

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, 2010, 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, 2010 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 **1 September 2012**. 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 on 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

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

The proposed upgrade of 33.7km of National Route 2 between Mtunzini Toll Plaza (Section 28, km 42.7) and Empangeni T-Junction (Section 29, km 13.0) is located within the Umlalazi Local Municipality and uMhlathuze Local Municipality within the Uthungulu District Municipality in KwaZulu-Natal (see Locality Map in **Appendix A1**).

Activity Description

The scope of work includes the construction of a second carriageway to create a dual carriageway together with rehabilitation of the existing carriageway. The specific issues related to the scope of works for this section comprises (*but is not limited to*), the following:

- Contractor's establishment on site including camp site and fuel storage facilities;
- The construction of a second carriageway (with a surfaced width of 11.4m) over 33.7km in length together with the following structures:
 - The widening of the existing bridges over the Mlalazi River and the Mhlatuze River to accommodate the proposed dual carriageway;
 - The extension of four agricultural overpasses over the N2;
 - The construction of a bridge over the Empangeni/Richards Bay Road;
 - The construction of road over rail bridges at two locations;
 - The extension of the existing culverts;
 - The upgrading of interchange ramps at the Esikaweni Interchange and the Empangeni Interchange to accommodate the upgrade of the N2;
 - The rehabilitation of the existing surfaced lanes and shoulders, probably *in situ* recycling of the base layer, followed by construction of a new base layer and asphalt surfacing;
- Selected construction material for the proposed road upgrade will be sourced from a proposed borrow pit that is located along the N2 highway, between the N2 and the railroad at the Esikhawini turnoff, at GPS co-ordinates 28° 51' 51.99"S and 31° 53' 16.23" E. The opened borrow pit will be rehabilitated on closure thereto. (*A separate application will be submitted to the Department of Mineral Resources (DMR) for approval of the proposed borrow pit*).
- \circ The existing culverts will be extended as a result of the proposed road upgrade.
- Water during the construction phase may be obtained from existing boreholes or the municipality. The applicant intends to abstract 110 000m³ of water over the first two and a half years of the construction period, from the Mlalazi and Mhlatuze Rivers.

The proposed construction of the second carriageway will not require the acquisition of any additional land, since adequate land for a dual carriageway was acquired at the time of the original construction of the N2 in 1985.

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

The project commenced as a Scoping and Environmental Impact Reporting (S&EIR) Process in December 2012. However, due to the non-applicability of listed activities nos. 3, 18 and 20 (as per GNR. No. 545: Listing Notice 2), the Department of Environmental Affairs (DEA) withdrew the S&EIR Application and accepted that the project proceed as a Basic Assessment on 15 May 2013 (refer to the correspondences with the DEA in **Appendix J1 - J4**).

Listed activity as described in GN R.544, 545	Description of project activity
GN R. 544 Item (9):	As part of the proposed road construction, piped
	culverts for the transportation of stormwater will
The construction of facilities or-	be required.
infrastructure exceeding' 1000 metres in	
length for the bulk transportation of water,	
sewage or storm water-	
i. with an internal diameter of 0,36	
meters or more; or	
ii. with a peak throughput of 120 litres	
per second or more,	
excluding where:	
(a) such facilities or infrastructure are for bulk	
transportation of water, sewage or storm water	
drainage inside a road reserve; or	
(b) where such construction will occur within	
urban areas but further than 32 meters from a	
watercourse, measured from the edge of the	
watercourse.	
GN R. 544 Item (11):	The project involves the construction/expansion of
	bridges over the Mlalazi River and the Mhlathuze
The construction of:	River.
i. canals;	
ii. channels;	A number of box culverts and pipe culverts and
iii. bridges;	agricultural overpasses and underpasses will be
iv. dams;	constructed for the new carriageway which may
v. weirs;	occur within the watercourse or 32m from the
vi. bulk storm water outlet structures;	edge of the watercourse.
vii. marinas;	
viii. jetties exceeding 50 square metres in	
size;	
x. buildings exceeding 50 square metres in	
size; or	
xi. infrastructure or structures covering	

50 square metres or more	
where such construction occurs within a watercourse or within 32 meters of a watercourse, measured from the edge of a watercourse, excluding where such construction will occur behind the development setback line.	
GN R. 544 Item (13): The construction of facilities or infrastructure for the storage, or for the storage and handling, of a dangerous good, where such storage occurs in containers with a combined capacity of 80 but not exceeding 500 cubic meters	During the construction phase, the contractors will establish a construction camp site and there may be construction of facilities for the storage of fuel with a combined capacity of 80 but not exceeding 500m ³ on site.
GN R. 544 Item (18): The infilling or depositing of any material of more than 5 cubic meters into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock from	There may be infilling or depositing of material into, or the dredging, excavation, removal or moving of soil, sand, pebbles or rock from a watercourse with regard to the construction of the box culverts, pipe culverts and the construction of the bridges within the existing watercourses.
i a watercourse:	
GN R. 544 Item (22): The construction of a road, outside urban areas, i. with a reserve wider than 13.5 meters; or ii. where no reserve exists where the road is wider than 8 meters, or iii. for which an environmental authorisation was obtained for the route determination in terms of activity 5 in Government Notice 387 of 2006 or activity 18 in Notice 545 of 2010.	The proposed development involves the construction of a second carriageway (with a surfaced width of 11.4m) over 33.7km in length.
GN R. 544 Item (39):	The existing bridges (Umhlathuze River and Umlalazi River) will be expanded as a result of the
 The expansion of canals; channels; Bridges; Bridges; weirs; bulk storm water outlet structures; marinas; within a watercourse or within 32 meters of a 	widening of the NZ.

watercourse, measured from the edge of a	
watercourse, where such expansion will	
result in an increased development footprint	
but excluding where such expansion occur	
behind the development setback line.	
GN R. 544 Item (47):	The construction of the second carriageway (with a surfaced width of 11.4m) over 33.7km in length in a 20m road reserve falls within this category
meters or the lengthening of a road by more	Vast majority of the N2 passes through rural and
than 1 kilometer-	
i where the existing reserve is wider	agnoultar aroas.
than 13.5 meters: or	
ii where no reserve exists where the	
avisting road is wider than 8 meters	
excluding widening or lengthening occurring	
inside urban areas.	
GN R. 546 Item (4):	According to the Ecological Assessment, part of the study area falls (in the vicinity of the Mlalazi
The construction of a road wider than 4 metres with a reserve less than 13,5 metres.	according to the EKZNW C-Plan. According to the Wetland Assessment, a small portion of the road near the Mlalazi River falls within the Indian
(a) In Eastern Cape, Free State, KwaZulu-	Ocean Coastal Belt Group 2 which as a group is
Natal, Limpopo, Mpumalanga and Northern	isteu as childal.
Cape provinces:	
i. in an estuary, in:	
ii. Outside urban areas, in:	
(aa) A protected area identified in terms of	
NEMPAA, excluding conservancies;	
(bb) National Protected Area Expansion	
Strategy Focus areas;	
(cc) Sensitive areas as identified in an	
environmental management framework as	
contemplated in Chapter 5 of the Act and as	
adopted by the competent authority;	
(dd) Sites or areas identified in terms of an	
International Convention;	
(ee)Uritical Diodiversity areas as	
identified in systematic biodiversity plans	
adopted by the competent authority of in	
pioregional plans;	
(π) Core areas in biosphere reserves;	
(gg) Areas within 10 kilometres from national	

parks or world heritage sites or 5 kilometres	
from any other protected area identified in	
terms of NEMPAA or from the core areas of	
a biosphere reserve:	
(hh) Area seawards of the development	
setback line or within 1 kilometre from the	
high water mark of the sea if no such	
development setback line is determined	
development selback line is determined.	
(iii) In urban araaa:	
(ad) dieds 2011e 101 use as public open space,	
(DD) Areas designated for conservation use in	
Spatial Development Frameworks adopted by	
the competent authority or zone for a	
conservation purpose;	
(cc) seawards of the development setback line	
or within urban protected areas.	
GN R. 546 Item (19)	According to the Ecological Assessment, part of
	the study area falls (in the vicinity of the Mlalazi
The widening of a road by more than 4	River) falls within the Biodiversity Priority Area 1,
metres, or the lengthening of a road by more	according to the EKZNW C-Plan. According to
than 1 kilometre.	the Wetland Assessment, a small portion of the
	road near the Mlalazi River falls within the Indian
(a) In Eastern Cape, Free State, KwaZulu-	Ocean Coastal Belt Group 2 which as a group is
Natal, Limpopo, Mpumalanga and Northern	listed as Critical.
Cape provinces:	
i. in an estuary, in:	
ii. Outside urban areas, in:	
(aa) A protected area identified in terms of	
NEMPAA, excluding conservancies;	
(bb) National Protected Area Expansion	
Strategy Focus areas;	
(cc) Sensitive areas as identified in an	
environmental management framework as	
contemplated in Chapter 5 of the Act and as	
adopted by the competent authority;	
(dd) Sites or areas identified in terms of an	
International Convention;	
(ee)Critical biodiversity areas as	
identified in systematic biodiversity plans	

bioregional plans:
(ff) Core areas in biosphere reserves:
(m) Areas within 10 kilometres from national
narks or world haritage sites or 5 kilometres
from any other protected area identified in
torma of NEMDAA ar from the core areas of
terms of NEMPAA of from the core areas of
a biosphere reserve;
(hh) Area seawards of the development
setback line or within 1 kilometre from the
high water mark of the sea if no such
development setback line is determined.
(ii) Areas on the watercourse side of the
development setback line or within 100
metres from the edge of a watercourse
where no such setback line has been
determined.
(iii) In urban areas:
(aa) areas zone for use as public open space:
(bb) Areas designated for conservation use in
Spatial Development Frameworks adopted by
the competent authority or zone for a
conservation nurnose
(co) social of the development setback line
or within urban protocted areas
or within urban protected areas.

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 Regulation 22(2)(h) of GN R.543. 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)		
N/A				
Alternative 2				
Description	Lat (DDMMSS)	Long (DDMMSS)		
N/A				
Alternative 3				
Description	Lat (DDMMSS)	Long (DDMMSS)		
N/A				

In the case of linear activities:

The proposed project involves the upgrade of the existing 33.7km of National Route 2 between Mtunzini Toll Plaza (Section 28, km 42.7) and Empangeni T-Junction (Section 29, km 13.0). Alternate sites have not been addressed in the Basic Assessment Report, as this site has been predetermined during the planning stage.

The original design for the proposed northbound carriageway of the N2 between the Mtunzini Toll Plaza (Section 28, km 42.7) and Empangeni T-Junction (Section 29, km 13.0) was carried out to accommodate a future dual carriageway. Therefore, there are no alternative sites, as the proposed dual carriageway is required in its current location as per past planning initiatives.

Sufficient land was expropriated at that stage (1985) and therefore, no further land expropriation is likely to be required.

Alternative:

Alternative S1 (preferred)

- Starting point of the activity
- Middle/Additional point of the activity
- End point of the activity
- Alternative S2 (if any) N/A
- Starting point of the activity
- Middle/Additional point of the activity

Latitude (S):

Longitude (E):

28° 56' 59.07 S	31° 44' 33.93" E
28° 52' 0.69 S	31° 52' 57.65" E
28° 43' 30.54 S	31° 56' 54.95" E

•	End point of the activity	
Alte	ernative S3 (if any) N/A	
•	Starting point of the activity	
•	Middle/Additional point of the activity	
٠	End point of the activity	

Please refer to Addendum 1 with the co-ordinates along the 33km of the proposed road upgrade.

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.

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**.

b) Lay-out alternatives

.

No alternative layouts have been addressed in the Basic Assessment Report as the proposed road upgrade was recommended as the preferred layout, based on the geometry of the road.

Alternative 1 (preferred alternative)			
Description	Lat (DDMMSS)	Long (DDMMSS)	
Alternativ	ve 2		
Description	Lat (DDMMSS)	Long (DDMMSS)	
Alternative 3			
Description	Lat (DDMMSS)	Long (DDMMSS)	

c) Technology alternatives

There are no alternative technologies.

Alternative 1 (preferred alternative)		
None		
	Alternative 2	
	Alternative 3	

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

Design Alternatives

Two road cross-section options were investigated during the preliminary design of the road upgrade. Refer to these alternatives in **Appendix A**.

Alternative 1 (Preferred Alternative):

<u>Construction of additional new separate carriageway (Dual Carriageway)</u> (Please see Appendix A3 for design/route plan)

The existing road cross-section was designed to accommodate future widening in the form of an additional new carriageway separated by a median. The proposed cross-section which allows for the construction of a separate carriageway option conforms with current SANRAL geometric standards i.e. 3,7 m lane widths and minimum 2,5 m left hand side surfaced shoulder width (3 m adopted).

If this option is considered the existing carriageway will be left unchanged except for the restriping the roadway back to a two lane configuration. Other aspects to be considered if this option is followed are:

- This would result in a new second carriageway with a 11, 4 m surfaced width which is less than the current 13,4 m width. This excludes the new median of 8, 6 m width.
- No reworking of the existing pavement would be required in order to adjust cambers and the new carriageway will have a reverse cross-fall to that of the existing carriageway.
- The construction of an additional carriageway would require an additional 20 m of roadway width (including the median) and as a result the cost would be substantially higher than the widening exercise proposed under Alternative 1. It should be noted however that no additional land will be required to be expropriated for the dual carriageway option.

The proposed dual carriageway cross-section is generally deemed to be safer when compared to the undivided option. In order to achieve the elimination of the potential for head-on collisions, appropriate physical barriers would need to be installed with both options.

SANRAL's decision is therefore to utilise Alternative 1 with a divided four lane dual carriageway primarily due to the safety benefits.

Alternative 2:

Widening of the existing carriageway to a four-lane undivided road (Please see Appendix A4 for design/ route plan)

The existing road cross-section was designed to accommodate future widening in the form of an additional new carriageway separated by a median.

In general, allowance has been made for this widening on the left side of the roadway heading in a northerly direction along the entire section of the road being considered for upgrading. The centreline of the existing carriageway is situated 11 m off-centre on the 80 m road reserve, or 29 m from the right side boundary.

The existing carriageway was originally designed and constructed as a two lane bi-directional facility with wide surfaced shoulders on either side. The surfaced width originally designed and constructed was 13, 4 m wide and has remained unaltered. The only material change made in recent times was the restriping of the roadway to allow for three lanes in order to improve capacity and safety.

The cross-section proposed for the widening of the existing single carriageway to a four lane undivided facility also conforms to current SANRAL geometric standards i.e. 3, 7 m lane widths and a 2, 5 m left-hand side surfaced shoulder width.

It should be noted that in order to accommodate the proposed road cross-section for Alternative 2, all overpasses would require widening on both sides of the existing roadway as opposed to the left side only. In addition to the widening, vertical clearances would also need to be checked.

One of the drawbacks of adopting the widened cross-section option is that a certain amount of reworking of the existing pavement will be required in order to reverse the cross-fall over to the new centreline. This requirement would also be applicable to any future widening that might be considered.

In order to improve the safety of the four-lane undivided facility, the proposed cross-section is designed to accommodate protection measures for motorists in the form of concrete median barriers or, alternatively, a wire rope safety fence along the centreline. At the very least a 700 mm painted median island will be used to separate the two carriageways however this does not offer any protection to road users.

e) No-go alternative

This option assumes that a conservative approach would ensure that the environment is not impacted upon any more than is currently the case. It is important to state that this assessment is informed by the current condition of the area. Should the DEA decline the application, the 'No-development' option will be followed and the status quo of the site will remain.

If a four-lane dual carriageway facility is not constructed along the entire route within the next 15 years, congestion levels will be experienced along the whole route, with the section between Esikhawini and Empangeni experiencing the worst levels of service.

Should the proposed road upgrade not occur, there would be no construction-related impacts upon the biophysical and social environment. There would be no additional short-term creation of jobs through construction activities.

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):

Alternative:Size of the activity:Alternative A11 (preferred activity alternative)N/AAlternative A2 (if any)N/AAlternative A3 (if any)N/A

or, for linear activities:

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

Alternative:

Alternative A1 (preferred activity alternative) Alternative A2 (if any) Alternative A3 (if any)

Length of the activity:

33.7km	
N/A	
N/A	

b) Indicate the size of the alternative sites or <u>servitudes</u> (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:

80m road reserve	
N/A	
N/A	

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

Describe the type of access road planned:

The proposed project involves the upgrade of the existing 33.7km of National Route 2 between Mtunzini Toll Plaza (Section 28, km 42.7) and Empangeni T-Junction (Section 29, km 13.0). Access already exists off the provincial and national roadways.

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

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

YES ✓	NO
N	/Α

 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).

THE ABOVE HAS BEEN COMPLIED WITH. REFER TO THE LOCALITY MAP IN APPENDIX A1

6. LAYOUT/ROUTE PLAN

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;
 Refer to Appendix A2 for the adjacent properties 50m of the site.
- the current land use as well as the land use zoning of the site;
 The site for the proposed development is zoned for use as a National Route and is currently vacant in most parts, while there is some illegal commercial forestry and cane cultivation in some areas of the site.
- the current land use as well as the land use zoning each of the properties adjoining the site or sites;
 Refer to the land uses of the adjoining properties in **Appendix A5**. The site for the proposed development is zoned for construction of the National Route 2.
- the exact position of each listed activity applied for (including alternatives); Refer to Appendix C.
- servitude(s) indicating the purpose of the servitude;
 The proposed road upgrade will occur within the existing SANRAL road reserve.
- a legend; and
- a north arrow.

REFER TO THE LAYOUT/ROUTE PLAN IN APPENDIX C

7. SENSITIVITY MAP

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;

Refer to the overall wetlands map and wetlands map A to H in **Appendix A10 and Appendix A11**.

the 1:100 year flood line (where available or where it is required by DWA);
 The 1: 100 year flood line will be demarcated at the detailed design stage.

- ridges;
 There are no ridges along the study area.
- cultural and historical features
 There are no heritage resources on the site for the road upgrade. Refer to the Heritage Impact Assessment in Appendix D3.
- areas with indigenous vegetation (even if it is degraded or infested with alien species); and
 Refer to the Ecological Sensitivity Maps A to K and the Sequence Ecological Sensitivity Map in
 Appendix A8 and A9.
- Critical biodiversity areas.
 Refer to the Conservation Map in Appendix A7.

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

8. SITE PHOTOGRAPHS

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.

THE ABOVE HAS BEEN COMPLIED WITH. REFER TO THE SITE PHOTOGRAPHS IN APPENDIX B.

9. 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.

THE ABOVE HAS BEEN COMPLIED WITH. REFER TO THE FACILITY ILLUSTRATION TITLED FA31137-500 AND PD31137-660 IN APPENDIX C FOR THE PROPOSED ROAD UPGRADE, RAIL BRIDGES AND THE EXPANSION OF THE UMLALAZI AND UMHLATHUZE RIVER BRIDGES, AND UPGRADING OF THE ESIKHAWINI INTERCHANGE.

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?	YES ✓	NO	Please explain
The proposed road upgrade occurs within the proclaimed SANRAL road reserve.			

