietermaritzburg 3200	Amafa will be engaged by an independent specialist.	

Ezemvelo KZN Wildlife		
<p><i>D. Wieners</i></p> <p>Tel: 033 845 1999 Fax: 033 845 1499 Dominic.Wieners@kznwildlife.com</p> <p>P.O Box 13053 Cascades, Pietermaritzburg 3202</p>	<p><u>Comments on BID</u></p> <p>- No comments received.</p>	<p>-Reminders sent.</p>
Uthungulu District Municipality		
<p><i>G. Mathalise</i></p> <p>Tel: 035 799 2682 Fax: 035 799 8176 Email:mathaliseg@uthungulu.co.za P. O. Box Private Bag X1025 Richards Bay 3900 Uthungulu House</p>	<p><u>Comment on BID</u></p> <p>-No comments received.</p>	<p>-Reminders sent.</p>

Corner Kruger Rand and Barbados road, Richards Bay		
Ward councilor		
<i>Mr. S. Dawood</i> dawoods@umhlathuze.gov.za	<u>Comment on BID</u> -No comments received.	-Reminders sent.
Umhlathuze Local Municipality		
<i>S. Govender</i> <u>Tel: 035 907 5174</u> Email:Sharin.Govender@unthungulu.gov.za Private Bag X1004 Richards Bay 3900 5 Mark Strasse, Richards Bay Civic Centre, Richards Bay	<u>Comment on BID</u> -Need a copy of the ecological/wetland shape files. Municipality also has information on floodlines and other studies that can be used (via telecom)	-Shape files will be sent.
	Which activity is the trigger?	Activity 19, due to the existing road being located over the wetlands, and the expansion occurring over the existing transformed wetlands.

Department of Human Settlements		
<p><i>P. Woolf</i> <i>N. Pillay – PA</i></p> <p>Tel: 031 336 5416 Peter.woolf@kzndhs.gov.za Private Bag X5467 Durban 4000</p>	<p><u>Comment on BID</u></p> <p>-No comments received.</p>	<p>-Reminders sent.</p>

SECTION D: IMPACT ASSESSMENT

The assessment of impacts must adhere to the minimum requirements in the EIA Regulations, 2014 and should take applicable official guidelines into account. The issues raised by interested and affected parties should also be addressed in the assessment of impacts.

1. IMPACTS THAT MAY RESULT FROM THE PLANNING AND DESIGN, CONSTRUCTION, OPERATIONAL, DECOMMISSIONING AND CLOSURE PHASES AS WELL AS PROPOSED MANAGEMENT OF IDENTIFIED IMPACTS AND PROPOSED MITIGATION MEASURES

Provide a summary and anticipated significance of the potential direct, indirect and cumulative impacts that are likely to occur as a result of the planning and design phase, construction phase, operational phase, decommissioning and closure phase, including impacts relating to the choice of site/activity/technology alternatives as well as the mitigation measures that may eliminate or reduce the potential impacts listed. This impact assessment must be applied to all the identified alternatives to the activities identified in Section A(2) of this report.

A complete impact assessment in terms of Regulation 19(3) of GN 733 must be included as Appendix F

DESCRIPTION OF IMPACT ASSESSMENT METHODOLOGY

Nature	Include a descriptive sentence
Probability	Categories 1 – 5
	1 Improbable (less than 24% chance of occurring)
	2 Probable (25 – 49%)
	3 Likely (50 – 69%)
	4 Very likely (70 – 89%)
5 Definite (90 – 100%)	
Frequency	Categories 1 – 5
	1 Very rare to remote (once or twice a decade)
	2 Unusual to occasional (once or twice every 5 years)
	3 Frequent (a few times a month)
	4 Very frequent (a few times a week, to daily)
5 Continuous (daily to a significant percentage of every day)	
Extent	Categories 1 – 5
	1 Footprint / site
	2 Local
	3 Regional
	4 National
5 International (trans-boundary)	
Duration	Categories 1 – 5
	1 Short (few days to a few months, less than a phase)
	2 Short (few months, or less than a phase in total)
	3 Medium (a few years, significant part of a phase)
	4 Long (lifespan of development (i.e. all of operation))
5 Permanent	
Intensity	Categories 1 – 5
	1 Very low – natural processes not affected
	2 Low – natural processes slightly affected
	3 Medium – natural processes continue but in a modified manner
	4 Medium-high – natural processes are modified significantly
5 High – natural processes disturbed significantly so that they cease to occur (temporarily / permanently)	
Significance	Significance = P + F + E + D + I Minimum value of 5, maximum of 25 Status determines if positive / negative

	Any positive value	No impact 1. High to low consequence, probability not an issue as positive, no mitigation required
	1– 5	Low 2. Low consequence, probably, minimal mitigation may be required
	6 to 10	Medium 3. Medium consequence, probably, mitigation is advised / preferred
	11 to 15	Medium–high 4. Medium to high consequence, probably to very probable, mitigation is necessary
	16 to 20	High 5. High consequence, probably / definite, mitigation is essential
	21 to 25	Extreme 6. Very high consequence, definite, fatal flaw!

