



**DRAFT BASIC ASSESSMENT
REPORT**

**DEA REFERENCE:
14/12/16/3/3/1/780**

**THE UPGRADE OF NATIONAL
ROUTE 1 SECTION 17 FROM
VENTERSBURG (KM 0.0) TO
KROONSTAD (KM 44.9)**

**Prepared for the South African
National Roads Agency Soc Limited**

March 2014



BASIC ASSESSMENT REPORT



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.

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

1. PROJECT DESCRIPTION

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

The project entails the Upgrade of National Route 1 Section 17 from Ventersburg (km 0.0) to Kroonstad (km 44.9). The applicant is the South African National Roads Agency Soc Limited.

The following is included in the scope of works:

- The roadway will be upgraded from a bi-directional single carriageway to a divided dual carriageway with a median by constructing the new carriageway towards the east adjacent to the existing carriageway.
- The existing N1 road will be widened by adding a 11.4m wide carriageway comprising 2 new lanes in a southbound direction, towards the east of the existing N1 carriageway.
- The horizontal alignment of the new carriageway will follow the existing alignment.
- All streams and river crossings will require new structures, or if possible, the existing structures are to be lengthened provided they meet the hydraulic requirements.
- The existing roadway will require full rehabilitation and some re-grades in places to improve the vertical alignment.
- In order to eliminate the existing at-grade accesses of the district roads, possible grade separated intersections may be required.
- The new carriageway will require permanent land acquisition as the existing road reserve is not wide enough to cater for the dual carriageway roadway towards the east.

a. Culverts

A total of 106 culverts will be extended or newly constructed to accommodate the wider carriageway. A list of culverts is included in Appendix C.

b. Bridges

The following bridges will be expanded as part of this project:

- B1711,
- B1712,
- B1713.

c. Mining Areas

There are 12 borrow pits or quarries that will need to be opened for this road project in order to provide the necessary material for the upgrade of the road. The location of the borrow pits are included in the locality plan in Appendix A.

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

Listed activity as described in GN R.544, 545 and 546	Description of project activity
<p>Example: GN R.544 Item 11(3): The construction of a bridge where such construction occurs within a watercourse or within 32 metres of a watercourse, measured from the edge of a watercourse, excluding where such construction will occur behind the development setback line.</p>	<p>A bridge measuring 5 m in height and 10m in length, no wider than 8 meters will be built over the Orange river</p>
<p>544, 18 June 2010, Item 11: The construction of: (vi) Bulk storm water outlet structures. Within a watercourse or within 32 metres of a watercourse.</p>	<p>106 existing pipe and/or box culverts to be constructed/lengthened to accommodate the 2 new lanes to be constructed towards the east of the existing N1.</p>
<p>544, 18 June 2010, Item 18: The infilling or depositing of any material of more than 5 cubic metres into: (a) A watercourse.</p>	<p>Material of more than 5m³ will be deposited into water courses at culverts to be constructed (see item 11).</p>
<p>544, 18 June 2010, Item 22: The construction of a road, outside urban areas, With a reserve wider that 13,5 meters.</p>	<p>Two additional lanes will be added towards the east of the existing N1. Widening of 44.7 km of the N1 from Ventersburg to Kroonstad. The planned road reserve is 80 m wide.</p>
<p>544, 18 June 2010, Item 39: The expansion of: (iii) Bridges; (v) Bulk storm water outlet structures. Within a watercourse or within 32 metres of a watercourse.</p>	<p>The following bridges will be expanded: B1711, B1712, B1713.</p> <p>106 existing pipe and/or box culverts to be constructed/lengthened.</p>
<p>544, 18 June 2010, Item 40: The expansion of: (iv) Infrastructure by more than 50 sq metres Within a watercourse or within 32 m of a watercourse</p>	<p>The following bridges will be expanded by more than 50 sq m: B1711, B1712, B1713.</p>
<p>544, 18 June 2010, Item 47: The widening of a road by more than 6 metres, or the lengthening of a road by more than 1 km- (i) Where the existing reserve is wider than 13,5 meters.</p>	<p>The existing N1 road will be widened by 25 m with the 2 new lanes to be constructed towards the east of the existing N1 and the road reserve is 80 m wide.</p>
<p>546, 18 June 2010, Item 14: The clearance of an area of 5 ha or more of vegetation where 75% or more of the vegetative cover constitutes indigenous vegetation.</p>	<p>Clearance of vegetation of 140 ha within existing road reserve to accommodate the 2 new lanes to be constructed towards the east of the existing N1.</p> <p>Opening 12 borrow pits or quarries on adjacent farms in order to provide the necessary material for the upgrade of the road.</p>

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

In the case of linear activities: **There is only 1 site alternative as the N1 is an existing road**

Alternative:	Latitude (S):	Longitude (E):
Alternative S1 (preferred)		
• Starting point of the activity	28°04'23.65"	27°09'05.60"
• Middle/Additional point of the activity	27°53'41.49"	27°12'23.38"
• End point of the activity	27°41'56.49"	27°14'12.87"

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 (Please see Appendix A).

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.