2. Will the activity be in line with the following?			
(a) Provincial Spatial Development Framework (PSDF)	YES ✓	NO	Please explain
Empangeni is a major freight transport hub from a vehicles and tonnage perspective, with N2 route to Matubatuba and Mtunzini carrying a large proportion of road freight within the province. Endemic overloading of heavy vehicles which, though better controlled in KZN than the rest of the country, has negative consequences for the life of the roads in the province. The cumulative effects of increasing road usage and accumulated deficits in the funding of road maintenance are felt by all road users in terms of increased vehicle operating costs. The deteriorating condition of roads in KwaZulu-Natal is a cause for grave concern as it contributes to rising costs, inflation and increasing accident rates.			
According to the Second Draft of Provincial Spatial Development Framework (Dated August 2011), In promoting growth and development within the uThungulu District as well as supporting the proposed spatial structure and areas of intervention, the upgrade to the road can be classified as a provincial catalytic project that is envisaged within the district through industrial support services (Empangeni).			igust 2011), In i the proposed as a provincial Empangeni).
(b) Urban edge / Edge of Built environment for the area	YES ✓	NO	Please explain
The site for the proposed development occurs within the urban edge a the northern part of KZN as it forms a major access to rail, air, sea and r	nd is a r oad linka	najor tr ages.	ansport hub in
(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?).	YES	NO ✓	Please explain
According to the Umlalazi Municipality IDP 2012 to 2016, the uThungulu District's transportation infrastructure is under pressure. The road network connects the major nodes, like Richards Bay and Empangeni to the national network, however the heavy vehicles servicing the Port of Richards Bay and the adjoining industrial areas are placing considerable strain on the infrastructure. Rail is a declining transport sector, with no major commuter networks in place and limited industrial linkages (with the exception of the coal link from Mpumalanga to the Richards Bay Coal Terminal at the Port of Richards Bay).			
The uMlalazi Integrated Development Plan has identified a number of roads for as part of their Development Corridor network based on condition of roads, level of access afforded by the roads and its importance at a district/regional scale.			
The N2 Highway (and R102) are primary corridors that are aligned parallel to each other in the southeastern sector of the uMlalazi municipal area. It offers access to Richards Bay/Empangeni, as well as the three Secondary Centres (Gingindlovu, Nqutshini and Mtunzini).			
One of the strategic objectives of the IDP is to improve and ensuring roa To facilitate the growth and development of the road construction indus be fully representative of the demographic profile of the province.	id and pi try in Kw	ublic tra /aZulu-	nsport safety; Natal, so as to

Turning the vision of the department into reality can only be achieved by focusing the attention and

energy of all employees and relevant stakeholders on the performance of core functions that are to produce results. The core functions are:

- Road Infrastructure; and
- To construct and maintain a balanced road network that complies with the Provincial Growth and Development Strategy.

The SDP of the Umlalazi Municipality has identified that with the realization of the significant role that proper roads or effective transport routes play in upliftment as well positive economic spins-offs they offer, there should be a roll out plan for road upgrades and future linkages. The SDP identified that road improvements is one of the goals and objectives for development.

One of the development principles of the Umlalazi Municipality is that transport networks are to be promoted as they are the 'veins' of economic growth and are an important catalyst in economic development. Areas that are highly accessible through transport networks have better opportunities for economic growth by increasing their sphere of influence and in turn their market threshold increases.

According to the Umhlathuze Municipality, IDP (2011/2012), the key feature of uMhlathuze Municipality is the N2 Development Corridor, eThekwini-Ilembe-uMhlathuze Corridor. The Dube Trade Port, (King Shaka Airport), is approximately 145 kilometers away is also an added advantage to the area in terms of investment attraction. The City has establishments of large new industries, company and port expansions, an industrial development zone (IDZ), and vast agricultural and forestry area. Large industrial concentrations are located in and around uMhlathuze. This has created the City to be an economic heartbeat of northern KwaZulu-Natal (KZN). The primary transport links, are the N2, R34 and MR231. These roads remain the main movement corridors within the uMhlathuze area, and as such present opportunities for development. Future development within the City is foreseen and the N2 is therefore in need of upgrading to cater for the additional traffic and the links with the eThekwini-Ilembe-Umhlathuze Corridor.

According to the Umhlathuze Municipality, SDF (2011), connectivity has been identified as a spatial development planning concept. The rationale for 'connectivity' is explained as follows:

- Transport networks are to be promoted as they are the 'veins' of economic growth and a catalyst in economic development.
- Areas that are highly accessible have better opportunities for economic growth by increasing their market threshold.
- Good transport systems ensure reliable transport of goods increasing investor confidence.
- Diverse goods and services located along the transport network allows for the generation of income by taking advantage of passing traffic.

The proposed Port expansion, when undertaken, will remove the link that Esikhaleni has with the John Ross Highway and create (albeit) strengthen the link between Esikhaleni and the N2 (Vulindlela and Felixton) in a westerly direction. Therefore, the proposed upgrade of the N2 to a dual carriageway will improve capacity for the anticipated increase in traffic flow, as a result of the port expansion.

(d) Approved Structure Plan of the Municipality	YES ✓	NO	Please explain
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In the 1996 Richards Bay Structure Plan the following goal is noted: "To provide a spatial framework, principles, policies, strategies and programmes of action which will ensure that the planning and development of the Core Area of Richards Bay will encourage ongoing, and increased, economic

growth in order to sustain the environmental, physical, social, economic and political well-being of all people within the jurisdiction of the TLC."

(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

In a telecom between Ms. Natasha Lalie of SEF and Ms. Sharin Govender, Project Manager: Environmental Planning of the City of Umhlathuze, Ms. Govender confirmed that an EMF for the Municipality was conducted for the Richards Bay Industrial Development Zone (IDZ) and the Port and did not extend to the study area of the N2.

(f) Any other Plans (e.g. Guide Plan		YES ✓	NO	Please explain
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According to the uMlalazi Municipality Process Plan (2012/2013), the Umlalazi Local Municipality needs to plan, direct and manage its capacity and resources to support the successful implementation of its integrated development planning process and the budget. Most importantly, the Municipality needs to take into account pertinent issues such as introducing change management strategies and organizational development interventions. The reality of limited technical, administrative and operational capacity and resources in Umlalazi demands innovation and the need for greater intergovernmental cooperation between various spheres of government. The uMlalazi process plan is seen as a document that describes how the municipality will develop and implement the integrated development plan through budget in its area of jurisdiction. Therefore, it will have a meaningful bearing on the current IDP document once completed and/or most importantly, it may lead to the process of the development of a new and all-inclusive integrated development planning methodology to plan and actualize future development in uMlalazi area through budgetary allocations.

According to the uMlalazi Municipality Process Plan (2012/2013), the process plan is thus similar to the business plan and deals with the allocation of municipality capacity and resources in support of and serve as a guideline in terms of which uMlalazi Local Municipality will carry out its mandate with regard to integrated development planning.

According to the uMlathuze Municipality Process Plan (2009/2010), the IDP Process set out in writing, requires the adoption by Council. This plan has to include the following:

- A programme specifying the time frames for the different planning steps;
- Appropriate mechanisms, processes and procedures for consultation and
- participation of local communities, organs of state, traditional authorities, and
- other role players in the IDP drafting process;
- An indication of the organisational arrangements for the IDP process;
- Binding plans and planning requirements, i.e. policy and legislation; and
- Mechanisms and procedures for vertical and horizontal alignment.

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)?	YES ✓	NO	Please explain
The upgrade of the N2 is a project undertaken by SANRAL as per the Assessment (TIA) based on future traffic projections. Construction is in 2014 and is in line with the timeframes of the SDF and IDP.	findings ntended	s of the to com	Traffic Impact mence in June
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.)	YES ✓	NO	Please explain
An article on the proposed road upgrade was published in the Zululand Observer on 14 January 2012. There has been positive feedback from the members of the public for the road upgrade. There has been increased traffic on the route over the past few years and a large number of serious accidents have occurred, as a result of overtaking and head-on collisions, since there is no barrier to assist in road safety.			
Being a major route for freight transport, the proposed divided du improving capacity for traffic flow for both heavy-duty and light motor vel	al carria nicles.	ageway	will assist in
The following was extracted from the article in the Zululand Observer dated 14 January 2012: 'Years ago, SANRAL promised that should there be a necessity to upgrade this stretch of road to create a dual carriageway, it would be done,' said Zululand Chamber of Commerce and Industry Empangeni Divisional Chairperson Mike Patterson.			
'It is great that it is finally happening. This route is extremely busy and with the development of Esikhaleni and increased commuters between Mthunzini and Empangeni daily, this timely upgrade is a necessity'.			
'We welcome more that can be done to improve the safety of motorists,' Association Chairperson Wendy Forse.	added N	Vthunzi	ni Residents
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.)	YES	NO ✓	Please explain N/A
This is a road development and does not require municipal services.			

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.)	YES	NO ✓	Please explain
There will be no implication on the infrastructure planning of the municipal occurs on the proclaimed SANRAL road reserve and there will not landowners or municipal services. Wayleave applications with respect powerlines, SASOL pipelines etc will be submitted by SANRAL to the after the service of the serv	ipality sin t be any t to encro fected se	ce the impac bachm rvice p	road upgrade ets on private ent on Eskom roviders.
7. Is this project part of a national programme to address an issue of national concern or importance?	YES	NO ✓	Please explain
To the knowledge of the EAP, this project is not a national programm independent statutory company is responsible to maintain and devel national road network, wherever such needs are identified.	ne. Howe lop South	ver, S n Afric	ANRAL as an a's expanding
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.)	YES ✓	NO	Please explain
The proposed road widening will take place within the proclaimed SANRAL road reserve. Therefore, no other landuses are permissible and the road upgrade project will be executed as planned by SANRAL. The proposed road upgrade is intended to improve the road capacity to acceptable levels. The future port expansion would also require adequate road infrastructure to meet its requirements, and the proposed road upgrade will accommodate the demands for traffic requirements on the N2			
9. Is the development the best practicable environmental option for this land/site?	YES ✓	NO	Please explain
As per the Traffic Impact Assessment (TIA) (Refer to Appendix D4) conducted by UWP Consulting in July 2012, the current traffic conditions are acceptable but by 2027, the N2 from Mtunzini to Empangeni will be highly congested, if the road capacity is not increased. Based on the recommendations of the TIA, and taking into consideration traffic flow and safety conditions, it is recommended that the exiting road be upgraded to a four-lane dual carriageway. In light of the need being indentified to upgrade the N2 from Empangeni to Mtunzini, and in terms of the existing impacts that have occurred as a result of the construction of the existing N2, the proposed road upgrade is the best practicable environmental option for this site.			
The original design for the new northbound carriageway of the N2 (Section 28, km 42.7) and Empangeni T-Junction (Section 29, km accommodate a future dual carriageway. Sufficient land was expropriate therefore, no further land expropriation is likely to be required. The E over the N2 has been constructed with a separate additional opening to carriageway. The Empangeni Interchange layout was also designed carriageway.	between m 13.0) ated at th sikhawin o accomm to acco	Mtunz was o at stag i Intero nodate mmod	tini Toll Plaza carried out to ge (1985) and change Bridge the additional ate the future
The majority of the study area consisted of rehabilitated areas which w	oro distu	rhad d	uring providus

The majority of the study area consisted of rehabilitated areas which were disturbed during previous road construction activities as well as small sections of riparian vegetation and remnant patches of coastal forests. The remainder of the site was classified as transformed and consisted of sugarcane

fields and exotic plantations. Accordingly, areas of high ecological sensitivity included numerous isolated remnants of coastal forest patches as well as two patches of *Barringtonia racemosa* (Brackwater Mangrove) swamp forest. These areas supported fairly high floral and avifaunal species diversity and in many cases provide a corridor for species dispersal through transformed habitats. Plant species recorded in the remnant coastal forest patches included many forest species as well as *Hypoxis hemerocallidea* (Star-Flower) which is currently listed as Declining, and *Barringtonia racemosa* which is a Nationally Protected Tree species. Permits would be required from the Department of Agriculture, Forestry and Fisheries (DAFF: Forestry Directorate) for the removal of the Protected Plants. While no faunal species of conservation concern were recorded in the study area, some of the remnant coastal forest patches supported bird communities indicative of forest interior.

There are no heritage resources on the site for the proposed road upgrade.

The wetlands within the study area are moderately to largely modified as a result of agricultural (mainly cane farming) and forestry practises along the study area. These activities have led to an increase in the susceptibility of the wetlands to erosion.

The moderate Ecological Importance and Sensitivity assigned to the wetlands can primarily be attributed to the moderately modified state of these wetlands through sugarcane cultivation, infrastructure and associated changed to the hydrological and geomorphologic processes that govern the wetland functionality. The high Ecological Importance and Sensitivity assigned to the swamp forest wetlands is as a result of these areas supporting high floral and faunal species diversity and providing natural corridors for faunal species adjacent to the transformed areas. The low Ecological Importance and Sensitivity score assigned to the hillslope seepage wetlands is as a result of the transformed nature of these wetlands with sugarcane cultivation removing all natural vegetation and changing the hydrological and geomorphologic processes within the wetlands. Human benefits were associated with the cultivation of sugarcane within the wetland boundaries, particularly the hillslope seep wetlands, forestry plantations, fishing, hunting and the gathering of natural plant materials, particularly from the swamp forests.

The Wetland impact assessment (Refer to **Appendix D2**) identified destruction of wetland habitat, surface water pollution, and the increase in erosion as potential impacts during the construction and operational periods of the proposed road upgrade. Several specific and general mitigation measures are proposed to mitigate impacts on the wetland. Should the proposed N2 road upgrade be approved, the impact on the channelled, unchannelled and hillslope seepage wetlands and larger downstream aquatic ecosystem would be deemed to be low provided the suggested buffers and mitigation measures outlined in the Wetland Report are adhered to. Further, with regard to the swamp forest areas, the road widening could have an impact on the ecological sensitivity of these areas. In this regard, it is essential to monitor water levels upstream and downstream of the swamp forest areas through the use of piezometers before construction begins, during construction and during the operational phases. Measures must be put in place to ensure that water levels are maintained at preconstruction levels upstream and downstream of the swamp forest areas. A wetland monitoring program should be conducted during the construction phase in order to identify any new degradation impacts on the wetlands and initiate cost effective rehabilitation plans timeously.

An Agricultural Impact Assessment (Refer to **Appendix D6**) was conducted to determine the impact that the proposed road upgrade would have on agricultural activities. The results of the report indicate that there are no compelling agricultural and agribusiness reasons for selecting an alternate route for the proposed road upgrade. Crops growing along the route are mainly outside the road reserve. Where the two main crops, sugar cane and timber are illegally grown within the road reserve,

most of the timber and all of the sugar can be harvested prior to road construction commencing. Both are industrial crops, not food crops. There are small areas of bananas and macadamias that have illegally encroached into the road reserve.

The majority of soils found within the site, pace themselves within the Land Capability Class IV, which is generally unsuitable for annual arable agriculture. According to the findings of the Agricultural Impact Assessment, it is recommended that the proposed widening of the N2 take place within the existing road reserve. The choice of any other route would result in the removal of substantial areas of sugar cane and timber, as well as the relocation of existing homesteads.

An Aquatic Assessment (Refer to **Appendix D5**) was undertaken to characterise the aquatic ecosystem associated with the area of interest. The results of the report have found the Mlalazi Estuary is considered to be of biological importance and regionally unique, in that the estuary is considered to be one of the few estuaries in the region that have salinities similar to that of marine environments, thus supporting a biological assemblage with a strong affinity to higher salinities. In addition, the Mlalazi Estuary is considered deep relative to other KwaZulu-Natal estuaries, which in turn facilitates vertical salinity stratification which drives ecosystem processes such as organic loading and zonation of benthic macroinvertebrates. As such, the seasonal inflow of freshwater into and the sediment dynamics of the estuary are critical for ensuring that the functionality and unique characteristics of the Mlalazi Estuary is considered high.

In addition, the Mhlatuze River in the vicinity of the proposed crossing of the N2 national was determined to be in a moderately impaired state, while further upstream the river was considered to be in a moderately to largely impaired state. However, the reach of the Mhlatuze River presently under study is considered to be of moderate ecological importance, with fish representivity and rarity within the context of the larger secondary catchment considered to be very high, particularly at the lower end of the reach where the estuarine interface is known to support species of conservation importance. Similarly, aquatic macroinvertebrate representivity within the context of the large secondary catchment was considered very high for the present sub-quaternary reach under study, although rarity was only considered to be high. Further, the ecological importance of the riparian and instream zone for vertebrates other than fish was considered to be very high, although the relative diversity of natural riparian vegetation associated with the reach was considered low. Further, the reach is considered to be of very high ecological sensitivity based on fish and aquatic macroinvertebrate species other than fish utilising the riparian or instream habitat to water level fluctuations and flow modifications.

10. Will the benefits of the proposed land use/development	YES	NO	Please explain
outweigh the negative impacts of it?	✓		

Based on the TIA findings, a proposed divided four-lane road will provide benefits in terms of traffic safety, as there are no barriers dividing the northbound and southbound traffic flow, resulting in a number of accidents. Further, the N2 between Mtunzini to Empangeni carries a large proportion of road freight within the province and the proposed road upgrade will be able accommodate the growth in traffic in the future. Therefore, the proposed road upgrade will indirectly facilitate economic growth through the availability of sufficient road infrastructure.

From a social standpoint, the proposed road upgrade falls within the SANRAL road reserve. Sufficient land was expropriated at that stage (1985) and therefore, no further land expropriation is required.

There are no heritage resources within the site for the proposed road upgrade.

From an ecological standpoint, areas of high ecological sensitivity included numerous isolated remnants of coastal forest patches as well as two patches of *Barringtonia racemosa* (Brackwater Mangrove) swamp forest. These areas supported fairly high floral and avifaunal species diversity and in many cases provide a corridor for species dispersal through transformed habitats. Plant species recorded in the remnant coastal forest patches included many forest species as well as *Hypoxis hemerocallidea* (Star-Flower) which is currently listed as Declining, and *Barringtonia racemosa* which is a Nationally Protected Tree species. As such, the removal, thinning or relocation of protected trees will require a permit from the Department of Agriculture, Forestry and Fisheries (DAFF).

The high ecological importance and sensitivity assigned to the swamp forest wetlands is a result of these areas supporting floral and faunal species diversity and providing natural corridors for faunal species adjacent to the transformed areas. There are impacts associated with destruction of the wetland habitat, surface water pollution and the increase in erosion as potential impacts during construction and operation. Should the proposed road upgrade be approved, the impact on the channelled, unchannelled and hillslope seepage wetlands and larger downstream aquatic ecosystem would be deemed to be low provided that the suggested buffers and mitigation measures are adhered to. A 100m buffer from the outer edge of the riparian area is recommended for the Mlalazi River, which has been identified as a Freshwater Ecosystem Priority Area, while a 50m buffer is recommended for the remaining wetland and riparian areas. All buffers should be barricaded and all work, including the dumping of materials, ablutions etc are to be located outside of the relevant buffer areas.

Further, with regard to the swamp forest areas, the road widening could have an impact on the ecological sensitivity of these areas. In this regard, it is essential to monitor water levels upstream and downstream of the swamp forest areas through the use of piezometers before construction begins, during construction and during the operational phases. Measures must be put in place to ensure that water levels are maintained at preconstruction levels upstream and downstream of the swamp forest areas. A wetland monitoring program should be conducted during the construction phase in order to identify any new degradation impacts on the wetlands and initiate cost effective rehabilitation plans timeously.

From an aquatic standpoint, the Mlalazi Estuary is considered to be of biological importance and regionally unique, in that the estuary is considered to be one of the few estuaries in the region that have salinities similar to that of marine environments, thus supporting a biological assemblage with a strong affinity to higher salinities.

11. Will the proposed land use/development set a precedent for similar activities in the area (local municipality)?	YES	NO ✓	Please explain
The upgrade of road networks within local municipal jurisdiction will be conducted on a case-by-case basis and dependent on the outcome of specialist TIA's per site where the need for road improvements have been identified.			
12. Will any person's rights be negatively affected by the proposed activity/ies?	YES	NO ✓	Please explain
The proposed road upgrade occurs within the SANRAL road re expropriation is required. During the Public Participation Process, the (Northbound) raised a comment that there must be no negative impa- Coast 1-Stop. In an email dated 11 February 2013. SEE responded that	eserve a e North C act on bu t entranc	nd no Coast 1 Usiness e to th	o further land I- Stop Engen s at the North e site must be

clear and open at all times and stringent safety measures must be implemented at the access and exit points to and from the filling station during construction.