IMPACT ASSESSMENT

Please refer to EMPr for full mitigation measures:

Description and Assessment of Direct and Indirect Impacts

Impacts will arise as a result of direct construction related activity, including site set up; will comprise the bulk of the impacts on the receiving environment. These will extend to movement of heavy vehicles and plant, supply of construction material, dust entrainment, potential for spills, and earthworks, as well as rehabilitation once construction has ended.

Access and Traffic

Impact assessment:

- An increase in traffic volumes will be expected, arising from all equipment to be used on site during construction.
- Slow moving construction vehicles on the roads can be expected.
- There may be damage to existing access due to the volume of heavy traffic

Impact	Extent	Duration	Probability	Magnitude	Reversibility	Confidence	Significance
Without Mitigation:							
Access and traffic	Site	Short Term	Probable	Low	High	High	Low
With Mitigation							
	Site	Short Term	Probable	Low	High	High	Low

Mitigation:

- Appropriate temporary traffic control and warning signage must be erected and implemented on the affected road
- A traffic control plan must be developed and implemented

Heritage

Impact assessment:

- During construction, subsurface artefacts may be uncovered from excavations.

Impact	Extent	Duration	Probability	Magnitude	Reversibility	Confidence	Significance
Without Mitigation:							
Heritage	Site	Short Term	Probable	Low	High	High	Low
With Mitigation							
	Site	Short Term	Probable	Low	High	High	Low

Mitigation:

- Caution must be taken during construction as there is an existing cemetery although located beyond the 30m developmental corridor at A: 28°43'48.7"S, 32°02'15.2"E, B: 28° 43'49.9"S; 32° 02' 16.2"E, C: 28°43'53.6"S; 32°02'18.0"E (cemetery fence coordinates) in Brackenham suburb not

to impact on the graves. However this is a formal fenced cemetery with access control in place and the actual graves even much further away from the developmental corridor. The fence of the gravesite occurs over approximately 80m from the proposed developmental corridor of 30m from the existing road edge.

- Construction activities should be limited to the proposed construction corridor of 30m from the outer edge of the existing road edge. If the size of the construction corridor is increased at a later stage, a heritage specialist should be involved in order to assess how the increase in the corridor width will affect heritage resources
- Archaeological material, by its very nature, occurs below ground. The developer should therefore keep in mind that archaeological sites might be exposed during the construction phase. If anything is noticed, work in that area should be stopped and the occurrence should immediately be reported to the KwaZulu Natal Provincial Heritage Resources Authority (Amafa) at 033 394 6543 and the author at 083 375 4270. The find should then be investigated and evaluated by the author, who will provide recommendations on when construction activities in the area where the discovery was made can resume

Watercourse Impacts- Surface and ground water quality ecology

Impact Assessment:

- Surface water impacts may be expected due to the culvert construction activities and stripping of surfaces for road works.
- Impact on the watercourse beds may occur due to excavations and foundations within the watercourse.
- Surface water impacts can occur due to hydrocarbon spills, mixing of cement directly on the ground and on unprotected surfaces, cement/concrete spills, waste mismanagement. These spills can in turn be carried off via runoff.
- Spillage of cement/concrete, waste, litter into the wet areas (concrete line drainage channel included) can cause pollution of both surface and subsurface water and eventually pollute downstream areas.
- The proposed upgrade of the R619 near Aquadene, Richards Bay, a project with a linear extent of approximately 6 kms will affect primarily existing transformed lands presently under silviculture and urban settlement. The route will traverse 4 identified wetland systems including a concrete sluice. It is proposed that minimal impact will arise on the existing wetland systems on account of:
 - The highly transformed nature of the systems.
 - The ongoing maintenance of these systems as drainage channels for the area.
 - The limited expansion of the roadway

Impact	Extent	Duration	Probability	Magnitude	Reversibility	Confidence	Significance
Without Mitigation:							
Ecology Watercourse	Site	Long Term	Probable	Low	High	High	Low

(wet areas, surface and ground water quality, soil and erosion)							
With Mitigation							
	Site	Long Term	Probable	Low	High	High	Low

Mitigation

- Spill prevention measures must be put in place where construction is to occur prior to any activities taking place. Contractor must ensure that spill kits and drip drays are available on site, as well as any other suitable spill prevention and protection measures as directed by the ECO and Engineer
- Contractor must ensure that an emergency response plan (for hydrocarbon/chemical and other hazardous material spill) is available
- Cleaning of cement mixing and handling equipment must be done on proper cleaning trays/wash bay area or preferably off site at a commercial facility.
- All empty cement bags are to be treated as hazardous waste and must not be discarded on the ground and the wetlands; and must not be allowed to become windblown

Soil and erosion

Impact Assessment:

- Erosion is possible as a result of exposed soils after clearing and grubbing has occurred, as well as erosion of soils in the wet areas.

Impact	Extent	Duration	Probability	Magnitude	Reversibility	Confidence	Significance
Without Mitigation:							
Soil and erosion	Site	Short Term	Probable	Low-Medium	High	High	Low
With Mitigation							
	Site	Short Term	Probable	Low	High	High	Low

- Silt curtains should be positioned perpendicular to flow below the working area. This is only effective during low and normal flow, with a potential for these to get washed away during localised heavy rainfall
- Suitable sculpting and reinstatement of affected points around wetland systems should be undertaken immediately after construction. The management of flow, stabilization of embankments and other factors should be taken into account.

Fauna and flora (ecology and loss of habitat)

Impact Assessment:

- The fauna that inhabits the area comprises of various mammals; arachnids, various reptile species, insect species, amphibians and various bird species and thus construction activity will discourage habit for smaller sedentary species such as amphibians.
- Clearing of grass cover for work along the road will result in minimal loss of habitat at the disturbed site.
- The further establishment and spread of alien species may occur on site during construction.

Impact	Extent	Duration	Probability	Magnitude	Reversibility	Confidence	Significance
Without Mitigation:							
Ecology - Fauna and flora	Site	Short Term	Probable	Low	Low	High	Low
With Mitigation							
	Site	Short Term	Probable	Low	Low	High	Low

Mitigation:

- The site must be inspected for smaller fauna or nesting/brooding activity prior to disturbance. Fauna that cannot relocate themselves must be rescued and relocated, including prior to any blast activity.
- Should any chance finding of red data species occur, a permit must be obtained prior to disturbance/removal/relocation.
- An alien plant removal and control plan is required for the site.
- An alien plant control program must be developed, approved by the ECO and implemented on an ongoing basis during construction, with total removal during operation

Air quality (Noise and Dust):

Impact Assessment:

- Operation of construction equipment, movement staff will generate a potential for increased noise at the work area
- Dust entrainment and vehicular emissions (exhaust fumes) are expected during construction, from driving of vehicles on cleared surfaces, and operation of equipment, stripped ground-cover/soil/bare surfaces, stockpiles

Impact	Extent	Duration	Probability	Magnitude	Reversibility	Confidence	Significance
Without Mitigation:							
Noise and Dust	Site	Short Term	Probable	Low	High	High	Low
With Mitigation							
	Site	Short Term	Probable	Low	High	High	Low

Mitigation

- Noisy activities must be restricted to the times given in the Project Specification or General Conditions of Contract
- Vehicles must adhere to speed limits at all times.
- Wetting of exposed surfaces must be undertaken to reduce dust emissions

Waste Management

Impact assessment

- Waste will be generated by the construction activity. This includes waste rock/spoil, plastic, paper, steel, concrete rubble, recyclables etc.

Impact	Extent	Duration	Probability	Magnitude	Reversibility	Confidence	Significance
Without Mitigation:							
Waste Management	Site	Short Term	Probable	Low-Medium	High	High	Low
With Mitigation							
	Site	Short Term	Probable	Low	High	High	Low

Mitigation

- Bins and skips with lids shall be provided for disposal of waste. The provision of separate waste receptacles for different types of waste is required; these receptacles must be labelled
- There must be no mixing of hazardous waste and general waste
- A demarcated, designated area is required for waste management, storage, sorting

Safety and security

Impact Assessment

- During construction, opportunities may be presented for crime to occur.
- Safety risks to staff and community members via excavations can occur.

Impact	Extent	Duration	Probability	Magnitude	Reversibility	Confidence	Significance
Without Mitigation:							
Socio-economic – and safety and Security	Site	Short Term	Probable	Low	High	High	Low
With Mitigation							
	Site	Short Term	Probable	Low	High	High	Low

Mitigation

- The site camp must be fenced and access controlled.
- Work area to be demarked.
- Contractor to adhere to the OHSACT.