The rights of landowners adjacent to the proposed road upgrade and passing motorists may be impacted by social issues such as noise, dust pollution and increased traffic during the construction phase.

13. Will the proposed activity/ies compromise the "urban edge" as defined by the local municipality?	YES	NO ✓	Please explain
Refer to Point 2(b) herein.			

14. Will the proposed activity/ies contribute to any of the 17	VES	NO	Please evolain
Strategic Integrated Projects (SIPS)?	1L0	✓	

The proposed road upgrade is not an SIP project, however it may contribute towards the SIP 2: Durban- Free State– Gauteng Logistics and Industrial Corridor.

The Mtunzini – Empangeni Road upgrade will strengthen the logistics and transport corridor between SA's main industrial hubs (Port of Richards Bay and Durban) and improve access to Durban's export and import facilities by the introduction of the dual carriageway.

The proposed development is arguably aligned with SIP 6. SIP 6 is known as the Integrated Municipal Infrastructure Project. This seeks to develop a national capacity to assist the 23 least resourced districts (17 million people) to address all the maintenance backlogs and upgrades required in water, electricity and sanitation bulk infrastructure. An important element of SIP 6 is the road maintenance programme which will enhance the service delivery capacity thereby impacting positively on the population.

15. What	will	the	benefits	be	to	society	in	general	and	to	the	local	Please explain
comm	unitie	es?											

The project will benefit the local community through improved capacity on the N2. Please refer to the motivation below.

An article on the proposed road upgrade was published in the Zululand Observer on 14 January 2014. There has been positive feedback from the members of the public for the road upgrade. There has been increased traffic on the route over the past few years and a large number of serious accidents have occurred, as a result of overtaking and head-on collisions, since there is no barrier to assist in road safety.

Being a major route for freight transport, the proposed dual carriageway will assist in improving capacity for traffic flow for both heavy-duty and light motor vehicles.

The following was extracted from the article in the Zululand Observer dated 14 January 2014:

'Years ago, SANRAL promised that should there be a necessity to upgrade this stretch of road to create a dual carriageway, it would be done,' said Zululand Chamber of Commerce and Industry Empangeni Divisional Chairperson Mike Patterson.

'It is great that it is finally happening. This route is extremely busy and with the development of

Esikhaleni and increased commuters between Mthunzini and Empangeni daily, this timely upgrade is a necessity'.

'We welcome more that can be done to improve the safety of motorists,' added Mthunzini Residents Association Chairperson Wendy Forse.

The project will benefit society in general, as the proposed divided four lane dual carriageway will have safety benefits to motorists using the road. The installation of physical barriers would eliminate the potential for head-on collisions. The four-lane dual carriageway facility will improve the capacity of the N2 between Mtunzini and Empangeni, thereby improving the level of service and traffic flow

...

16. Any other need and desirability considerations related to the proposed activity?	Please explain
The Preliminary Traffic Assessment on National Route 2 (N2) (Refer to Append	ix D4) between
Mtunzini Toll Plaza and Empangeni T-Junction was carried out by UWP Consulting (Pty) Ltd in order
to ascertain future upgrading requirements. This assessment was undertaken using	g the simulation
software developed by SANRAL in conjunction with the SANRAL Highway Traffic M	Model. The data
used as input for the model was assembled from the following sources:	
Troffic counts from troffic loggers clong the route and	

• Traffic counts from traffic loggers along the route and,

.

 Geometric information of the existing route which was obtained from the original design construction drawings.

The information below is extracted from the Preliminary Traffic Assessment.

The traffic data indicates that the current highest traffic volumes (12,000 vehicles per day) are experienced on the section between the Esikhawini Interchange and the Empangeni Interchange. The section between the Empangeni Interchange and the R102 / N2 T-Junction currently enjoys the lowest volumes (3,500 vehicles per day) while the section between the Mtunzini Interchange and the Esikhawini Interchange currently has traffic volumes in the order of 8,500 vehicles per day. Of interest is that the section of the N2 just north of the R102 / N2 T-Junction currently carries fairly high traffic volumes at 10,000 vehicles per day.

The analysis of the traffic data was undertaken for three possible scenarios and the results reported as levels of services, where a Level of Service A, represents free flow traffic conditions through to a level of Service F, which represents high congestion levels. The first analysis was carried out using the existing geometry of the route and using current traffic levels, estimated traffic volumes in 10 years time, and estimated traffic in 15 years time, all with a relatively low growth rate of 2.5 % per annum.

The following results were determined:

 Traffic conditions are currently acceptable, but will deteriorate in 10 years time with 10 % of the route congested in the 15 years time frame.

In the second analysis, the proposed four-lane geometry throughout this route was assessed using the estimated traffic volumes in 15 years' time (Year 2027) and in 25 years' time (Year 2037). Separate analyses were undertaken for a moderate traffic growth rate (4.5% per annum) and a high traffic growth rate (6.0% per annum).

The following was found:

-

- If traffic volumes increased at 4.5 % per annum for the next 25 years, the traffic conditions along the entire route would be acceptable; and
- If traffic grows at 6.0 % per annum, the section between the Esikhawini Interchange and Empangeni Interchange would experience congestion by Year 2037.

In the third analysis, an alternative cross section consisting of four lanes along the whole route except between the Esikhawini Interchange and the Empangeni Interchange, where six lanes were introduced, was simulated. This analysis was undertaken allowing for a traffic growth rate of 6 % per annum.

The following was found:

- This alternative geometry results in acceptable operating conditions along the whole route in the Year 2037, even at the high assumed traffic growth rate of 6.0 % per annum; and
- It should be noted however that it is unlikely that such a high traffic growth rate would be
 experienced for a 25 year period. Further, given the fact that traffic between Esikhawini and
 Empangeni / Richards Bay contains many commuter trips, the 2037 demand on the freeway
 could be lower than estimated if certain other parallel provincial and municipal roads were to
 be upgraded during the 25 year period.

SANRAL policy reviewed during the course of this traffic assessment, together with research from other international sources (NHCRP Report 633), indicates the preference of a divided four-lane road over an undivided road, primarily due to benefits in safety. It is further noted that the presence or absence of a median does not significantly affect the capacity of a four-lane road.

The recommendation of this preliminary traffic assessment is that the existing road be upgraded to a four-lane dual carriageway, based on traffic flow and safety considerations.

17. How does the project fit into the National Development Plan for 2030?	Please explain
The project will in some way, broaden the opportunities through economic growth an	d the availability

The project will in some way, broaden the opportunities through economic growth and the availability of jobs.

The National Development Plan for 2030 aims to improve and expand infrastructure, create jobs and provide education and trainings for local communities. Furthermore, it seeks to transform urban and rural spaces through the improvement of public transport.

The proposed development would provide employment opportunities for members of the local community during the construction and operational phases of the project, thereby providing local economic benefit for currently unemployed people. It would also allow people the opportunity for skills development.

Thus in the EAPs opinion, the project does indeed fit into the National Development Plan for 2030.

18. Please describe how the general objectives of Integrated Environmental Management as set out in section 23 of NEMA have been taken into account.

There are various biophysical, social and economic impacts that may be impacted as result of the proposed development (refer to Section D of the Draft BAR). The procedure/methodology for the identification, prediction and evaluation of the actual and potential impact on the environment, the risks and consequences and alternatives and options for mitigation of activities, are as per the Section 31(2)(h) of GNR No. 543 of the NEMA, 1998 as amended and the EIA Regulations of 2010. Refer to **Appendix F** for the methodology that was undertaken for the assessment of impacts. Various mitigation measures for each of the identified impacts are provided in Section D and **Appendix F** (Impact assessment) of the Draft BAR and the EMPr (**Appendix G**). These mitigation measures are aimed at ensuring that the effects of activities on the environment receive adequate consideration before actions are taken in connection with them; with a view to minimizing negative impacts and maximizing benefit, and promoting compliance with the principles of environmental management set out in section 2 of NEMA.

The Public Participation Process (PPP) has been conducted in accordance with Chapter 6 of NEMA, 1998 (Act N0. 107 of 1998) as amended and the EIA Regulations of 2010 to ensure an open and transparent process and adequate representation from 'organs of state', adjacent landowners, Non-Governmental Organisations, National Authorities, Provincial Authorities, Local Authorities, Ward

Councillors, Parastatal/ Service Providers and local forums/ unions.

It is envisaged that the Draft BAR will provide the above stakeholders with adequate information for them to make an informed decision of the proposed development and the impacts it may have on the receiving biophysical and socio-economic environment. Comments from stakeholders on the Draft BAR will be incorporated into a Comments and Responses Report (CRR) that will be included in the Final BAR for public review. The Department of Environmental Affairs (DEA), as decision-makers will issue an Environmental Decision on whether or not the proposed development may proceed.

19. Please describe how the principles of environmental management as set out in section 2 of NEMA have been taken into account.

A Preliminary Traffic Impact Assessment (Refer to **Appendix D4**) was undertaken to determine the future traffic growth and the capacity of the existing N2 between the Mtunzini Toll Plaza to the Empangeni T-Junction using the SANRAL Highway Traffic Model. Based on the current two-lane geometry with alternating passing lanes, the estimated traffic in 2012, the estimated traffic in 10 year's time and the estimated traffic in 15 year's time was assessed. The traffic was estimated to grow at a relatively low rate of 2.5% per annum. The following was found:

- Traffic conditions are acceptable in the current year but show a deterioration in 10 years time. By 2027, 10% of this road will be highly congested if the road capacity is not increased;
- The deterioration in traffic conditions is evident on the three-lane option, in the direction with one lane; and
- The segment of this road between Esikhawini Interchange and Empangeni Interchange indicates a severe deterioration in operating conditions in 15 year's time as it carried the most traffic.

The TIA revealed that along the entire road, wherever there is a three- lane segment, the level of service is worst in the single lane direction. However, in the base year, levels of service along the whole route are acceptable to approaching capacity.

Even at a low traffic growth rate of 2.5%, there is a need to upgrade at least the portion between the Esikhawini Interchange and the Empangeni Interchange to a four-lane facility by 2027. it would therefore be prudent to provide a four-lane facility along the entire route, so that if the traffic grows at even a moderate rate of 4.5%, it can be accommodated. Based on traffic flow and safety considerations, it is recommended that the existing road be upgraded to a four-lane dual carriageway.

Environmental Authorisation (EA) is therefore required by way of the Basic Assessment Process to proceed with the construction of the proposed dual carriageway. Various specialist studies were undertaken such as the above TIA to ensure that the proposed road geometry and layout leads to an improved level of service and ensures safety conditions are met.

An Ecological Assessment (Refer to **Appendix D1**) was undertaken to determine the dominant floral and faunal species occurring in the study area, including floral composition and structure. The study confirmed that there are no sensitive, threatened, endemic, rare or protected animal species on site. However, there are Protected Plant Species i.e. *Barringtonia racemosa, Hypoxis hemerocallidea* and *Adenia gummifera* present within the study area and therefore, a permit from the KZN DAFF is

required together with a rehabilitation plan where the plants will be re-established or rescued and relocated to a suitable site.

A Wetland Delineation and Functional Assessment (Refer to **Appendix D2**) was undertaken to delineate and classify in terms of the Present Ecological State (PES) as well as the Ecological Importance and Sensitivity wetland and riparian areas within the study area. The high ecological importance and sensitivity assigned to the swamp forest wetlands is a result of these areas supporting floral and faunal species diversity and providing natural corridors for faunal species adjacent to the transformed areas. There are impacts associated with destruction of the wetland habitat, surface water pollution and the increase in erosion as potential impacts during construction and operation. Should the proposed road upgrade be approved, the impact on the channelled, unchannelled and hillslope seepage wetlands and larger downstream aquatic ecosystem would be deemed to be low provided that the suggested buffers and mitigation measures are adhered to. A 100m buffer from the outer edge of the riparian area is recommended for the Mlalazi River, which has been identified as a Freshwater Ecosystem Priority Area, while a 50m buffer is recommended for the remaining wetland and riparian areas. All buffers should be barricaded and all work, including the dumping of materials, ablutions etc are to be located outside of the relevant buffer areas.

Further, with regard to the swamp forest areas, the road widening could have an impact on the ecological sensitivity of these areas. In this regard, it is essential to monitor water levels upstream and downstream of the swamp forest areas through the use of piezometers before construction begins, during construction and during the operational phases. Measures must be put in place to ensure that water levels are maintained at preconstruction levels upstream and downstream of the swamp forest areas. A wetland monitoring program should be conducted during the construction phase in order to identify any new degradation impacts on the wetlands and initiate cost effective rehabilitation plans timeously.

An Aquatic Assessment (Refer to **Appendix D5**) was undertaken to characterise the aquatic ecosystem associated with the area of interest. Based on the results of the present study, it could be determined that the proposed crossing of the N2 national road over the Mlalazi Estuary is within the estuarine functional zone. The results of the report have found the Mlalazi Estuary is considered to be of biological importance and regionally unique, in that the estuary is considered to be one of the few estuaries in the region that have salinities similar to that of marine environments, thus supporting a biological assemblage with a strong affinity to higher salinities. In addition, the Mlalazi Estuary is considered deep relative to other KwaZulu-Natal estuaries, which in turn facilitates vertical salinity stratification which drives ecosystem processes such as organic loading and zonation of benthic macroinvertebrates. As such, the seasonal inflow of freshwater into and the sediment dynamics of the estuary are critical for ensuring that the functionality and unique characteristics of the estuary are maintained. Accordingly, the ecological importance and ecological sensitivity of the Mlalazi Estuary is considered high.

In addition, the Mhlatuze River in the vicinity of the proposed crossing of the N2 national was determined to be in a moderately impaired state, while further upstream, the river was considered to be in a moderately to largely impaired state. However, the reach of the Mhlatuze River presently under study is considered to be of moderate ecological importance, with fish representivity and rarity within the context of the larger secondary catchment considered to be very high, particularly at the lower end of the reach where the estuarine interface is known to support species of conservation importance. Similarly, aquatic macroinvertebrate representivity within the context of the large secondary catchment was considered very high for the present sub-quaternary reach under study, although rarity was only considered to be high. Further, the ecological importance of the riparian and

instream zone for vertebrates other than fish was considered to be very high, although the relative diversity of natural riparian vegetation associated with the reach was considered low. Further, the reach is considered to be of very high ecological sensitivity based on fish and aquatic macroinvertebrate sensitivity to physico-chemical and flow alteration, as well as the sensitivity of the riparian zone and vertebrate species other than fish utilising the riparian or instream habitat to water level fluctuations and flow modifications.

The Heritage Impact Assessment (Refer to **Appendix D3**) confirmed that there were no heritage resources within the study area. However, should any heritage resources, become exposed during excavation activities (*construction phase*) then construction must stop immediately and Amafa KwaZulu-Natal must be contacted. Any archaeological sites exposed construction activities must not be disturbed prior to authorisation by Amafa.

An Agricultural Impact Assessment (Refer to **Appendix D6**) was conducted to determine the impact that the proposed road upgrade would have on agricultural activities. The results of the report indicate that there are no compelling agricultural and agribusiness reasons for selecting an alternate route for the proposed road upgrade. Crops growing along the route are mainly outside the road reserve. Where the two main crops, sugar cane and timber are illegally grown within the road reserve, most of the timber and all of the sugar can be harvested prior to road construction commencing. Both are industrial crops, not food crops. There are small areas of bananas and macadamias that have illegally encroached into the road reserve.

The majority of soils found within the site, pace themselves within the Land Capability Class IV, which is generally unsuitable for annual arable agriculture. According to the findings of the Agricultural Impact Assessment, it is recommended that the proposed widening of the N2 take place within the existing road reserve. The choice of any other route would result in the removal of substantial areas of sugar cane and timber, as well as the relocation of existing homesteads.

The Public Participation Process (PPP) has been conducted with the principal objective of achieving equitable and effective participation of all Interested and Affected Parties (I&Aps) to make them better informed and enrich their decision-making. Public Participation is aimed at ensuring participation by all I&Aps, which includes any person, group of persons or organization and any organ of state that may have jurisdiction over any aspect of the activity and is aware of the proposed development and have the opportunity to comment on the project and the Draft BAR. The social interests of the above parties will be accommodated through the PPP and concerns raised through this process will be addressed in the forthcoming Final BAR that will be available for public review to registered I&Aps. Refer to the procedure undertaken for the PPP in Section C of the Draft BAR. The Department of Environmental Affairs (DEA) will make a decision and grant or refuse authorisation (in terms of the National Environmental Management Act, Act No. 107 of 1998) – Regulations 35(1)(a) and 35(1)(b) respectively). All registered I&AP's will be notified of the decision (i.e. Environmental Authorisation). This notification will also detail the appeal procedure should I&Aps disagree with the decision. There are various other legislations that are applicable to the proposed development and are discussed in Section A, Point 11 of the Draft BAR.

The various 'organs of state' will be given an opportunity to comment on the Draft BAR for 40 days as per Regulation 56(9) (b) of the National Environmental Management Act, 1998 (Act No. 107 of 1998) as amended and the EIA Regulations of 2010.

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	Applicability to the project	Administering	Date
or guideline		authority	
South African Constitution, 1996 (Act No. 108 of 1996) is the supreme law of the land. The Constitution states that the people of South Africa have the right to an environment that is not detrimental to human health, and imposes a duty on the state to promulgate legislation and to implement policies to ensure that this right is upheld.	The receiving environment, including the rights of individuals must not be compromised by the proposed development.	National	4 February 1997
National Environmental Management Act, 1998 (Act No. 107 of 1998)	The DEA is the Competent Authority (CA) since the applicant, SANRAL is a Parastatal. The DEA will issue a decision on the EA.	National & Provincial	27 November 1998
Environmental Impact Assessment Regulations, 2010, Government Notice No. 543 and 544	There are listed activities as per the R544 (Listing Notice 1) that are triggered by the proposed development.	Department of Environmental Affairs	18 June 2010
National Water Act, 1998 (Act No. 36 of 1998)	Water abstraction from the Umlalazi and Umhlathuze Rivers triggers Section 21(a) taking water from a water resource. The expansion of the existing Umhlathuze and Umlalazi River Bridges triggers Section 21I(Altering the beds and banks of a watercourse and 21(i) (impeding or diverting the flow of water in a watercourse) of the NWA.	Department of Water Affairs	1998
Occupational Health and Safety Act (OHSA) No. 85 of 1993 Department of Labour 1993	Construction-related activities must be carried out with circumspection to provide for the health and safety of persons at work and for the health and safety of the general public in close	Department of Labour	1993

	proximity to the construction site.		
National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004)	The KwaZulu-Natal Coastal Belt ecosystem occurs within the study area and is currently listed as Vulnerable in terms of Section 52 of NEMBA (Government Gazette, 2009).	KZN Department of Agriculture, Forestry and Fisheries (DAFF)	2004
National Heritage Resources Act, 1999 (Act No. 25 of 1999)	A Cultural and Heritage Impact Assessment was conducted since the proposed road upgrade is a linear development exceeding 300 metres in length. The HIA revealed that there are no heritage sites that will be affected by the proposed development.	Amafa KwaZulu-Natal	1999
Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983) (CARA)	Numerous alien species were recorded throughout the study area which included falling within Category 1b i.e. <i>Camuloclinium</i> macrocephalum (Pom Pom weed), Centella asiatica (Marsh Pennyworth), Senna septemtrionalis, Schinus terebinthifolius (Brazilian Pepper Tree), Solanum mauritianum (Bugweed), Chromolaena odorata (Paraffin Weed), Lantana camara (Common Lantana) and Caesalpinia decapetala (Mauritius Thorn) and Eucalyptus spp., falling under Category 2 of the CARA.	KZN Department of Agriculture, Forestry and Fisheries (DAFF)	1983
Promotion of Access to Information Act, 2000 (Act No. 2 of 2000)	The Draft BAR has been made available for public review through the Public Participation Process to ensure that Interested and Affected Parties (I&Aps) have access to information that enables them to exercise and protect their rights, through an open and transparent process.	Department of Justice and Constitutional Development	2000
The National Forest Act, 1998 (Act No. 84 of 1998)	Barringtonia racemosa (Brackwater Mangrove) which is nationally and provincially	KZN Department of Agriculture, Forestry and Fisheries (DAFF)	1998

			· · · · · · · · · · · · · · · · · · ·
	Protected was recorded within the study area and permits for the relocation, removal, thinning and destruction of this species will be required.		
	<i>Hypoxis hemerocallidea</i> (Star Flower) and <i>Adenia gummifera</i> (Green-stem) are plants of conservation concern that occur on the site. Removal of these plants will require a permit and should be accompanied by either a rehabilitation plan where the plants will be re-established or the plants should be rescued and relocated at a suitable site.		
The Minerals and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002)	A borrow pit near the Esikhawini Interchange is proposed and G10 fill material from this site will be used for the proposed road construction. A permit from Department of Mineral Resources is currently underway for the proposed borrow pit.	Department of Mineral Resources	2002
Integrated Coastal Zone Management Ac, 2008 (Act. No. 24of 2008	The Umlalazi Estuary and Umhlathuze Rivers will be affected by this upgrade.	Dept. of Environmental Affairs KZN Dept. of Agriculture and Environmental Affairs	2008

12. WASTE, EFFLUENT, EMISSION AND NOISE MANAGEMENT

a) Solid waste management

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

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



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

Solid waste shall be stored within a designated area in a covered, tip proof waste skip for collection and disposal. A refuse control system shall be established for the collection and removal of refuse to the satisfaction of the engineer. Disposal of solid waste shall be at a licensed landfill site. No waste shall be burnt or buried at or near the site.