Rehabilitation - Ecology

Impact Assessment

- Once construction is complete, all disturbed areas must be rehabilitated to avoid erosion impacts and damage to road surface and surrounding environment, as well as spread of alien species

Impact	Extent	Duration	Probability	Magnitude	Reversibility	Confidence	Significance
Without Mitigation:							
Rehabilitation	Site	Long Term	Probable	Low-Medium	High	High	Low
With Mitigation							
	Site	Long Term	Probable	Low	High	High	Low

Mitigation

- A rehab plan or method statement that includes erosion controls, alien plant removal and maintenance of rehab, must be prepared by the contractor and submitted to the engineer and ECO for approval. This method statement must include the rehabilitation program as contained in the ecological specialist study (annexure B)
- No specific “rehabilitation” is recommended however revegetation of disturbed areas through grassing and basic management is recommended, the aim being to stabilise the soil and allow natural forces to dictate the return of suitable species.
- The site must be stabilized using suitable environmental (grassing/gabions) and engineered solutions for scour and erosion protection where required.

Climate Change (+)

Impact Assessment

- With climate change often resulting in an increase in flood and storm events, ageing structures and road surfaces will erode and will need increased repair and maintenance interventions. Improving the road network will to cater for increases in both traffic and runoff, will enhance adaptability and socio-economic development. Reducing the need and frequency of maintenance interventions will free funds that may be used elsewhere for socio-economic growth.
- The upgrade of the road will enable the network to withstand increased traffic as well as run off from increased storm events during peak rainfall periods and additional hardened surfaces.

Socio-economic (+)

Impact Assessment

- The project construction will provide temporary employment for locals.
- In the long term, an enhanced road network will enable traffic flow and ease congestion, as well as promoting further social development and economic activities.
- Local labour must be given preference for job opportunities.

No Go

MR 231 is to be designed as a four lane dual carriageway with additional lanes at intersections. A four lane dual carriageway has a daily traffic capacity in the region of 50 000 vehicles total flow both directions at a level of service LOS C. The initial upgrade as proposed in this project i.e. to a four lane urban arterial will have adequate capacity for the medium term.

With climate change often resulting in an increase in flood and storm events, ageing structures and road surfaces will erode and will need increased repair and maintenance interventions. Improving the road network will cater for increases in both traffic and runoff, will enhance adaptability and further promote socio-economic development. Reducing the need and frequency of maintenance interventions will free funds that may be used elsewhere for socio-economic growth.

The upgrade of the road will enable the network to withstand increased traffic as well as runoff from increased storm events during peak rainfall periods and additional hardened surfaces

Should the proposed project not be undertaken, then the current status quo will remain. The traffic volume increases will result in congestion and eventual damage to the existing road surface. This option is therefore not recommended. The upgrade of the road will still be an eventuality.

2. ENVIRONMENTAL IMPACT STATEMENT

Taking the assessment of potential impacts into account, please provide an environmental impact statement that summarises the impact that the proposed activity and its alternatives may have on the environment after the management and mitigation of impacts have been taken into account, with specific reference to types of impact, duration of impacts, likelihood of potential impacts actually occurring and the significance of impacts.

IMPACT STATEMENT

Summary of impacts

Impact	Significance without mitigation	Significance with mitigation
Watercourse ecology	Low	Low
fauna and flora	Low	Low
Noise and air quality	Low	Low
Waste management	Low-Medium	Low
Heritage	Low	Low
Soil and erosion	Low-Medium	Low
Socio-economic safety and security	Low	Low
Rehab	Low-Medium	Low

Taking into account the assessment and rating above, the activity and project construction will unavoidably have some impact on the environment during the construction phase. However, mitigation measures, once adopted, as per the EMP, will ensure that impacts are reduced to low significance.

Thus, based on the above, the option of activity or project construction is permissible.

Alternative A (preferred alternative)

As above

Alternative B

N/A

Alternative C

N/A

No-go alternative (compulsory)

MR 231 is to be designed as a four lane dual carriageway with additional lanes at intersections. A four lane dual carriageway has a daily traffic capacity in the region of 50 000 vehicles total flow both directions at a level of service LOS C. The initial upgrade as proposed in this project i.e. to a four lane urban arterial will have adequate capacity for the medium term.

With climate change often resulting in an increase in flood and storm events, ageing structures and road surfaces will erode and will need increased repair and maintenance interventions. Improving the road network will cater for increases in both traffic and runoff, will enhance adaptability and further promote socio-economic development. Reducing the need and frequency of maintenance interventions will free funds that may be used elsewhere for socio-economic growth.