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

Waste will be disposed of at the Uthungulu Regional Landfill Site

Will the activity produce solid waste during its operational phase?

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

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

N/A

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?

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. N/A

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

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?

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

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

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. N/A

f	YES	NO ✓
		N/A m ³
	VEQ	NO
	IES	

YES	NO ✓

YES

NO

NO

m³

YES

NO

1

YES

YES

N/A

35

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

If VES provide the particulars of the facility:

11120, provide the particulars of the r	aomy.	
Facility name:	N/A	
Contact		
person:		
Postal		
address:		
Postal code:		
Telephone:	Cell:	
E-mail:	Fax:	

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

ļ	N/A		

c) Emissions into the atmosphere

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

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

YES	NO
	\checkmark
YES	NO
N/A	

NO

YES

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:

Dust and exhaust emissions will be produced during the construction phase. The volumes cannot be determined at this stage. This impact is likely to be of a very small scale should appropriate dust control management practices and procedures be implemented. Vehicle emissions will emanate from construction vehicles (diesel fumes). However, the ambient vehicle emissions within the study area are high, being a National Road in frequent use.

d) Waste permit

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

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?

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

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. If NO, describe the noise in terms of type and level:

Construction activity and increased traffic will generate noise that will be of a temporary nature during the construction phase of the proposed development. Maintenance vehicles could generate noise during the operational phase. The waste removal trucks will be removing waste on a daily basis during the construction phase.

13. WATER USE

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

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

4 583m ³ per	
month	
YES ✔	NO

use license) from the Department of Water Affairs? If YES, please provide proof that the application has been submitted to the Department of Water Affairs.

Water will be abstracted from the Mlalazi Estuary and the Mhlatuze River for use during the construction phase of the project. Approximately 4 583m³ of water would be required per month. Potable water cannot be utilised for the construction phase so abstraction from the rivers is needed. Discussions are currently underway with a neighbouring farmer to confirm whether SANRAL would be able to utilise part of their existing WULA. This will be reported on in the Final BAR.

The Department of Water (DWA) have confirmed that the abstraction of 4 583m³ from the Mlalazi Estuary and the Mhlatuze River is above the limit requiring registration, and thus the Applicant cannot abstract water until the necessary approvals from DWA are in place.

14. ENERGY EFFICIENCY

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

The construction activity will not be reliant on electricity.

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

The need to remove excavated material to spoil sites is being limited by utilizing suitable material as backfill during construction of the proposed road upgrade between Mtunzini and Empangeni.
SECTION B: SITE/AREA/PROPERTY DESCRIPTION

Important notes:

1. 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):

- 2. Paragraphs 1 6 below must be completed for each alternative.
- 3. 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	Province	KwaZulu-Natal
description/physi	District	Uthungulu District Municipality
cal address:	Municipality	
	Local Municipality	Umlalazi and Umhlathuze Local Municipality
	Ward Number(s)	5, 12, 19, 23 and 26
	Farm name and	LOT 104 UMLALAZI 13853
	number	THE FARM FELIXTON 17401
		LOT 103 UMLALAZI 13880
		LOT 114 UMHLATUZI No. 13453
		NUWERS 15242
		LOT 131 UMLALAZI 14098
		GAGE 16695
		RUTH 16833
		MZINEWENYA RAIL 16837
		RICHARD 16802
		BIRKETT 16832
	Portion number	Portion 3 and Rem of Birkett 16832
		Portion 4 and Rem of Lot 104 Umlalazi 13853
		Portion 8 and Rem of the Farm Felixton 17401
		Portion 2 and Rem of Lot 103 Umlalazi 13880
		Portion 5 and Rem of Lot 114 Umhlatuzi 13453
		Portion 1 and Rem of Nuwers 15242
		Portion 1 of Mzingwenya Rail 16837
		Portion 1 of Ruth 16833
		Portion 1 and Rem of MZINEWENYA RAIL 16837
		Portion 1 and Rem of RICHARD 16802
		BIRKETT 16832
		Rem of GAGE 16695 and Portion 4 of
		Portion 1 and Rem of RUTH 16833
		Portion 3, Portion 30 and Rem of Lot 131 Umlalazi
		14098
	SG Code	N0GU0000001385300000

	N0GU0000001740100000
	N0GU0000001388000000
	N0GU0000001345300000
	N0GU0000001524200000
	N0GU0000001409800000
	N0GU0000001669500000
	NOCI 10000001683300000
	NOCU000001683700000
	N0GU000001683700000
	N0G0000001880200000
	N0GU0000001683200000
	N0GU000001669500004
	N0GU0000001510500001
	N0GU0000001680200001
	N0GU0000001683200003
	N0GU0000001683300001
	N0GU0000001683700001
	N0GU0000000135300005
	N0GU0000001740100008
	N0GU0000001146400003
	N0GU0000001142300001
	N0GU0000001141600004
	N0GU0000001345300005
	N0GU0000001524200001
	N0GU0000001388000002
	N0GU0000001385300004
	N0GU0000001409800003
	N0GU0000001409800030
	N0GV04210001146400000
	NGV04210001566200000
	NOCV04210001145600007
	NOGV04210001143600007
	N0GV04210001141600000
	NUGVU4210001494300000
	NUGV04210001566200001
	NUGV04210001566900000
	N0GV04210001145100013
	N0GV04210001145600006
	N0GV04210001145600004
	N0GV04210001494300002
	N0GV04210001566200002
	N0GV04210001142100005
	N0GV04210001141900003
	N0GV04210001142200003
	N0GV04210001152800001
	N0GU02220000105200000
	N0GV04210001145800005
	N0GV04210001152800000
	N0GV04210001142300000
	N0GV04210001145100011

N0GV04210001141600000
N0GV04210001494300000
N0GV04210001566200001
N0GV04210001566900000
N0GV04210001145100013
N0GV04210001145600006
N0GV04210001145600004
N0GV04210001494300002
N0GV04210001566200002
N0GV04210001142100005
N0GV04210001141900003
N0GV04210001142200003
N0GV04210001152800001
N0GU02220000105200000

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: SANRAL 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
	\checkmark

1. GRADIENT OF THE SITE

Indicate the general gradient of the site.

Alternative S1:

Flat	1:50 – 1:20	1:20 – 1:15	1:15 – 1:10	1:10 – 1:7,5	1:7,5 – 1:5	Steeper
Alternative S2	2 (if any):					
Flat	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
Alternative S3	B (if any):					
Flat	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

2. LOCATION IN LANDSCAPE

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

- 2.1 Ridgeline
- 2.2 Plateau
- 2.3 Side slope of hill/mountain

2.5 Open valley 2.6 Plain

2.7 Undulating plain / low hills
2.8 Dune
2.9 Seafront

3. **GROUNDWATER, SOIL AND GEOLOGICAL STABILITY OF THE SITE**

2.4 Closed valley

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

Shallow water table (less than 1.5m deep)

Dolomite, sinkhole or doline areas

Seasonally wet soils (often close to water bodies)

Unstable rocky slopes or steep slopes with loose soil

Dispersive soils (soils that dissolve in water)

Soils with high clay content (clay fraction more than 40%)

Any other unstable soil or geological feature

An area sensitive to erosion

Alterna	tive S1:	Alterna (if any):	tive S2	Alterna (if any):	tive S3
YES	NO ✓	YES	NO	YES	NO
YES	NO ✓	YES	NO	YES	NO
YES ✓	NO	YES	NO	YES	NO
YES	NO ✔	YES	NO	YES	NO
YES	NO ✔	YES	NO	YES	NO
YES	NO ✔	YES	NO	YES	NO
YES	NO ✔	YES	NO	YES	NO
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 site is underlain by the following geological types viz, arenite, sedimentary, tillite, granite and alluvial along the 33km of the study area (refer to the Geological Map in Appendix A6).

4. GROUNDCOVER

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 -	Natural veld with scattered aliens ^E	Natural veld with heavy alien	Veld dominated by alien species ^E	Gardens
good condition ^E	\checkmark	infestation ^E	 ✓ 	

BASIC ASSESSMENT REPORT

	Sport field	Cultivated land ✓	Paved surface	Building or other structure	Bare soil
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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.

An Ecological Assessment was conducted by Strategic Environmental Focus (Pty) Ltd (refer to **Appendix D1**). The majority of the study area consisted of rehabilitated areas which were disturbed during previous road construction activities as well as small sections of riparian vegetation and remnant patches of coastal forests. The remainder of the site was classified as transformed and consisted of sugarcane fields and exotic plantations.

Accordingly, areas of high ecological sensitivity included numerous isolated remnants of coastal forest patches as well as two patches of *Barringtonia racemosa* (Brackwater Mangrove) swamp forest. These areas supported fairly high floral and avifaunal species diversity and in many cases provide a corridor for species dispersal through transformed habitats. Plant species recorded in the remnant coastal forest patches included many forest species as well as *Hypoxis hemerocallidea* (Star-Flower) which is currently listed as Declining, and *Barringtonia racemosa* which is a Nationally Protected Tree species.

5. SURFACE WATER

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 ✓	NO	UNSURE
Seasonal Wetland	YES ✓	NO	UNSURE
Artificial Wetland	YES	NO Ý	UNSURE
Estuarine / Lagoonal wetland	YES ✓	NO	UNSURE

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

To accommodate the proposed construction of the dual carriageway along the N2, the existing bridges over the Umlalazi River and the Umhlatuze River will be expanded/widened.

The Mlalazi River and its associated riparian and wetland areas have been categorised as a FEPA wetland area. The Mlalazi Estuary is considered to be of biological importance and regionally unique, in that the estuary is considered to be one of the few estuaries in the region that have salinities similar to that of marine environments, thus supporting a biological assemblage with a strong affinity to higher salinities. In addition, the Mlalazi Estuary is considered deep relative to other KwaZulu-Natal estuaries, which in turn facilitates vertical salinity stratification which drives ecosystem processes such as organic loading and zonation of benthic macroinvertebrates. As such, the seasonal inflow of freshwater into and the sediment dynamics of the estuary are critical for ensuring that the functionality and unique characteristics of the estuary are maintained. Accordingly, the ecological importance and ecological sensitivity of the Mlalazi Estuary is considered high.

Three HGM types were delineated and classified into twenty two different HGM units within the study area. These included valley bottom wetlands with a channel, unchannelled valley bottom wetlands and hillslope seepage wetlands connected to a watercourse. Two riparian areas associated with the Mlalazi River and Mhlatuze River were also delineated. It should be clearly understood, however, that identified wetland areas provided are only representative of those wetlands associated with the area under study (i.e. approximately 150m on either side of the N2 road), and form part of much larger systems that were not verified in their totality as part of the present study.

Please see the Wetland Report in Appendix D2, for maps illustrating wetland types.

Unchannelled Valley Bottom Wetlands

HGM 1, HGM 2, HGM 17 and HGM 21 were delineated as unchannelled valley bottom wetlands. These wetlands are generally characterised by their location on the valley floors and are formed when a river channel loses confinement and spreads out over a wider area causing a diffuse flow. Ecosystem services generally provided by unchannelled valley bottom wetlands relate to erosion control, sediment and toxicant trapping, as well as flood attenuation, phosphate and nitrate trapping to a lesser degree.

The unchannelled valley bottom wetlands were determined to be moderately modified (PES Category C; Table 4 of the Wetland Report) and have some loss of natural habitats and basic ecosystem functions. Modifications to this system are predominantly related to the cultivation of sugar cane within these wetlands. Artificial herring-bone drainage channels have also been created in the wetland areas to dry-out the land to make it more suitable for the cultivation of sugar. These channels will increase the movement of sediment in the wetland as water is channelled down specific paths changing its diffuse flow pattern. The movement of sediment ultimately leads to the formation of erosion gullies. The presence of the N2 road within these wetlands has also increased the velocity of run-off entering the wetland leading to further erosion problems.

Within the unchannelled valley bottom wetlands, HGM 10 to HGM 14 were identified as Swamp forest areas and support the *Barringtonia racemosa* (Brackwater Mangrove) species. Swamp forests are a community of trees occurring in soils that are inundated with water. These wetlands are predominantly fed by groundwater that is close to or at the surface of the ground (Ollis et al., 2013). The swamp forest wetland areas identified along the N2 were classified as moderately modified (PES

Category C; Table 4 of the Wetland Report), due to the impact that forestry activities have had on the whole area and the resultant separation of these areas by plantations. However, the swamp forests still retain a number of functions relating to flood attenuation, sediment trapping, phosphate, nitrate and toxicant trapping and erosion control. They are regarded as being sensitive areas and provide corridors for faunal species between surrounding transformed areas.

Channelled Valley Bottom Wetlands

HGM 18, HGM 19 and HGM 20 were delineated as channelled valley bottom wetlands. These wetlands are valley bottom wetlands with a river channel running through them. Dominant water inputs to these wetlands are from the river channel flowing through the wetland either as surface flows resulting from flooding or as subsurface flow and/or from adjacent valley side slopes (Ollis et al., 2013). The ecosystem services generally provided channelled valley bottom wetlands are related to erosion control, and flood attenuation, sediment trapping, phosphate, nitrate and toxicant removal to a certain extent.

The channelled valley bottom wetlands were determined to be largely modified (PES Category D, Table 4 of the Wetland Report), with the exception of HGM 19 which was classified as moderately modified (PES Category C; Table 4 of the Wetland Report). Modifications to these wetland systems are again related to the cultivation of sugar cane and its associated impact on the functionality of the wetlands. Stream channel modifications, artificial drainage and the removal of indigenous vegetation have all lead to the degradation of these wetlands. The presence of the N2 road traversing these wetlands has also increased the velocity of run-off entering the wetland leading to further erosion problems.

Hillslope Seepage Wetlands Connected to a Watercourse

The majority of wetlands delineated were categorised as hillslope seepage wetlands connected to a watercourse. This includes HGM 3, HGM 4, HGM 5, HGM 6, HGM 7, HGM 8, HGM 9, HGM 15, HGM 16 and HGM 22. Hillslope seeps are wetlands located on gently to steeply sloped land. Water inputs to these wetlands are primarily via subsurface flows from an upslope direction. Water movement through the wetland is generally in the form of interflow, with diffuse overland flow often being significant after rainfall events (Ollis et al., 2013). Ecosystem services generally supplied by hillslope seepage wetlands include erosion control, nitrate and toxicant trapping and flood attenuation and streamflow regulation to a lesser extent.

Most of the wetlands were recorded to be largely modified (PES Category D; Table 4 of the Wetland Report) with several hillslope seepage wetlands recorded as moderately modified (PES Category C). Modifications to these wetlands are related to sugar cane cultivation and forestry plantations which have encroached into wetland areas. The associated effects of these modifications include the desiccation of wetlands due to artificial herring-bone drains being installed on the slopes of the wetlands and the removal of indigenous vegetation. The risk of erosion on these modified wetlands is also greater as changes to the hydrological and geomorphologic processes within the wetlands have occurred. The presence of the N2 road traversing the hillslope seepage wetlands adds to the increase in velocity of runoff water entering the wetlands which further increases the risk of erosion in these areas.

The Mhlatuze River in the vicinity of the proposed crossing of the N2 national was determined to be in a moderately impaired state, while further upstream the river was considered to be in a moderately to largely impaired state. However, the reach of the Mhlatuze River presently under study is considered to be of moderate ecological importance, with fish representivity and rarity within the context of the larger secondary catchment considered to be very high, particularly at the lower end of the reach

where the estuarine interface is known to support species of conservation importance. Similarly, aquatic macroinvertebrate representivity within the context of the large secondary catchment was considered very high for the present sub-quaternary reach under study, although rarity was only considered to be high. Further, the ecological importance of the riparian and instream zone for vertebrates other than fish was considered to be very high, although the relative diversity of natural riparian vegetation associated with the reach was considered low. Further, the reach is considered to be of very high ecological sensitivity based on fish and aquatic macroinvertebrate sensitivity to physico-chemical and flow alteration, as well as the sensitivity of the riparian zone and vertebrate species other than fish utilising the riparian or instream habitat to water level fluctuations and flow modifications.

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	\checkmark	Dam or reservoir		Polo fields	
Low density residential		Hospital/medical centre		Filling station ^H	✓
Medium density		School		Landfill or waste	
residential				treatment site	
High density residential		Tertiary education facility		Plantation	✓
Informal residential ^A		Church		Agriculture	\checkmark
Retail commercial &		Old age home		River, stream or	✓
warehousing				wetland	
Light industrial		Sowago troatmont plantA		Nature	
		Sewage treatment plant.		conservation area	
Modium industrial AN		Train station or shunting yard		Mountain, koppie	
		Ν		or ridge	
Heavy industrial AN		Railway line ^N	\checkmark	Museum	
Power station		Major road (4 lanes or more) N		Historical building	
Office/consulting room		Airport ^N		Protected Area	
Military or police base/station/compound		Harbour		Graveyard	
Spoil heap or slimes damA		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 will this impact / be impacted upon by the proposed activity?

The proposed dual carriageway will be constructed over two rail bridges as follows:

• Empangeni Rail Bridge (2/13 mast pole) at GPS point 28°45'51.75"S and 31°55' 55.87"E; and

• Umhlathuzi Rail Bridge (10/15 mast pole) at GPS point 28° 51'33.47"S and 31° 53'29.10"E. The applicant is engaging with Transnet, in terms of Wayleave applications for the construction of the proposed dual carriageway.

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:

The proposed road upgrade will occur adjacent to the North Coast 1-Stop Engen Filling Station on the northbound carriageway. During public announcement of the project, the owner of the Filling Station raised a concern that there must be no negative impact on their business operations at the North Coast 1-Stop. They indicated that entrance to the site must be clear and open at all times.

In an email dated 11 February 2013, SEF responded that SANRAL must ensure that access to the filling station is open to the public at all times and stringent safety measures must be implemented at the access and exit points to and from the filling station during construction.

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

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

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

Refer to the Conservation Plan Map in **Appendix A7**. The EKZNW C-plan shows that a small section in the southern part of the study area includes a Biodiversity Priority Area 1 which will be affected by the upgrade of the north bound carrier while two small portions of Biodiversity Priority Area 3 are located on the eastern side of the N2 and will thus not be affected by the proposed upgrade of the north bound carrier. These Biodiversity Priority Areas are considered necessary for representation and persistence of biodiversity within KwaZulu-Natal.

According to the Wetland Assessment (Refer to **Appendix D2**), a small portion of the road near the Mlalazi River falls within the Indian Ocean Coastal Belt Group 2 which as a group is listed as Critical (SEF, 2013).

7. CULTURAL/HISTORICAL FEATURES

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: N/A

YES	NO ✓		
Uncertain			

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 Heritage Impact Assessment (HIA) was conducted by SEF (Pty) Ltd in January 2013 (refer to Appendix D3). The aim of the cultural heritage survey (Phase I Heritage Survey, in accordance with the National Heritage Resources Act, 1999 (Act No. 25 of 1999)) was to locate, identify, document and assess sites of cultural heritage and archaeological significance that may occur within the proposed study area for the upgrade of the N2 Road between Mtunzini Toll Plaza and Empangeni T-Junction.

The study revealed no heritage resources within the proposed route upgrade. It is therefore, recommended from a heritage point of view that the upgrade of the N2 route between Mtunzini Toll Plaza and Empangeni T-Junction, proceed with acceptance of the conditions stated in Section 7 of this report.

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 or a museum, preferably one at which an archaeologist is available. The find should then be investigated and evaluated by the archaeologist, who will provide recommendations on when construction activities in the area where the discovery was made can resume.

Will any building or structure older than 60 years be affected in any way?	YES	NO ✓
Is it necessary to apply for a permit in terms of the National Heritage Resources Act 1999 (Act 25 of 1999)?	YES	NO √

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

N/A

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:

The unemployment level in the area is 37.3% whilst that of the uThungulu region 45.7%. Manufacturing is the dominant economic sector in the uThungulu District and is centered in the City of uMhlathuze, only 24% of people employed work within this sector.

It is for the above reasons that an appropriate economic development strategy for the municipality is concentrated on Small, Medium and Micro Enterprise (SMME) development as a means of promoting emerging entrepreneurs who will initiate labour intensive job growth. Furthermore, the strategy aims to provide support to the informal sector as it is recognized that it currently provides many households with an income and it is anticipated to play an increasingly more important role in the future. Even though the economic performance of the local area is good, it must be noted that unemployment remains high.

The following information was extracted from the Umlalazi Local Municipality IDP:

YEAR	PERCENTAGE
2005	42.1%
2006	39.8%
2007	62.1%
2008	32.0%
2009	31.9%
2010	29.5%

Table 1: Unemployment Rate in the Umlalazi Local Municipality

As can be seen from the above table, there appears to have been a decline in unemployment levels, within the Umlalazi Local Municipality, from 2005.

Economic profile of local municipality:

The following information was extracted from the Umhlathuze Municipality IDP. The City of uMhlathuze is the third most important primary manufacturing area in KwaZulu Natal in terms of economic production. Several of the world's industrial giants are located in uMhlathuze. The significant industrial concentrations supported by the output and activities of several important development nodes. 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 area is the third most important in KwaZulu Natal (KZN) in terms of economic production, contributing 7,6% of the total gross geographic product and 5.5% of total formal employment. Development of the port facilities through the years has initiated and promoted the development of manufacturing activity. The areas port and Industrial Development Zone (IDZ) are important assets that can successfully exploit opportunities to export produce to the vast markets of the world. Policies have been designed to promote industrial growth and to encourage investment, with projects prioritised on the basis on the contribution made to job creation. Strategies and interventions revolve around promotion of primary industrial development while creating an entry level into the market system for emerging businesses, the informal sector and Small Medium and Micro Enterprises (SMMEs).

The following information was extracted from the Umlalazi Local Municipality. The employment and income levels of the economically active population is provided in the table below:

YEAR	NUMBER OF ECONOMICALLY ACTIVE PEOPLE
2005	38 769
2006	39 398
2007	42 373
2008	41 634
2009	38 942
2010	37 389

Source: Global Insight 2010

The graph below indicates the distribution of employment in the formal and informal sectors.



Level of education:



Source: Source: Quality of Life Survey, 2009

Graph 2: Levels of Education obtained by over 20 year olds in Umhlathuze Local Municipality

The following information was extracted from the Umlalazi Local Municipality IDP, 2012/2013 to 2016/2017.

Table 3: Education Levels within the Umlalazi Local Municipality

LEVEL	PERCENTAGE
No Schooling	39%
Some Primary	20%
Completed Primary	5%
Some Secondary	21%
Grade 12/Std 12	12%
Higher	4%
TOTAL	100%

The level of education is graphically represented in the Graph below.



b) Socio-economic value of the activity

 What is the expected capital value of the activity on completion?
 I

 What is the expected yearly income that will be generated by or as a result of the activity?
 I

Will the activity contribute to service infrastructure?

Is the activity a public amenity?

R850 million			
The co	The construction		
of the road is not			
intended	to		
generate income			
YES ✓	NO		
YES ✓	NO		

How many new employment opportunities will be created in the development and	This is a thirty six
construction phase of the activity/les?	likely employment
	would neak at
	1000 persons – an
	estimate of $2/1000$
	work opportunities
	would be created
	hy a project of this
	magnitude
What is the expected value of the employment opportunities during the	Assuming a daily
development and construction phase?	rate for labourers
	of say average of
	R150.00 per dav
	over the three
	year period, the
	value of this
	labour
	employment would
	be approx. R3, 65
	million. Please
	note this does not
	include all other
	persons employed
	on the project e.g.
	permanent
	contractor statt,
	other skilled
	ailisaiis and
	profossional
	staffing
What percentage of this will accrue to previously disadvantaged individuals?	80%
How many permanent new employment opportunities will be created during the	There will be no
operational phase of the activity?	new jobs created
	due to the nature
	of the project.
What is the expected current value of the employment opportunities during the	N/A
first 10 years?	
What percentage of this will accrue to previously disadvantaged individuals?	N/A

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.

Refer to the Conservation Plan Map in **Appendix A7**, which illustrates the Biodiversity areas and transformed areas of the study area in the Ecological Assessment in **Appendix D1**.

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	
Critical Biodiversity Area (CBA) ✓	Ecological Support Area (ESA)	Other Natural Area (ONA)	No Natural Area Remaining (NNR) ✓	Refer to the Conservation Plan Map in Appendix A7. The EKZNW C-plan shows that a small section in the southern part of the study area includes a Biodiversity Priority Area 1 which will be affected by the upgrade of the north bound carrier while two small portions of Biodiversity Priority Area 3 are located on the eastern side of the N2 and will thus not be affected by the proposed upgrade of the north bound carrier (<i>see the Conservation Map on</i> <i>Appendix A7</i>). These Biodiversity Priority Areas are considered necessary for representation and persistence of biodiversity within KwaZulu-Natal. The remainder of the study area is 100% transformed (Ezemvelo KZN Wildlife, 2010. Conservation Plan for KwaZulu-Natal. KZN Wildlife).

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	5%	There were small sections of riparian vegetation and coastal forests observed during the floral survey. Barringtonia racemosa Swamp Forest Patches Two patches of <i>Barringtonia racemosa</i> swamp forest were recorded in the study area. Although these areas were dominated by <i>Barringtonia racemosa</i> (Brackwater Mangrove), numerous additional species are also located in these swamp forest patches. <i>Barringtonia racemosa</i> (Brackwater Mangrove) is a Nationally and Provincially Protected Tree species. The two areas containing the patches of <i>Barringtonia racemosa</i> swamp forest was

		classified as highly sensitive.
Near Natural (includes areas with low to moderate level of alien invasive plants)	20.5%	Remnant Coastal Forest PatchesNumerous isolated remnant coastal forest patches wererecorded and were mostly associated with drainage lines.These areas supported fairly high species diversity and inmany cases provide a corridor for species dispersalthrough transformed habitats. Species recorded in theremnant coastal forest patches included forest speciessuch as Harpephyllum caffrum (Wild Plum),Tabernaemontana ventricosa (Forest Toad Tree) andMimusops obovata (Forest Red-milkwood) as well as otherspecies such as Strelitzia nicolai (Natal Wild Banana),Trema orientalis (Pigeonwood), Ficus lutea (Giantleaf Fig),Ficus sur (Broom Cluster Fig) and Trichilia emeticasubsp.emitica (Natal Mahogany). Hypoxis hemerocallidea(Star-Flower) which is currently listed as Declining wasalso recorded next to one of the remnant coastal forestpatches in the study area.Alien plant species such as Chromolaena odorata,Lantana camara, Caesalpinia decapetala and Arundodonax were observed within this vegetation type.Rehabilitated GrasslandRehabilitated Grassland was recorded along the majority ofthe site which will be affected by the proposed roadupgrade. These rehabilitated areas supported fairly highindigenous species diversity if compared to disturbedareas and included species such as Imperata cylindrica(Cottonwool Grass), Leersia hexandra (Wild Rice Grass),Albizia adianthifolia var. adianthifolia (Flatcrown),Watsonia sp. and various Cyperaceae spp. Since a widevariety of species were used during re
Degraded (includes areas heavily invaded by alien plants)	0.5%	Riparian vegetation Riparian vegetation was recorded on the banks of the Mlalazi River and although this area was disturbed, it included indigenous species such as <i>Phoenix reclinata</i> (Wild Date Palm) and <i>Acacia robusta</i> (Broad-pod Robust Thorn). This section was largely dominated by alien invasive species such as <i>Chromolaena odorata</i> (Paraffin Weed), <i>Arundo donax</i> (Spanish Reed), <i>Lantana camara</i>

		(Wild Lantana) and <i>Caesalpinia decapetala</i> (Mauritius Thorn). Due to the presence of some indigenous vegetation, the Mlalazi River crossing was classified as medium floral sensitivity. Alien plant species such as <i>Chromolaena odorata, Lantana camara, Caesalpinia</i> <i>decapetala</i> and <i>Arundo donax</i> were observed within this vegetation type.
		The Mhlatuze River was of low floral sensitivity due to the absence of indigenous vegetation.
Transformed (includes cultivation, dams, urban, plantation, roads, etc)	74%	Transformed areas The remainder of the site was classified as transformed and consisted of sugarcane fields and exotic tree plantations (mostly <i>Eucalyptus</i> spp). These areas were classified as low floral sensitivity.

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

The KwaZulu-Natal Coastal Belt ecosystem occurs within the study area and is currently listed as Vulnerable in terms of Section 52 of NEMBA (Government Gazette, 2009).

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)

Flora

Various vegetation types were identified on site as per the Ecological Assessment (refer to **Appendix D1**). These are described below.

a) Rehabilitated Grassland

Rehabilitated grassland was recorded along the majority of the site which will be affected by the proposed road upgrade. These rehabilitated areas supported fairly high indigenous species diversity if compared to disturbed areas and included species such as *Imperata cylindrica* (Cottonwool Grass), *Leersia hexandra* (Wild Rice Grass), *Albizia adianthifolia* var. *adianthifolia* (Flatcrown), *Watsonia* sp. and various *Cyperaceae* spp. Since a wide variety of species were used for during the rehabilitation

process, not all species were likely to be present within the defined study area under natural conditions, therefore the rehabilitated areas were classified to be of medium floral sensitivity.

b) Remnant Coastal Forest Patches

Numerous isolated remnant coastal forest patches were recorded and were mostly associated with drainage lines. These areas supported fairly high species diversity and in many cases provide a corridor for species dispersal through transformed habitats. Species recorded in the remnant coastal forest patches included forest species such as *Harpephyllum caffrum* (Wild Plum), *Tabernaemontana ventricosa* (Forest Toad Tree) and *Mimusops obovata* (Forest Red-milkwood) as well as other species such as *Strelitzia nicolai* (Natal Wild Banana), *Trema orientalis* (Pigeonwood), *Ficus lutea* (Giantleaf Fig), *Ficus sur* (Broom Cluster Fig) and *Trichilia emetica* subsp.*emitica* (Natal Mahogany). *Hypoxis hemerocallidea* (Star-Flower) which is currently listed as Declining was also recorded next to one of the remnant coastal forest patches in the study area. In addition, the Protected plant species, *Adenia gummifera* was observed within the study area. A permit for the removal of the *Hypoxis hemerocallidea* and *Adenia gummifera* must be submitted to the Department of Agriculture, Forestry and Fisheries (DAFF) and be accompanied by either a rehabilitation plan where the plants will be re-established or the plants should be rescued and relocated to a suitable site. The remnant coastal forest is deemed to be of high floral sensitivity.

c) Barringtonia racemosa Swamp Forest Patches

Two patches of *Barringtonia racemosa* swamp forest were recorded in the study area. Although these areas were dominated by *Barringtonia racemosa* (Brackwater Mangrove), numerous additional species are also located in these swamp forest patches. *Barringtonia racemosa* (Brackwater Mangrove) is also a Protected Tree species. The two areas containing the patches of *Barringtonia racemosa* swamp forest was classified as highly sensitive. A permit from the Department of Agriculture, Forestry and Fisheries (DAFF) is required for the removal of the Brackwater mangrove. The swamp forest is deemed to be of high floral sensitivity.

d) Riparian vegetation

Riparian vegetation was recorded on the banks of the Mlalazi River and although this area was disturbed, it included indigenous species such as *Phoenix reclinata* (Wild Date Palm) and *Acacia robusta* (Broad-pod Robust Thorn). This section was largely dominated by alien invasive species such as *Chromolaena odorata* (Paraffin Weed), *Arundo donax* (Spanish Reed), *Lantana camara* (Wild Lantana) and *Caesalpinia decapetala* (Mauritius Thorn). Due to the presence of some indigenous vegetation, the Mlalazi River crossing was classified as medium floral sensitivity while the Mhlatuze River was of low floral sensitivity due to the absence of indigenous vegetation.

e) Alien Plant Species

Numerous alien species were recorded throughout the study area which included *Camuloclinium* macrocephalum (Pom Pom weed), *Centella asiatica* (Marsh Pennyworth), *Eucalyptus* spp., *Senna* septemtrionalis, Schinus terebinthifolius (Brazilian Pepper Tree), Solanum mauritianum (Bugweed), *Chromolaena odorata* (Paraffin Weed), *Lantana camara* (Common Lantana) and *Caesalpinia* decapetala (Mauritius Thorn). The removal and control of the alien plant species should be prioritised based on the size of populations already recorded in the study area.

f) Transformed areas

The remainder of the site was classified as transformed and consisted of sugarcane fields and exotic tree plantations (mostly *Eucalyptus* spp). These areas were classified as low floral sensitivity.

Fauna

Due to the level of disturbance of the surrounding landscape (intensive farming and the national road), mammal and amphibians species of conservation concern are unlikely to occur on site.

Bird species of conservation concern were given a medium probability of occuring on the study area due to the level of degradation and disturbance of the surroundings. Some of the remnant coastal forest patches supported bird communities indicative of the forest interior.

Butterflies of conservation concern are unlikely to occur within the study area due to a lack of a suitable habitat.

Aquatic Ecosystem

An Aquatic Assessment (refer to **Appendix D5**) was undertaken to characterise the aquatic ecosystem associated with the area of interest. Based on the results of the present study, it could be determined that the proposed crossing of the N2 national road over the Mlalazi Estuary is within the estuarine functional zone. The results of the report have found the Mlalazi Estuary is considered to be of biological importance and regionally unique, in that the estuary is considered to be one of the few estuaries in the region that have salinities similar to that of marine environments, thus supporting a biological assemblage with a strong affinity to higher salinities. In addition, the Mlalazi Estuary is considered deep relative to other KwaZulu-Natal estuaries, which in turn facilitates vertical salinity stratification which drives ecosystem processes such as organic loading and zonation of benthic macroinvertebrates. As such, the seasonal inflow of freshwater into and the sediment dynamics of the estuary are critical for ensuring that the functionality and unique characteristics of the estuary are maintained. Accordingly, the ecological importance and ecological sensitivity of the Mlalazi Estuary is considered high.

In addition, the Mhlatuze River in the vicinity of the proposed crossing of the N2 national was determined to be in a moderately impaired state, while further upstream the river was considered to be in a moderately impaired state. However, the reach of the Mhlatuze River presently under study is considered to be of moderate ecological importance, with fish representivity and rarity within the context of the larger secondary catchment considered to be very high, particularly at the lower end of the reach where the estuarine interface is known to support species of conservation importance. Similarly, aquatic macroinvertebrate representivity within the context of the large secondary catchment was considered very high for the present sub-quaternary reach under study, although rarity was only considered to be high. Further, the ecological importance of the riparian and instream zone for vertebrates other than fish was considered to be very high, although the relative diversity of natural riparian vegetation associated with the reach was considered low. Further, the reach is considered to be of very high ecological sensitivity based on fish and aquatic macroinvertebrate sensitivity to physico-chemical and flow alteration, as well as the sensitivity of the riparian zone and vertebrate species other than fish utilising the riparian or instream habitat to water level fluctuations and flow modifications.

Wetlands

Three different types of wetlands were classified within the study area and were categorised into twenty two different hydro-geomorphic (HGM) units. These include unchannelled valley bottom wetlands, channelled valley bottom wetlands, hillslope seepage wetlands connected to a watercourse and swamp forest areas. Wetlands were delineated to a distance of approximately 150m on either side of the N2

road, but form part of much larger wetland systems that could not be delineated in totality. The proposed borrow pit location is not situated within any of the delineated wetland areas.

Each wetland's ability to contribute to ecosystem services within the study area is dependent on the particular wetland's Present Ecological Status in relation to a benchmark or reference condition. A Wet-Health level 1 desktop assessment of the wetlands within the study area was used to assign Present Ecological Status scores for the twenty two hydro-geomorphic units delineated. Combined area weighted Wet- Health results indicated that wetlands within the study area are moderately to largely modified as a result of agricultural and forestry practices along the study area. Agricultural practices are associated with the cultivation of sugarcane within wetland boundaries and this coupled with forestry plantations have caused changes to hydrologic and geomorphologic processes within the wetlands. These changes could lead to an increase in the susceptibility of the wetlands to erosion.

Despite the modification of the wetlands on site a number of functions are still performed through the provision of various ecosystem services such as erosion control, sediment trapping, streamflow regulation, flood attenuation, nitrogen, phosphate and toxicant removal, and provision of natural resources. Many of these functional benefits contribute directly or indirectly to increase biodiversity within the study area, as well as downstream of the study area through the provision and maintenance of appropriate habitat and associated ecological processes.

The Ecological Importance and Sensitivity assessment was undertaken to rank water resources in terms of:

- Provision of goods and service or valuable ecosystem functions which benefit people;
- Biodiversity support and ecological value; and
- Reliance of subsistence users (especially basic human needs uses);

The moderate Ecological Importance and Sensitivity assigned to the wetlands can primarily be attributed to the moderately modified state of these wetlands through sugarcane cultivation, infrastructure and associated changed to the hydrological and geomorphologic processes that govern the wetland functionality. The high Ecological Importance and Sensitivity assigned to the swamp forest wetlands is as a result of these areas supporting high floral and faunal species diversity and providing natural corridors for faunal species adjacent to the transformed areas. The low Ecological Importance and Sensitivity score assigned to the hillslope seepage wetlands is as a result of the transformed nature of these wetlands with sugarcane cultivation removing all natural vegetation and changing the hydrological and geomorphologic processes within the wetlands. Human benefits were associated with the cultivation of sugarcane within the wetland boundaries, particularly the hillslope seep wetlands, forestry plantations, fishing, hunting and the gathering of natural plant materials, particularly from the swamp forests.