The upgrade of the road will enable the network to withstand increased traffic as well as runoff from increased storm events during peak rainfall periods and additional hardened surfaces.

Should the proposed project not be undertaken, then the current status quo will remain. The traffic volume increases will result in congestion and eventual damage to the existing road surface. This option is therefore not recommended. The upgrade of the road will still be an eventuality.

SECTION E. RECOMMENDATION OF PRACTITIONER

Is the information contained in this report and the documentation attached hereto sufficient to make a decision in respect of the activity applied for (in the view of the environmental assessment practitioner)?

X YES	NO
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If "NO", indicate the aspects that should be assessed further as part of a Scoping and EIA process before a decision can be made (list the aspects that require further assessment).

N/A

If "YES", please list any recommended conditions, including mitigation measures that should be considered for inclusion in any authorisation that may be granted by the competent authority in respect of the application.

It is recommended that alternative A1 and S1 (i.e. construction of upgrade project) be accepted from environmental and socio-economic perspective.

The specialist study states that 'it is evident that the wetland systems directly affected by the proposed road upgrade are limited, having been subject to significant and temporally regular disturbance and change. The nature of the Aquadene area, whereby high rainfall events are generally common occurrence, the water table lies proximal to natural ground level and the generally level nature of the area gives rise to a necessity to alter and improve drainage if infrastructure is to be established in this area. In turn, such drainage serves to reduce and alter the functional state of wetlands.

The road upgrade 'will affect primarily existing transformed lands presently under silviculture and urban settlement. The route will traverse 4 identified wetland systems including a concrete sluice. It is proposed that minimal impact will arise on the existing wetland systems on account of :

- The highly transformed nature of the systems.**
- The ongoing maintenance of these systems as drainage channels for the area.**
- The limited expansion of the roadway**

The heritage specialist study recommended 'that the proposed Road P231 Upgrade proceed from a heritage point of view as no heritage resources were identified within 30m of the proposed route upgrade, with acceptance that construction activities should be limited to the proposed construction corridor of 30m from the outer edge of the existing road edge. If the size of the construction corridor is increased at a later stage, a heritage specialist should be involved in order to assess how the increase in the corridor width will affect heritage resources.'

The mitigation measures and controls specified in the EMPr and specialist studies must be adhered to. The construction phase of the project must be monitored by an ECO, on a monthly basis, who will report on compliance with the construction EMPr, attached as Appendix F for further details on management of the site during construction.

MR 231 is to be designed as a four lane dual carriageway with additional lanes at intersections. A four lane dual carriageway has a daily traffic capacity in the region of 50 000 vehicles total flow both directions at a level of service LOS C. The initial upgrade as proposed in this project i.e. to a four lane urban arterial will have adequate capacity for the medium term.

With climate change often resulting in an increase in flood and storm events, ageing structures and road surfaces will erode and will need increased repair and maintenance interventions. Improving the road network will cater for increases in both traffic and runoff, will en-

hance adaptability and further promote socio-economic development. Reducing the need and frequency of maintenance interventions will free funds that may be used elsewhere for socio-economic growth.

The upgrade of the road will enable the network to withstand increased traffic as well as run off from increased storm events during peak rainfall periods and additional hardened surfaces.

Should the proposed project not be undertaken, then the current status quo will remain. The traffic volume increases will result in congestion and eventual damage to the existing road surface. This option is therefore not recommended. The upgrade of the road will still be an eventuality.

Is an EMPr attached?

<input checked="" type="checkbox"/> YES	<input type="checkbox"/> NO
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The EMPr must be attached as Appendix G.

The details of the EAP who compiled the BAR and the expertise of the EAP to perform the Basic Assessment process must be included as Appendix H.

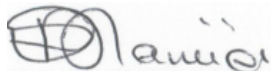
If any specialist reports were used during the compilation of this BAR, please attach the declaration of interest for each specialist in Appendix I.

Any other information relevant to this application and not previously included must be attached in Appendix J.

POPPY DLAMINI

HENWOOD & NXUMALO CONSULTING ENGINEERS CC

NAME OF EAP



03/03/2016

SIGNATURE OF EAP

DATE

SECTION F: APPENDIXES

The following appendixes must be attached:

Appendix A: Maps

Appendix B: Photographs

Appendix C: Facility illustration(s)

Appendix D: Specialist reports (including terms of reference)

Appendix E: Public Participation

Appendix F: Impact Assessment

Appendix G: Environmental Management Programme (EMPr)

Appendix H: Details of EAP and expertise

Appendix I: Specialist's declaration of interest

Appendix J: Additional Information