The location of the borrow pit outside of the delineated wetland areas is not expected to have any significant impacts on the wetlands throughout the proposed route upgrade. The impact assessment identified destruction of wetland habitat, surface water pollution, and the increase in erosion as potential impacts during the construction and operational periods of the proposed interchange. Several specific and general mitigation measures are proposed to mitigate impacts on the wetland. Should the proposed N2 road upgrade be approved, the impact on the channelled, unchannelled and hillslope seepage wetlands and larger downstream aquatic ecosystem would be deemed to be low provided the suggested buffers and mitigation measures outlined in this report are adhered to. Further, with regard to the swamp forest areas, the road widening could have an impact on the ecological sensitivity of these areas. In this regard, it is essential to monitor water levels upstream and downstream of the swamp forest areas through the use of piezometers before construction begins, during construction and during

the operational phases. Measures must be put in place to ensure that water levels are maintained at preconstruction levels upstream and downstream of the swamp forest areas. A wetland monitoring program should be conducted during the construction phase in order to identify any new degradation impacts on the wetlands and initiate cost effective rehabilitation plans timeously.

SECTION C: PUBLIC PARTICIPATION

1. ADVERTISEMENT AND NOTICE

Publication name	Mercury (English advert)				
	llanga (Zulu Advert)				
Date published	Mercury – 4 December 2012				
-	llanga – 6 – 8 December 2012				
Site notice position	Latitude Longitude				
	Mtunzini Toll Plaza	28° 57'11.12"S			
	31° 44' 26.71"E				
	Esikhaleni / R102 Intersection 28° 51' 51.06"S				
	31° 53'04.18"E				
	Empangeni T-Junction	28° 43' 34.69"S			
		31° 56'51.49"E			
	Morris Road, Empangeni 28° 46'09.82"S				
		31° 54' 21.22"E			
Date placed	4 December 2012	·			

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

Please refer to proof of placement of the newspaper advertisement and site notices in Appendix E1.

2. DETERMINATION OF APPROPRIATE MEASURES

Provide details of the measures taken to include all potential I&APs as required by Regulation 54(2)(e) and 54(7) of GN R.543.

The SEF Geographic Information Systems (GIS) Unit extrapolated data from the Surveyor General Cadastral data of the properties adjacent to the site for the proposed road upgrade. The contact details of the owners of the adjacent properties were obtained from Windeed Searches.

The I&APs database drew on past project experience in the KZN Province. Key stakeholders were directly informed of the proposed development by e-mail, post and fax on 4 December 2012 (Refer to **Appendix E.2** for an example of the notification letters sent to the following stakeholders. Letters were faxed, posted and emailed following stakeholders:

- Provincial Authorities;
- Local Authorities;
- District Municipality;
- Service providers;
- Ward Councillors;
- Non-governmental organizations;
- Community based organizations;
- Businesses; and
- Other I&APs (identified through other projects in the area).

Title, Name and	Affiliation/ key stakeholder	Contact details (tel number or e-mail		
Surname	status	address)		
Mr. M.H. Nkosi	Uthungulu District Municipality	sceo@uthungulu.co.za		
	 Municipal Manager 			
Mr D.P Lubbe	Uthungulu District Municipality	lubbed@uthungulu.co.za		
	 Deputy Municipal Manager 			
Mr Xolani Mthembu	Uthungulu District Municipality	mthembux@uthungulu.co.za		
	-Senior Manager: Operations			
	& Maintenance			
Mr Mlungisi Mgabi	Uthungulu District Municipality	mgabim@uthungulu.co.za		
	– Director :Water Services			
Justice Radebe	Othungulu District Municipality	radebej@uthungulu.co.za		
	- Senior Manager:			
Dr. Nhlanhla Sibaka	Limblethuze Leeel Municipality	SibokaN 1@richamp.org.zo		
	Municipal Managor	Sibekonj@nchemp.org.za		
Clir John Cele	– Municipal Manager	083 /21 1/78		
	- Ward 12 Councillor	003 421 1470		
Cllr Lindi Danisa	Umhlathuze Local Municipality	lindi@vahoo.com		
	– Ward 19 Councillor	in alleyen control to the second		
Cllr Ahamed Dawood	Umhlathuze Local Municipality	asdawood@telkomsa.net		
	– Ward 26 Councillor			
Mr Thembinkosi	Umlalazi Local Municipality –	mm@umlalazi.org.za		
Mashabane	Municipal Manager	e e		
Cllr J.K. Powell	Umlalazi Local Municipality -	072 142 9551		
	Ward 19 Councillor			
Mr Brendon Scott	Transnet Freight Rail	Brendon.Scott@transnet.net		
	(Empangeni)			
Mr Thami Hadebe	Transnet Pipelines-Servitude	thami.hadebe@transnet.net		
	Management			
Ms Michelle Nicol	Eskom: Land Development	NICOLM@eskom.co.za		
Mr. Neil Durden	(confirmed)			
IVIT INEIL PURDON	Eskom: Land Development	Purdoninvv@eskom.co.za		
Ma Akhana Nacaha	Nallagel	akhana ngaaha@dina aa za		
IVIS AKIIOHA NYCODO	Development investment Promotion Agonov: Project	akiiona.ngcobo@uipa.co.za		
	Executive (Agribusiness)			
Cllr Simmadhri	Ward Councillor	simmadhriss@richemn.org.za		
Mr Perry Moodley	Durban Tourism: Acting CEO	funinsun@iafrica.com		
Mr Thomas Mathibela	KZN Tourism: GM Tourism	thomas@zulu.org.za		
	Development	alomao @_calaloi g.ca		
Mr Zamo Gwala	Trade and Investment	info@tikzn.co.za		
	KwaZulu-Natal			
Ms Bianca Morgan	WESSA	conservation@wessakzn.org.za		
Mr NT Snyman	Association of Wildlife	nicosnyman@nitrosoft.co.za		
•	Investigators			
Mr Bill Bainbridge	Wilderness Action Group	wrbainbr@iafrica.com		

Key stakeholders (other than organs of state) identified in terms of Regulation 54(2)(b) of GN R.543

Mr Tim Snow	Endangered Wildlife Trust	snowman@ewt.org.za
Mr Roy Cowgill	Birdlife Port Natal	rcowgill@saol.com
Mr Dominic Wieners	Ezemvelo KZN Wildlife	wienersd@kznwildlife.com
Ms Mbali Goge	KZN: Working for Wetlands	m.goge@sanbi.org.za
Mr Damian Walters	Wetlands Forum	walters@wetlands.org.za
Ms Barbara Chedzey	Mtunzini Conservancy details	bwkewley@telkomsa.net
Ms Andrew Layman	Durban Chamber of	Andrewlayman@durbanchamber.co.za
	Commerce and Industry: CEO	
Mr Trevor Arron	Exxaro KZN Sands (Executive GM)	035 902 7000
Ms Colette van Staden	Mondi (Communication Manager)	035 902 2491
Mr Ben Scheepers	Dark Fibre Africa	regulatory@dfafrica.co.za
Ms Wendy Forse	Mtunzini Residents	mtzra@iafrica.com
	Association	
Ms Tina Hattingh	Rem of Farm Felixton -	tina.hattingh@tongaat.com
	Tongaat Hulett	
Mr Stegen Friedrich	Lot 35 Umlalazi 14081 and	hf@stegen.co.za
	Nuwers 15242 (Mr. Stegen	
	Heino Friedrich)	
Mr Grant Lawrie	Lot 94 Umlalazi 13684 – Grant	duleen@iafrica.com;
	Lawrie - Duleen Estates (Pty)	waynwiaw@iafrica.com
Mr Charly on der Wyr or	Lt0	
wir Chan van der wyver		roadisiand@gmail.com
	Station	
Mr Dan Nol	L ot 02R Limialazi 10263	dannamnol@tolkomsa.not
	Fourwinds Farm (Ptv) I td	danpannel@telkomsa.net
Mr Andrew John	L ot 93 Umlalazi 9116 – Ngove	P O Box 1861 Empangeni 3880
Kirland	View Sugar Estates	
Mr Brendon Scott	Lot 91 Umlalazi 10011 –	Brendon.Scott@transnet.net
	Exxaro Sands	
Mr Desmond John	Lot 171 Umhlathuzi	P.O. Box 20779. Durban North. 4016
Ames Gage		
Mr Chennels Peter	Lot 171 Umhlatuzi 13767 -	P.O. Box 6, Nkwaleni, 3816
Mark	JOCKS FARM (CHENNELLS,	
	PETER MARK)	

Include proof that the key stakeholder received written notification of the proposed activities as Appendix E2. This proof may include any of the following:

Please refer to Appendix E2 for the proof of delivery.

- 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

Summary of main issues raised by I&APs	Summary of response from EAP
Impact of road upgrade on wetlands, rivers, flora	A Wetland Delineation and Functional
and fauna.	Assessment and Ecological Assessment has
Impact on indigenous vegetation and fauna	An Ecological Assessment was undertaken (refer
	to Appendix D1 and the Impact Assessment
	Section in Section D and Appendix F.
Impact on water quality as a result of expansion	An Aquatic Impact Assessment was undertaken
of bridges at the Umhlathuze and Umlalazi	to determine the impact on the two rivers (refer to
Rivers.	Appendix D5) and the Impact Assessment
have a first start with a first start and the second start	Section in Section D and Appendix F.
Impact of destruction of heritage resources	A Heritage Impact Assessment (HIA) has been
	to Appendix D3) There are no heritage
	resources along the study area.
National Department of Agriculture, Forestry and	Comment noted. An Agricultural Assessment was
Fisheries (DAFF) has no objection to the	undertaken (refer to Appendix D6).
proposed road upgrade.	
Impact of proposed road upgrade on access to	SANRAL must ensure that access to the filling
operations	stringent safety measures must be implemented
	at the access and exit points to and from the
	filling station during construction.
Impact on soil/agriculture	An Agricultural Assessment was conducted for
	the site (refer to Appendix D6). There is no
	compelling agricultural or agribusiness reason for
	selecting an alternate route for the proposed road
Impact on noise during construction	The noise impact has been discussed in Section
	D of the Draft BAR.
Impact on existing infrastructure under the	Should there be any encroachment into Eskom
jurisdiction of Eskom and Transnet Rail.	servitudes, the necessary wayleaves will be
	submitted by SANRAL.
Impact of using potable water for the	The proposed duel corriggous will grosp the
	existing rail bridges at Limblatuzi rail bridge mast
	pole no. 10/15 and at the Empandeni rail bridge
	mast pole no. 2/13. SANRAL is engaging with
	Transnet for permission to construct the
	proposed dual carriageway over the Transpet
Depitive impact of reuse of anall and requely re-	bridge.

4. COMMENTS AND RESPONSE REPORT

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.

The Comments and Response Report is in Appendix E3.

5. AUTHORITY PARTICIPATION

Authorities and organs of state identified as key stakeholders:

Authority/O	Contact	Tel No	Fax No	e-mail	Postal
rgan of	person (Title,				address
State	Name and				
National Department of Agriculture, Forestry and Fisheries (Soil Management and Land Use)	Ms. M.C. Marubini	012 319 7634	012 329 5938	nhlakad@daff.gov.za	P/Bag X120 Pretoria 0001
National Department of Rural Development and Land Reform	Ms. Debbie Khan	012 312 9490	012 323 6072	DKHAN@ruraldevelopment.gov.za	Director General, P/Bag X833, Pretoria 0001
National Department of Public Works	Mr. Sibusiso Chonco	031 314 7027	031 332 2844	sibusiso.chonco@dpw.gov.za	P/ Bag X54315,Durban, 4000
Department of Cooperative Governance and Traditional Affairs	Nonhlanhla Qhobosheane	033 395 2367	033 345 6432	nonhlanhla.qhobosheane@kzncog ta.gov.za	Private Bag X9059 Pietermaritzburg 3200
KZN Department of Agriculture: Land Use and Macroplanning	Ms. Nonhlanhla Myeni	033 395 2367	033 345 6432	nonhlanhla.myeni@kzndae.gov.za	Private Bag X9078 Pietermaritzburg 3200
Provincial Department of Housing (Acting HOD)	Mr. Mdu Zungu	033 392 6434	033 392 6454	mdu.zungu@kzndhs.gov.za	P/Bag X9157 Pietermaritzburg 3200
KwaZulu-Natal Department of Agriculture and Environmental Affairs	Mr. Muzi Mdamba	035 780 6859/082 8222 582	035 789 6211	Muzi.mdamba@kzndae.gov.za	P/Bag X20018 Empangeni 3880
KwaZulu-Natal Department of Mineral Resources	Ms. Zanele Gwala	031 335 9610	031 301 6950	zanele.gwala.dmr.gov.za	Private Bag X 54307 Durban 4000 P/Bag X0020
กงพล่ะนเน-เงิสโลโ	IVIS. F.G.	000 092 1101	000 042 0100	Filliulieb@uall.gov.za	F/Day 19029

Department of Agriculture, Forestry and Fisheries (Forestry Directorate)	Bhungane		or 033 394 1849		Pietermaritzburg 3200
KwaZulu-Natal Department of Land Affairs	Mr. Sifiso Ntombela	033 355 8557	033 342 3409	HJSNtombela@ruraldevelopment. gov.za	Private Bag X9059, Pietermaritzburg, 3200
KZN Department of Transport	Mr. Roy Ryan	033 355 8897 / 0570	033 342 3962	roy.ryan@kzntransport.gov.za	P/Bag X9043 Pietermaritzburg 3200
KZN Department of Water Affairs	Ms. Colleen Moonsamy	031 336 2846	031 305 9915	moonsamyc@dwa.gov.za	P. O. Box 1018 Durban 4000
KZN Department of Water Affairs	Mr. Norman Ward	031 336 2737	031 305 9927	WardN@dwaf.gov.za	PO Box 1018 Durban 4000
Ezemvelo KZN Wildlife	Mr. Andy Blackmore	033 845 1356	033 845 1499	andyb@kznwildlife.com	PO Box 13053 Cascades 3202
Amafa	Ms. Weziwe Tshabalala	033 394 6543	033 342 6097	amafa.pmb2@mweb.co.za	PO Box 2685 Pietermaritzburg 3200
Department of Agriculture, Forestry and Fisheries (DAFF- Forestry)	Mr. D.J. Maivha	033 392 7739	033 342 8783	JefferyMAI@daff.gov.zaa	Private Bag X9029 Pietermaritzburg 3200
Department of Economic Development and Tourism	Ms. Boyce Mntambo	033-2642528	033 264 2672	mntambob@kznded.gov.za	Private Bag X9152, Pietermaritzburg, 3200
Uthungulu District Municipality	Mr. D.P. Lubbe	035 799 2500	035 789 1409	Khulusen@uthungulu.co.za	Private Bag X1025 Richards Bay 3900
Umhlathuze Local Municipality	Ms. Sharin Govender	035 907 5174	035 907 5426	Sharin.Govender@richemp.org.za	Private Bag X1025 Richards Bay 3900
Umlalazi Local Municipality	Mr. Thembinkosi Mashabane	035 473 3342	035 474 2809	mm@umlalazi.org.za	P.O.Box 37 Eshowe 3805

Include proof that the Authorities and Organs of State received written notification of the proposed activities as appendix E4.

Refer to Appendix E4 for proof of notification to the key state departments.

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

N/A

6. CONSULTATION WITH OTHER STAKEHOLDERS

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.

Refer to the list of registered I&APs in **Appendix E5**.

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

The actual comments and responses to the Interested and Affected Parties is in Appendix E6.

SECTION D: IMPACT ASSESSMENT

The assessment of impacts must adhere to the minimum requirements in the EIA Regulations, 2010, 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.

It should be noted that due to the nature of the proposed development, impacts associated with construction and operation are applicable and thus discussed below.

The decommissioning and closure phases are not applicable and have thus not been included as decommissioning is not anticipated for this project.

	CONSTRUCTION PHASE						
Activity	Impact summary	Significance	Proposed mitigation				
Alternative 1 (p	preferred alternative)						
Clearing of the 20m servitude for widening of the road, stock piles and construction camps will lead to destruction of natural vegetation and faunal habitat in some areas, resulting in the possible mortality of plants and animals. An edge effect will be created	Direct impacts: Destruction of natural vegetation and faunal habitat and edge effect.	WOM=Medium WM = Low	 Road widening near highly sensitive areas should be avoided if possible; If any plants of conservation concern or plant species that are provincially protected will be destroyed or damaged during construction activities, these should be removed by a qualified botanist (where possible) and replanted in a suitable area within the same property or the conservation area just north of the study site (Please note that a provincial or national permits will be required to remove, relocate or 				

CONSTRUCTION PHASE						
Activity	Impact summary	Significance	Proposed mitigation			
on highly sensitive areas (remnant forest patches) where the intact edge of natural forest will be disturbed and will die back resulting in a reduction in size of the entire patch.			 destroy any protected species); Construction activities through areas containing natural vegetation (such as riparian areas and forest patches) should commence during the winter months to decrease impacts on breeding faunal species; An independent Environmental Control Officer (ECO) should be appointed to oversee all construction activities; No open fires should be allowed in areas containing natural vegetation, especially during the dry season; and All remaining areas after road widening should be rehabilitated with indigenous plant species that will be beneficial to faunal species such as bats and birds. 			
The removal of surface vegetation will cause exposed soil conditions where rainfall and high winds can cause mechanical erosion. Rainfall and inadequate drainage systems would lead to sediments washing down into wetlands,	Direct impacts: Soil erosion and silting of the wetlands, drainage lines and rivers	WOM=Medium WM = Low	 An ecologically-sound stormwater management plan must be implemented during construction and appropriate water diversion systems put in place; Erosion must not be allowed to develop on a large scale before effecting repairs; Vegetation and soil must be retained in position for as long as possible, and removed immediately ahead of construction / earthworks in that area (DWAF, 2005); Runoff must be managed to avoid erosion and soil must 			

CONSTRUCTION PHASE					
Activity	Impact summary	Significance	Proposed mitigation		
water courses	· · · · ·		pollution problems:		
and low lying			 Stormwater management 		
areas, causing			such as culverts over the		
sedimentation.			riparian and drainage line		
In addition.			crossings must be		
indigenous			implemented.		
vegetation			 All areas suscentible to 		
communities			erosion must be protected		
are			and it must be ensured		
unlikely to			that there is no undue soil		
colonise			arosion resulting from		
eroded soils			activities within and		
successfully			activities within and		
and soods			aujacent to the		
from					
novimete			work areas;		
			• Natural trees, shrubbery		
			and grass species must be		
coroad oacily			retained wherever		
into those			possible;		
eroded soil			• Remaining areas exposed		
			to erosion due to		
			construction should be		
			vegetated with species		
			naturally occurring in the		
			area; and		
			• Surface water or		
			stormwater must not be		
			allowed to concentrate, or		
			flow down cut or fill slopes		
			without erosion protection		
		-	measures being in place.		
During	Direct impacts:	WOM=Medium	 During construction, the 		
construction,	Potential increase in invasive	WM = Low	construction area and		
vegetation will	vegetation		immediate surroundings		
be removed			should be monitored		
and soil			regularly for emergent		
disturbed. The			invasive vegetation;		
seeds of alien			 Surrounding natural 		
invasive			vegetation should not be		
species that			disturbed in order to		
occur on and			minimize chances of		
in the vicinity			invasion by alien		
of the			vegetation;		
construction			 All alien seedlings and 		
area could			saplings must be removed		
spread into			as they become evident		
the disturbed			for the duration of		
areas. In			construction and		

CONSTRUCTION PHASE						
Activity	Impact summary	Significance	Proposed mitigation			
addition,			operational phase;			
construction			 Manual / mechanical 			
vehicles and			removal is preferred to			
equipment			chemical control;			
were likely			All construction vehicles			
used on			and equipment, as well as			
various other			construction material			
sites and			should be free of plant			
COUID			material. Therefore, all			
introduce alien			equipment and vehicles			
invasive plant			should be thoroughly			
indigonous			cleaned prior to access on			
nlants not			to the construction site.			
belonging to			the ECO: and			
this vegetation						
type to the			 All allell lilvasive oradication and monitoring 			
construction			plan must be compiled and			
site.			implemented during the			
			construction phase			
			whereby all emergent			
			invasive species are			
			removed during			
			construction.			
During	Direct impacts:	WOM=Medium	• A 100m buffer from the			
construction,	Loss of hydrological function	WM = Low	outside edge of the			
wetlands and	impacting on downstream		riparian area is			
watercourses	wetland and riparian habitat		recommended for the			
will be			Umlalazi River, while a			
severely			50m buffer is			
impacted on,			recommended for the			
which may			remaining wetland and			
result in a			riparian areas. All buffers			
change in the			should be barricaded and			
function of the			all work, including the			
system			ablutions at are to be			
impacting on			located outside of the			
FFPA			relevant huffer areas			
wetlands			Areas where construction			
located			will take place within			
downstream			watercourses i.e. bridge			
of the			expansion, work areas			
Umlalazi			must be clearly			
Bridge with			demarcated before.			
likely increase			• The area where activity			
in erosion and			with the riparian zone will			
sedimentation			take place must be clearly			

CONSTRUCTION PHASE								
Activity	Impact summary	Significance	Proposed mitigation					
Activity of these FEPA wetlands.	Impact summary	Significance	 Proposed mitigation demarcated prior to construction commencing with the widening of the bridge. The ECO must be present on site to assist. Water levels upstream and downstream of the swamp forest areas through the use of piezometers before construction must be put in place to ensure that water levels are maintained at pre-construction levels upstream and downstream of the swamp forest areas. Erosion interventions such as swales, netting and other sedimentation control measures should be installed in the road reserve to prevent erosion 					
			 reserve to prevent erosion processes from being initiated in wetland areas as a result of the increase in surface water velocity entering the wetlands. Stormwater outflows should not enter directly into a wetland. The velocity of water that may reach wetlands should be slowed before it is intercepted by virgin soils using a siltation and erosion control structure. 					
The presence of the construction site may result in negative faunal interactions that could be associated with construction personnel including	<i>Direct impacts:</i> Interference with faunal activities by human presence	WOM=Medium WM = Low	 Construction should commence in the winter months in order to minimise the impacts on the breeding activities of the terrestrial floral and faunal species; As far as possible, construction should be limited to the daylight hours in order to minimise the need for lights; An education programme 					

CONSTRUCTION PHASE						
Activity	Impact summary	Significance	Proposed mitigation			
Activity poaching, trapping and hunting of faunal species. Construction at night and the use of lights may attract certain nocturnal faunal species to the construction site, placing them in danger of collisions by construction vehicles and vehicles on the adjacent road. Food and rubbish can attract wildlife to the area, increasing risk of negative interactions.	Impact summary	Significance	 Proposed mitigation should be compiled for all contractors, subcontractors and workers to ensure compliance to all aspects of the EMPr as well as educating personnel in the safe and proper conduct within areas of natural habitat; No wild animal may under any circumstance be handled, removed or be interfered with by construction workers; No wild animal may under any circumstance be hunted, snared, captured, injured or killed. This includes animals perceived to be vermin. Checks of the surrounding natural vegetation must be regularly undertaken to ensure no traps have been set. Any snares or traps found on or adjacent to the site must be removed and disposed of; No domesticated animals must be allowed on site; and All food should be securely stored away to prevent attraction of faunal species and all rubbish should be disposed off away from the site. Bins located around the infrastructure should have tightly fitting lids to prevent faunal species raiding the bins and thereby becoming 			
Hydrocarbon	Direct impacts:	WOM=Medium	• During the construction			
riyulocaldon	Direct impacts:	vvoivi=ivieaium	 During the construction 			

CONSTRUCTION PHASE							
Activity	Impact summary		Significance	Proposed mitigation			
Activity and other chemical spillages	Impact summary Soil contamination		Significance WM = Low	 Proposed mitigation phase hazardous waste should be stored in compliance with regional, national and local legislation. Water passing through vehicle bays and workshops must pass through oil traps to ensure that all hazardous material is removed. All construction vehicles should be kept in good working condition. All construction vehicles should be parked in demarcated areas when not in use and drip trays should be placed under vehicles to collect any spillages/ leaks. If hydrocarbon spills occur these should be cleaned using SUNSORB (or similar product) and the contaminated soils removed from site and dispose of at an appropriate registered 			
Contamination of surface water and groundwater due to hydrocarbon spillage from the storage of fuel on site and the spillages from vehicles.	Direct impacts: Surface and contamination	groundwater	WOM=Medium WM = Low	 Construction should preferably take place during the dry season. All construction vehicles should be kept in good working condition. The contractor must provide method statements for the "handling & storage of oils and chemicals", "fire", and "emergency spills procedures". These substances must be confined to specific and secured areas within the contractor's camp, and in a way that does not pose a 			
CONSTRUCTION PHASE							
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Activity	Impact summary	Significance	Proposed mitigation				
		eiginiounoc	 danger of pollution even during times of high rainfall. These areas must be imperviously bunded with adequate containment (at least 1.5 times the volume of the fuel) for potential spills or leaks. Drip trays (minimum of 10cm deep) must be placed under all vehicles 				
			that stand for more than 24 hours. Vehicles suspected of leaking must not be left unattended, drip trays must be utilised.				
			 drip trays will be dependent on the vehicle and must be large enough to catch any hydrocarbons that may leak from the vehicle while standing. The depth of the drip tray 				
			must be determined considering the total amount / volume of oil in the vehicle. The drip tray must be able to contain the volume of oil in the vehicle.				
			 Spill kits must be available on site and in all vehicles that transport hydrocarbons for dispensing to other vehicles on the construction site. Spill kits must be made up of material/product that is in line with environmental best practice (SUNSORB is a recommended product 				
			 friendly). All spilled hazardous substances must be contained in impermeable 				

CONSTRUCTION PHASE			
Activity	Impact summary	Significance	Proposed mitigation
			containers for removal to a licensed hazardous waste site, (this includes contaminated soils, and drenched spill kit material)
Construction activities and transportation of equipment and materials	Direct impacts: Increased ambient dust levels	WOM=Medium WM = Low	 The contractors must provide and maintain a method statement for "dust control". The method statement must provide information on the proposed source of water to be utilised and the details of the licenses acquired for such usage. Potable water must not be used as a means of dust suppression, and alternative measures must be sourced. The use of 'grey' water must be investigated as an alternative. The contractor will be responsible to source this water and obtain the required approvals to utilise this water for the purpose of dust suppression. The construction camp must be watered during dry and windy conditions to control dust fallout. Dust production must be controlled by regular watering of roads and works area, should the need arise. In addition to the standard dust suppression measures and where these measures are not sufficient, main access roads and site camps must be surfaced with a temporary surface such as gravel to assist with dust suppression.

CONSTRUCTION PHASE			
Activity	Impact summary	Significance	Proposed mitigation
		oignincalice	 All vehicles transporting material that can be blown off (e.g. soil, rubble etc.) must be covered with a tarpaulin, and speed limits of 20 km/h must be adhered to. Excessive dust conditions must be reported to the ECO. Regular monitoring of dust fallout must be carried out and the records kept on site. Baseline dust measures must be sampled and approved by the ER and ECO prior to the commencement of construction activities. All forms of dust pollution must be managed in terms of the Atmospheric Pollution Prevention Act, 1965 (Act No. 45 of 1965).
Construction activities and the movement of construction vehicles	<i>Direct impacts:</i> Increased ambient noise levels	WOM=Medium WM = Low	 Construction times must be restricted to working hours (06:00-18:00). All construction equipment or machinery should be switched off when not in use. Construction equipment must be kept in good working condition.
Exposure of archaeological sites during excavation activities	<i>Direct impacts:</i> Potential destruction of heritage resources	WOM=Medium WM = Low	 In terms of the National Heritage Act, 1999 (Act No. 25 of 1999), construction personnel must be alert and must inform the local heritage agency should they come across any findings of heritage resources within 24 hours. Should any archaeological artefacts be exposed during construction

Activity	Impact summary	Significance	Proposed mitigation
Supply of local	Direct impacts:	High positive	 activities, work on the area where the artefacts were found must cease immediately and the ECO must be notified within 24 hours. Upon receipt of such notification, the ECO will arrange for the excavation to be examined by an Archaeologist. Under no circumstances must archaeological artefacts be removed, destroyed or interfered. Any archaeological sites exposed during demolition or construction activities must not be disturbed prior to authorisation by the South African Heritage Resources Agency on the appropriate provincial heritage resource agency. Temporary employment
labour for construction activities	Job creation and transfer of skills to local communities	significance.	opportunities will be created during the construction phase, via construction related activities. Local labour must be sought. This will positively impact on the surrounding community and local economy due to possible skills development and income generation.
Impact on	Direct impacts:		
resources	Crossing 1 - Mlalazi Estuary	WOM=Medium WM = Low	Crossing 1 - Mlalazi Estuary
	1. <u>Sedimentation</u> As determined by Hill (1966) and Mabaso (2002), the distribution of macroinvertebrate fauna in the Mlalazi Estuary is, to a large extent, determined by the nature of the substratum. As		 Sedimentation Ensure that all earth excavated for the purpose of sinking piling is not located within any drainage lines; Ensure flow diversion

CONSTRUCTION PHASE			
Activity	Impact summary	Significance	Proposed mitigation
Activity	CONSTRUCT Impact summary 2. <u>Changes in drainage patterns</u> The water quality as well as the biological assemblages within the Mlalazi Estuary and the distribution thereof along the longitudinal gradient of the estuary are strongly governed by the interaction of freshwater received from the catchment and water of high salinity received via the permanently open mouth of the estuary. As such, any interception or abstraction of the freshwater entering the estuary is likely to impact the water quality and the biological assemblages in the system.	ON PHASE Significance WOM = Low WM = Low	 Proposed mitigation 2. <u>Changes in drainage patterns</u> No water is to be extracted from the Mlalazi River catchment; Negotiations are being held with a neighbouring farmer to establish whether the applicant can utilise their WULA. Will be reported in Final BAR. If abstraction of water from the Mlalazi River catchment cannot be avoided, then a WULA must be submitted and approved prior to abstraction taking place.
	inter quality and the biological assemblages in the system.		 avoided, then a WULA must be submitted and approved prior to abstraction taking place. No impeding structures such as temporary dams are to be placed in the Mlalazi Estuary; The existing National Road 2 bridge over the Umlalazi River is situated where the freshwater and estuarine systems meet. The aquatic specialist has recommended that no coffer dams or structures are placed at the interface of where the freshwater and estuarine systems meet. The acknowledges the recommendation of the specialist, but in order for the applicant to achieve the preferred alternative, construction of supporting columns will be required in this area, the construction
			of temporary coffer dams is required. This will assist with allowing the columns to be piled and

CONSTRUCTION PHASE			
Activity	Impact summary	Significance	Proposed mitigation
	· · · ·		constructed appropriately.
			 Should DEA accept the
			developer's proposal to
			expand the bridge in this
			area, the temporary use of
			coffer dams will be
			required. To mitigate
			against the potential
			impacts this activity might
			have on the Umlalazi River
			and estuary, the following
			is recommended by the EAP:
			- Water quality
			monitoring of the
			Umlalazi River (for
			example conductivity,
			salinity, turbidity)
			must be undertaken
			prior to construction
			to establish baseline
			conditions.
			- The temporary conter
			dants inust be
			winter low flow
			neriods
			- An engineer must
			design the impeding
			structure in such a
			way so as to
			minimise the potential
			for creating and
			releasing silt into the
			watercourse.
			- Should a sand berm
			be proposed, suitable
			soil types such as
			clay should be utilised
			to prevent natural
			tiow regimes of the
			river wasning this
			- vvaler quality
			undertaken abovo
			and below the coffer
			dam(s) to alert the

	CONSTRUCT	ION PHASE	
Activity	Impact summary	Significance	Proposed mitigation
	· · ·	•	contractor and ECO
			to any changes in
			conductivity, salinity
			and turbidity.
			- Weekly water samples
			(one per week)
			should be taken by a
			suitably qualified
			specialist to assist the
			contractor and ECO
			in responding to any
			potential impacts that
			may arise.
			- When the support
			columns have been
			completed it is
			imperative that the
			decommissioning of
			the coffer dam is
			undertaken in a
			the notential for
			impact on the
			Impact on the
			estuary The
			impeding structure
			should be removed
			from the point of least
			flow in the direction of
			greatest flow to
			reduce the potential
			for siltation.
			- Based on the design
			of the impeding
			structure by the
			engineer, a
			rehabilitation and
			management plan
			should be dratted by
			a suitably qualified
			specialist to reinstate
			area where
			area wriere
			nlace within the
			Imlalazi River SEF
			recommends that the
			compilation and

CONSTRUCTION PHASE			
Activity	Impact summary	Significance	Proposed mitigation
			 submission of the rehabilitation and management plan to the relevant competent authorities for approval be undertaken prior to the commencement of construction. The EAP recommends that DEA include this requirement as a condition of authorisation, should the competent authority choose to issue a decision in favour of the proposed development. Rehabilitation of slopes must be carried out so as to ensure the recovery of established drainage patterns; and Construction phase should be carried out in winter period when rainfall is least likely to occur (i.e. during winter).
	3. <u>Water quality</u> Given the depth of the Mlalazi Estuary and the salinity stratification present, the Mlalazi Estuary is regarded as sensitive to organic loading. As such, any additional input of organic matter into the estuary is likely to impact on the biological processes within the estuary. Should appropriate toilet facilities not be provided for construction workers at the construction crew camps, the	WOM=Medium WM = Low	 3. <u>Water quality</u> Any vegetation that is cleared for the purposes of the bridge construction should be taken away immediately, and not be disposed of in the Mlalazi Estuary. Any vehicle washbays should be located at least 500m away from the Mlalazi Estuary crossing; All construction materials

CONSTRUCTION PHASE			
Activity	Impact summary	Significance	Proposed mitigation
	resources and surrounds to be		should be stored in a
	contaminated by raw sewage.		demarcated area and
			contained within a bunded
	Further, hydrocarbon-based fuels		impermeable surface at
	or lubricants spilled from		least 100m form the 1:100-
	construction vehicles,		year floodline of the
	construction materials that are not		Mlalazi Estuary crossing;
	properly stockpiled, and litter		• Refuse bins should be
	deposited by construction		provided within the
	workers may be washed into the		construction area, and
	wetland and surface water bodies		must be cleared daily;
	located downstream of the study		Construction phase should
	site.		be carried out in winter
			period when rainfall is
			least likely to occur (i.e.
			during winter);
			• A walled concrete
			platform, dedicated store
			with adequate flooring or
			bermed area should be
			used to accommodate
			chemicals such as fuel, oil,
			paint, herbicide and
			insecticides, as
			appropriate, in well-
			ventilated areas;
			• Storage of potentially
			hazardous materials
			should be at least 500m
			from the Mlalazi Estuary
			crossing. These materials
			include fuel, oil, cement,
			bitumen etc.;
			• Sufficient care must be
			taken when handling these
			materials to prevent
			pollution;
			• Surface water draining off
			contaminated areas
			containing oil and petrol
			would need to be
			channelled towards a
			sump which will separate
			these chemicals and oils;
			• Oil residue shall be treated
			with oil absorbent such as
			Drizit or similar and this
			material removed to an

CONSTRUCTION PHASE			
Activity	Impact summary	Significance	Proposed mitigation
			approved waste site;
			• Concrete and tar shall be
			mixed only in areas which
			nave been specially
			All concrete and tar that is
			 All concrete and tal that is spilled outside these areas
			shall be promptly removed
			by the Contractor and
			taken to an approved
			dumpsite;
			• After all the concrete / tar
			mixing is complete all
			waste concrete / tar shall
			be removed from the
			disposed of at an
			approved dumpsite.
			 Stormwater shall not be
			allowed to flow through the
			batching area. Cement
			sediment shall be removed
			from time to time and
			disposed of in a manner
			as instructed by the
			Consulting Engineer,
			 All construction materials liable to spillage are to be
			stored in appropriate
			structures with
			impermeable flooring;
			• Portable septic toilets are
			to be provided and
			maintained for
			Construction crews.
			Iviaintenance must include their removal without
			sewage spillage.
			 Portable sentic toilets are
			to be located at least
			500m from the 1:100-year
			floodline;
			Under no circumstances
			may ablutions occur
			outside of the provided
			iaciiilies;

CONSTRUCTION PHASE			
Activity	Impact summary	Significance	Proposed mitigation
			 At all times care should be taken not to contaminate surface water resources; No uncontrolled discharges from the construction crew camps to any surface water resources shall be permitted. Any discharge points need to be approved by the relevant authority; and In the case of pollution of any surface or groundwater, the Regional representative of the Department of Water Affairs (DWA) must be informed immediately.
	Crossing 2 – Mhlatuze River 1. Sedimentation Clearance of existing vegetation and exposure of the upper layers of the soil horizon may lead to erosion during times of rainfall, as will the location of borrow pits within the 1:100- year floodlines. The transport of eroded soil into surrounding surface water resources will increase the Total Suspended Solids (TSS), which may adversely affect the aquatic fauna in a number of ways. For example, transport of sediment into watercourses decreases the amount of aquatic habitat available for utilisation due to smothering and increased embeddedness of substrata, resulting in a significant decrease in the aquatic macroinvertebrates.	WOM=Medium WM = Low	 Crossing 2 – Mhlatuze River Sedimentation Erect silt curtains on the downslope sides of all construction areas in close proximity to water resources, including wetlands; The temporary storage of topsoil, inert spoil, fill, etc. should be above the 20 year floodline or at least 20m from the top of the bank of any drainage lines, whichever is the maximum or as agreed with the Environmental Control Officer (ECO); To prevent erosion of material that is stockpiled for long periods, the material must be retained

CONSTRUCTION PHASE				
Activity	Impact summary	Significance	Pro	oposed mitigation
	habitat structure within the study area was dominated by highly dynamic alluvial substrate, and as such imbedding of substrate was unlikely. Various authors (Barton, 1977; Taylor & Roff, 1986; Ogbeibu & Victor, 1989) have assessed the impact of increases in suspected solids and sediment deposition on aquatic macroinvertebrates. Specifically, these studies determined that while no significant change in the abundance of species occurred as a result of such construction activates, a shift in the species composition was noted, and incorporated the concept of invertebrate drift (i.e. the movement of aquatic invertebrates into or out of an area of impact by relinquishment of hold on substrate). However, biotic communities were determined to return to normal within eight months after construction was complete (Dallas and Day, 2004).		•	Mulch, roughen or sterile grass seeding can be used on any batter or topsoil stockpile that is to be maintained for longer than 28 days; Construct an earth bank around the upslope portion of any stockpiles in order to redirect runoff and prevent scouring of stockpiles; Erect a silt fence around any stockpiles in order to trap sediment and prevent stockpile sediment loss; Stockpiles should not be higher than 2m to avoid compaction, and single handling is recommended; and Dust suppression is necessary for stockpiles older than a month – with either water or a biodegradable chemical binding agent.
	2. <u>Water quality</u> Hydrocarbon-based fuels or lubricants spilled from construction wehicles, construction materials that are not properly stockpiled, and litter deposited by construction workers may be washed into the surface water bodies. Should appropriate toilet facilities not be provided for construction workers at the construction crew camps, the potential exists for surface water resources and surrounds to be contaminated by raw sewage	WOM=Medium WM = Low	•	Water quality Construction vehicles are to be maintained in good working order, to reduce the probability of leakage of fuels and lubricants; A walled concrete platform, dedicated store with adequate flooring or bermed area should be used to accommodate chemicals such as fuel, oil, paint, herbicide and insecticides, as

CONSTRUCTION PHASE				
Activity	Impact summary	Significance	Proposed mitigation	
Activity	CONSTRUCT Impact summary While it is acknowledged that the impacts associated with the proposed activities will be negligible, every effort should still be taken limit additional contributions.	ON PHASE Significance	 Proposed mitigation appropriate, in well-ventilated areas; Storage of potentially hazardous materials should be above any 100-year flood line, or as agreed with the ECO. These materials include fuel, oil, cement, bitumen etc.; Sufficient care must be taken when handling these materials to prevent pollution; Surface water draining off contaminated areas containing oil and petrol would need to be channelled towards a 	
			 sump which will separate these chemicals and oils; Oil residue shall be treated with oil absorbent such as Drizit or similar and this material removed to an approved waste site; Concrete, if used, is to be mixed on mixing trays only, not on exposed soil; Concrete and tar shall be mixed only in areas which have been specially demarcated for this purpose; All concrete and tar that is spilled outside these areas shall be promptly removed by the Contractor and taken to an approved dumpsite; After all the concrete / tar mixing is complete all waste concrete / tar shall be removed from the batching area and disposed of at an approved dumpsite; 	

	CONSTRUCT	ION PHASE	
Activity	Impact summary	Significance	Proposed mitigation
Activity	CONSTRUCT Impact summary	ON PHASE Significance	 Proposed mitigation Storm water shall not be allowed to flow through the batching area. Cement sediment shall be removed from time to time and disposed of in a manner as instructed by the Consulting Engineer; All construction materials liable to spillage are to be stored in appropriate structures with impermeable flooring; Portable septic toilets are to be provided and maintained for construction crews. Maintenance must include their removal without sewage spillage; Portable septic toilets are to be located outside of the 1-100year floodline; Under no circumstances may ablutions occur outside of the provided facilities; At all times care should be taken not to contaminate surface water resources; No uncontrolled discharges from the approximation or surves in the sement surface area.
			 taken not to contaminate surface water resources; No uncontrolled discharges from the construction crew camps to any surface water resources shall be permitted. Any discharge points need to be approved by the relevant authority; In the case of pollution of any surface or groundwater, the Regional Representative of the Department of Water Affairs (DWA) must be informed immediately; Where construction in

CONSTRUCTION PHASE				
Activity	Impact summary	Significance	Proposed mitigation	
			 close proximity to sewer lines is unavoidable then excavations must be done by hand while at all times ensuring that the soil beneath the sewer lines is not destabilised; Store all litter carefully so it cannot be washed or blown into any of the water courses within the study area; Provide bins for construction workers and staff at appropriate locations, particularly where food is consumed; The construction site should be cleaned daily and litter removed; Conduct on-going staff awareness programs so as to reinforce the need to avoid littering; and Backfill must be compacted to form a stabilised and durable blanket; and the current load above the sewer lines must at no time be exceeded. 	
	There are no indirect impacts			
Cumulative im	pacts			
The existing N2 would experience short-term traffic congestion as a result of road construction	Impact on traffic flow	WOM=Medium WM = Low	This would be a temporary impact during construction and should there be other developments proposed in the vicinity of the site during the road upgrade construction work. Stop/go traffic control should be adopted to maintain road safety. On the N2, speed will be controlled through sign posts and construction flagman controlling traffic.	

CONSTRUCTION PHASE				
Activity	Impact summary	Significance	Proposed mitigation	
Design Alternative 1: Widening of the existing carriageway to a four-lane undivided road	Direct impacts: <u>Impact of safety</u> The existing road cross-section was designed to accommodate future widening and more specifically for the addition of a new carriageway separated by a median.	WOM = High - Medium WM = Medium	In order to improve the safety of the four-lane undivided facility, the proposed cross- section is designed to accommodate protection measures for motorists in the form of concrete median barriers or, alternatively, a wire rope safety fence along the centreline. At the very least a 700 mm painted median island will be used to separate the two carriageways however this does not offer any protection to road users.	
Alternative 2	Dive et imme etc.	Llinh Desitive	The prepaged dual	
Alternative 2: Construction of additional new separate carriageway (Dual Carriageway)	Direct impacts: <u>Impact of safety</u> The existing road cross-section was designed to accommodate future widening in the form of an additional new carriageway separated by a median. The proposed cross-section which allows for the construction of a separate carriageway option conforms with current SANRAL geometric standards i.e. 3,7 m lane widths and minimum 2,5 m left hand side surfaced shoulder width (3 m adopted).	Impact	The proposed dual carriageway cross-section is generally deemed to be safer when compared to the undivided option. In order to achieve the elimination of the potential for head-on collisions, appropriate physical barriers would need to be installed with both options. SANRAL's decision it therefore to utilise Alternative 2 with a divided four lane dual carriageway primarily due to the safety benefits.	
Alternative 3				
	N/A Indirect impacts: N/A Cumulative impacts: N/A			
No-go option				
The activities listed above will not occur if the no-go option is followed.	Direct impacts: Should the project not go ahead, construction would not take place. The site would remain intact and none of the impacts listed above would occur.	There will be no mitigation measures required if construction does not take place.	N/A	

CONSTRUCTION PHASE				
Activity Impact summary Significance Proposed mitigation				
	Cumulative impacts:	N/A	N/A	

OPERATIONAL PHASE				
Activity	Impact summary	Significance	Proposed mitigation	
Alternative 1 (preferred alternative)			
Negative interactions with fauna and vehicles.	<i>Direct impacts:</i> Faunal Injuries and fatalities	WOM=Medium WM = Low	Road widening near highly sensitive areas such as remnant forest patches should be avoided if possible; Suitable barriers such as fences, that are impassable by larger fauna should be erected along the widened areas; In areas adjacent to sensitive natural areas, road underpasses such as culverts may be created that provide safe passage for fauna under the roadway.	
Increased impermeable surfaces could result in an increase in flow velocities and erosion potential within the wetland habitat associated with the N2 road upgrade. Run-off from the road surface may enter the associated watercourse and wetland, resulting in wetland scouring and increased flooding of downstream	Direct impacts: Increased erosion	WOM=Medium WM = Low	It is essential to monitor water levels upstream and downstream of the swamp forest areas through the use of piezometers before construction begins, during construction and during the operational phases. Measures must be put in place to ensure that water levels are maintained at pre-construction levels upstream and downstream of the swamp forest areas. The bed of the river channel should be rehabilitated to the correct height following culvert installation. An ecologically-sensitive stormwater management plan should be developed that does not allow concentrated stormwater to enter into a wetland or watercourse directly, but instead makes use of flow diffusers and retention areas (such as artificial	

OPERATIONAL PHASE			
Activity	Impact summary	Significance	Proposed mitigation
areas.	Direct impacts:		wetland areas, swales, baffles and gabion structures). Velocity breaking structures such as baffles should be placed on the downstream side of all culverts and piping.
Water resources	Crossing 1 - Mlalazi Estuary		Crossing 1 - Mlalazi Estuary
	1. <u>Changes in drainage</u> patterns	WOM=Medium WM = Medium	1. <u>Changes in drainage</u> <u>patterns</u>
	Increased road surfaces will result in an increase in stormwater runoff into drainage areas at topographical low-points, such as at the crossing of the N2 national road over the Mlalazi Estuary. As such, the volume of freshwater entering into the Mlalazi is likely to increase		 No stormwater should be allowed to be discharged directly into the Mlalazi Estuary Adequate drainage areas along the entire length of the proposed upgrade must be included in road design so as to ensure effective drainage into adjacent terrestrial areas; Stormwater diverted into adjacent terrestrial areas should be diffuse flow so as not to facilitate erosion. As such, the inclusion of velocity breakers, flow spreaders and retention swales is strongly recommended within the road design; Regular inspections of the areas adjacent to the proposed road should be conducted so as to identify of active erosion and areas of potential erosion.
	2. <u>Water quality</u>		2. <u>Water quality</u>
	Stormwater runoff from roads is likely to contain hydrocarbons, as well as increased concentrations of heavy metals and nutrients.	WOM=Medium WM = Medium	 No stormwater should be allowed to be discharged directly into the Mlalazi Estuary

OPERATIONAL PHASE			
Activity	Impact summary	Significance	Proposed mitigation
			 Adequate drainage areas along the entire length of the proposed upgrade must be included in road design so as to ensure effective drainage into adjacent terrestrial areas; Stormwater diverted into adjacent terrestrial areas should be diffuse flow so as not to facilitate erosion. As such, the inclusion of velocity breakers, flow spreaders and retention swales is strongly recommended within the road design; Regular inspections of the areas adjacent to the proposed road should be conducted so as to identify of active erosion and areas of potential erosion.
	3. Loss of instream habit An indicated previously, the zonation of aquatic biota within the Mlalazi Estuary is strongly governed by substrate characteristics and salinities. As such, the extent of the area occupied by a select assemblage of fauna is limited. The installation of bridge pilings within the Mlalazi Estuary will therefore result in a loss of areas available for colonisation by fauna.	WOM=Medium WM = Low	 Loss on instream habit Bridges must span the entire width of the channel and floodplain so as to avoid disturbance to the riparian zones of rivers. Pillars, columns or bridge buttresses should not be placed in instream or in riparian zones, if at all possible. The number and width of pillars, vertical columns and buttresses placed within the river channel and floodplain should be minimised. Physical structures, which could later alter hydrological regimes, should not be placed in the

OPERATIONAL PHASE			
Activity	Impact summary	Significance	Proposed mitigation
	<u>Crossing 2 – Mhlatuze River</u> 1. <u>Changes in drainage</u>	WOM=Medium	vicinity of any wetlands. <u>Crossing 2 – Mhlatuze River</u> 1. <u>Changes in drainage</u>
	patterns Increased road surfaces will result in an increase in stormwater runoff into drainage areas at topographical low-points, such as at the crossing of the N2 national road over the Mhlatuze River.	WM = Medium	 <u>patterns</u> No stormwater should be allowed to be discharged directly into the Mhlatuze River; Adequate drainage areas along the entire length of the proposed upgrade must be included in road design so as to ensure effective drainage into adjacent terrestrial areas; Stormwater diverted into adjacent terrestrial areas should be diffuse flow so as not to facilitate erosion. As such, the inclusion of velocity breakers, flow spreaders and retention swales is strongly recommended within the road design; Regular inspections of the areas adjacent to the proposed road should be conducted so as to identify of active erosion and areas of potential erosion.
	2. <u>Water quality</u> Stormwater runoff from roads is likely to contain hydrocarbons, as well as increased concentrations of heavy metals and nutrients.	WOM=Medium WM = Medium	 2. <u>Water quality</u> No stormwater should be allowed to be discharged directly into the Mhlatuze River; Adequate drainage areas along the entire length of the proposed upgrade

OPERATIONAL PHASE				
Activity	Impact summary	Significance	Proposed mitigation	
			 design so as to ensure effective drainage into adjacent terrestrial areas; Stormwater diverted into adjacent terrestrial areas should be diffuse flow so as not to facilitate erosion. As such, the inclusion of velocity breakers, flow spreaders and retention swales is strongly recommended within the road design; 	
			 Regular inspections of the areas adjacent to the proposed road should be conducted so as to identify of active erosion and areas of potential erosion. 	
Spread of alien invasive species post construction activities	<i>Direct impacts:</i> Decrease in biodiversity and indigenous vegetation	WOM = Medium WM = Low	 It is recommended that an alien eradication programme, tailored to the study area is developed by a suitably qualified ecologist to remove the existing alien invasive species; 	
			 An alien invasive eradication and monitoring plan must be compiled and implemented during the construction and operational phases whereby all emergent invasive species are removed and the surrounding vegetation monitored regularly for emergent invasive vegetation; Contractors tendering to undertake construction must be requested to quote adequately for addressing and managing 	
			proliferation of aliens during the entire construction phase.	

OPERATIONAL PHASE			
Activity	Impact summary	Significance	Proposed mitigation
			 All alien seedlings and saplings must be removed as they become evident for the duration of the operational phase; Surrounding natural vegetation should not be disturbed in order to minimize chances of invasion by alien vegetation; and Manual / mechanical removal is preferred to chemical control.
Improved level of service in terms of traffic flow along the N2 (positive impact).	Direct impacts: The proposed dual carriageway will have a positive impact in terms of traffic safety and improved levels of service in the next 15 years due to increased road capacity to accommodate ease of traffic flow.	High positive impact	The recommendation of the preliminary traffic assessment is that the existing road be upgraded to a four-lane divided dual carriageway, based on traffic flow and safety considerations.

A complete impact assessment in terms of Regulation 22(2)(i) of GN R.543 must be included as Appendix F.

REFER TO APPENDIX F FOR THE IMPACT ASSESSMENT

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 <u>after</u> 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.

Alternative A (preferred alternative)

The impacts associated with the proposed development as described in the Section above are:

Construction phase:

Direct Impacts:

- Destruction of natural vegetation and faunal habitat.
- Potential increase in invasive vegetation.
- Surface and groundwater contamination.
- Interference with faunal activity and human presence.
- Contamination of environment by hazardous materials and rubbish.
- Increase in ambient dust levels.
- Increase in ambient noise levels.

- Potential destruction of heritage resources.
- Destruction of wetland habitat.
- Job creation and transfer of skills (positive impact).
- Sedimentation of the Mlalazi Estuary
- Changes in drainage patterns in the Mlalazi Estuary
- Water quality of the Mlalazi Estuary
- Sedimentation of the Mhlatuze River
- Water Quality of the Mhlatuze River

Cumulative impact:

• Increased traffic congestion

Operational Phase:

Direct Impacts:

- Negative interaction between fauna and vehicles.
- Increased erosion.
- Decrease in biodiversity and indigenous vegetation.
- Improved level of service in terms of traffic flow along the N2 (positive impact).
- Loss of stream habit in the Mlalazi Estuary
- Changes in drainage patterns in the Mlalazi Estuary
- Water quality of the Mlalazi Estuary
- Changes in drainage patterns in the Mhlatuze river
- Water Quality of the Mhlatuze river

All of the impacts stated above have been assessed and if the environmental management programme (EMPr) is correctly implemented, the impacts will be mitigated to acceptable levels, to allow the development to proceed. The positive socio-economic benefits that can potentially be fulfilled by the development outweigh the negative impacts that are foreseen.

Alternative B

N/A

Alternative C

N/A

No-go alternative (compulsory)

Direct impacts:

This option assumes that a conservative approach would ensure that the environment is not impacted upon any more than is currently the case. It is important to state that this assessment is informed by the current condition of the area. Should the DEA decline the application, the 'No-Go' option will be followed and the status quo of the site will remain.

The biophysical and social impacts as per the construction phase listed above will not occur and the status quo of the site will remain.

If a four-lane dual carriageway facility is not constructed along the entire route within the next 15 years, congestion levels will be experienced along the whole route, with the section between Esikhawini and Empangeni experiencing the worst level of service.

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)?

YES ✓	NO
✓	NU

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).

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 in the view of the EAP that the <u>Alternative 1 (Preferred Alternative): Construction of</u> <u>additional new separate carriageway (Dual Carriageway)</u> is considered to be within acceptable limits of change. On balance of social, economic and biophysical impacts, the impacts of the proposed development are considered acceptable if the mitigation measures discussed in this report and the EMPr attached as **Appendix G** are implemented.

The following **conditions** should however from part of the Environmental Authorisation should a positive decision be granted by the competent authority:

- All the mitigation measures recommended in this report (Basic Assessment Report) and the EMPr should be implemented.
- All the mitigation measures recommended in the Specialist reports must be adhered to, with the exception of the following from the Aquatic Impact Assessment (Appendix D5) if it is deemed unavoidable:
 - Negotiations are being held with a neighbouring farmer to establish whether the applicant can utilise their WULA. This will be reported in Final BAR.
 - If abstraction of water from the Mlalazi River catchment cannot be avoided, then a WULA must be submitted and approved prior to abstraction taking place.
 - The existing National Road 2 Bridge over the Umlalazi River is situated where the freshwater and estuarine systems meet. The aquatic specialist has recommended that no coffer dams or structures are placed at the interface of where the freshwater and estuarine systems meet. The EAP acknowledges the recommendation of the specialist, but in order for the applicant to achieve the preferred alternative, construction of supporting columns will be required in this area. The construction of temporary coffer dams is required and this will assist with allowing the columns to be piled and constructed appropriately.
 - Should DEA accept the developer's proposal to expand the bridge in this area, the temporary use of coffer dams will be required. To mitigate against the potential impacts, this activity might have on the Umlalazi River and estuary, the following is recommended by the EAP:
 - Water quality monitoring of the Umlalazi River (for example conductivity, salinity, turbidity) must be undertaken prior to construction to establish baseline conditions.
 - The temporary coffer dams must be constructed during winter low flow periods.
 - An engineer must design the impeding structure in such a way so as to minimise the potential for creating and releasing silt into the watercourse.
 - Should a sand berm be proposed, suitable soil types such as clay should be

utilised to prevent natural flow regimes of the river washing this structure away.

- Water quality monitoring should be undertaken above and below the coffer dam(s) to alert the contractor and ECO to any changes in conductivity, salinity and turbidity.
- Weekly water samples (one per week) should be taken by a suitably qualified specialist to assist the contractor and ECO in responding to any potential impacts that may arise.
- When the support columns have been completed it is imperative that the decommissioning of the coffer dam is undertaken in a manner that reduces the potential for impact on the Umlalazi River and estuary. The impeding structure should be removed from the point of least flow in the direction of greatest flow to reduce the potential for siltation.
- Based on the design of the impeding structure by the engineer, a rehabilitation and management plan should be drafted by a suitably qualified specialist to reinstate the integrity of the area where construction took place within the Umlalazi River. SEF recommends that the compilation and submission of the rehabilitation and management plan to the relevant competent authorities for approval be undertaken prior to the commencement of construction. The EAP recommends that DEA include this requirement as a condition of authorisation, should the competent authority choose to issue a decision in favour of the proposed development.
- A copy of the EMPr and environmental authorisation must be kept on site during the construction phase of the project. These documents must be made available to officials of the department, employees or agents who undertake work on site.
- Coloured copies of the Basic Assessment Report including all Appendices, any additional reports and application forms (water use application forms, EKZNW permits, etc) that has been complied by the EAP, ECO or specialists must be kept on site for the duration of the construction phase. These documents must be made available to officials of the department, employees or agents who undertake work on site.
- An independent Environmental Control Officer (ECO) must be appointed to conduct environmental audits.
- All parties involved in the construction and ongoing maintenance of the interchange (including contractors, engineers, and administrators) are, in terms of NEMA's "Duty of Care" and "Remediation of Damage" principals (Section 28), required to prevent any pollution or degradation of the environment, be responsible for preventing impacts occurring, continuing or recurring and for the costs of repair of the environment. Removal of alien invasive plants with specific follow-up control measures, and reclamation and management of soil erosion along the proposed road alignment is an ongoing requirement in terms of national legislation.

Is an EMPr attached?



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.

NAME OF EAP

NAME OF EAP

SIGNATURE OF EAP

DATE

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