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- b) Lay-out alternatives: NONE
- c) Technology alternatives NONE
- d) Other alternatives DESIGN ALTERNATIVES

Alternative 1 (preferred alternative)
Upgrading the bi-directional single carriageway to a divided dual carriageway with a median by constructing the new carriageway adjacent the N1 towards the <u>EAST</u> of the existing carriageway.
Alternative 2
Upgrading the bi-directional single carriageway to a divided dual carriageway with a median by constructing the new carriageway adjacent the N1 towards the <u>WEST</u> of the existing carriageway.
Alternative 3
None

- e) **No-go alternative**

Should the road not be upgraded, the traffic on the N1 could experience increasingly unsafe driving conditions. The intersections on this section of the road are not adequate to provide for the heavy traffic experienced in the area, especially during the peak holiday periods. The vertical and horizontal alignments and intersections of the road need to be upgraded to ensure the safety of the traveling public. This will also accommodate the predicted increase in traffic volume and avoid high driver frustration.

The current high volumes of heavy vehicle traffic are a major safety and capacity concern. The volume of heavy vehicles is expected to increase significantly over the next 20 years. Traffic volumes and design principals determine that the road needs to be upgraded to ensure the safety of the traveling public. If this is not done, it is anticipated that accidents on this road will increase in future.

Indirect impacts:

Possible traffic accidents as a result of poor driving conditions.
Possible injury and death of travelling public.

Cumulative impacts:

High health care costs as a result of traffic accidents.

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

ALTERNATIVE 1: PREFERRED ALTERNATIVE

UPGRADING THE BI-DIRECTIONAL SINGLE CARRIAGEWAY TO A DIVIDED DUAL CARRIAGEWAY WITH A MEDIAN BY CONSTRUCTING THE NEW CARRIAGEWAY ADJACENT THE N1 TOWARDS THE EAST OF THE EXISTING CARRIAGEWAY.

3. PHYSICAL SIZE OF THE ACTIVITY

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

For linear activities:

Alternative:

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

Length of the activity:

	44900 m
	44900 m
	None.

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

Alternative:

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

Size of the site/servitude:

	(44900m x 80 m) = 3 592 000m ²
	(44900m x 80 m) = 3 592 000m ²
	None.

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

YES x	NO
m	

Describe the type of access road planned:

There is no access road planned. This is an upgrade of an existing road.

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
- locality GPS co-ordinates (Indicate the position of the activity using the latitude and longitude of the centre point of the site for each alternative site. The co-ordinates should be in degrees and decimal minutes. The minutes should have at least three decimals to ensure adequate accuracy. The projection that must be used in all cases is the WGS84 spheroid in a national or local projection).

6. LAYOUT/ROUTE PLAN

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

The site or route plans must indicate the following:

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

7. SENSITIVITY MAP

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

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

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

8. SITE PHOTOGRAPHS

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

9. FACILITY ILLUSTRATION

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

10. ACTIVITY MOTIVATION

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

1. Is the activity permitted in terms of the property's existing land use rights?	YES x	NO	Please explain
The upgrade of the road is undertaken in terms of the South African National Roads Agency Soc Limited (SANRAL's) mandate in terms of the South African National Roads Agency Limited and National Roads Act, 1998. The declaration of the N1 as a national road under section 40(1) of the Act creates the land use right within the declared road reserve.			
2. Will the activity be in line with the following?			
(a) Provincial Spatial Development Framework (PSDF)	YES x	NO	Please explain
The SANRAL is given the power to perform all strategic planning, as well as the planning, design, construction, operation, management, control, maintenance and rehabilitation of all national roads in South Africa in terms of the South African National Roads Agency Limited and National Roads Act, 1998. The N1 is a national road and falls within the jurisdiction of the SANRAL and the development is not bound by the Municipality's PSDF in order to continue.			
(b) Urban edge / Edge of Built environment for the area	YES x	NO	Please explain
The SANRAL is given the power to perform all strategic planning, as well as the planning, design, construction, operation, management, control, maintenance and rehabilitation of all national roads in South Africa in terms of the South African National Roads Agency Limited and National Roads Act, 1998. The N1 is a national road and falls within the jurisdiction of the SANRAL and the development is not bound by the Municipality's urban edge in order to continue as it is not a residential development or municipal road development.			
(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 x	NO	Please explain
The SANRAL is given the power to perform all strategic planning, as well as the planning, design, construction, operation, management, control, maintenance and rehabilitation of all national roads in South Africa in terms of the South African National Roads Agency Limited and National Roads Act, 1998. The N1 is a national road and falls within the jurisdiction of the SANRAL and the development is not bound by the Municipality's IDP in order to continue as it is not a residential development or municipal roads development.			

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(d) Approved Structure Plan of the Municipality	YES <input checked="" type="checkbox"/>	NO	Please explain
The SANRAL is given the power to perform all strategic planning, as well as the planning, design, construction, operation, management, control, maintenance and rehabilitation of all national roads in South Africa in terms of the South African National Roads Agency Limited and National Roads Act, 1998. The N1 is a national road and falls within the jurisdiction of the SANRAL and the development is not bound by the Municipality's approved structure plan in order to continue as it is not a residential development or municipal roads development.			
(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	NO <input checked="" type="checkbox"/>	Please explain
The approval of this application will not compromise the integrity of the existing environmental management priorities for the area and it can be justified in terms of sustainability considerations. No significant long term impact is foreseen as a result of the upgrade of the road.			
(f) Any other Plans (e.g. Guide Plan)	YES	NO <input checked="" type="checkbox"/>	Please explain
No significant long term impact is foreseen as a result of the upgrade of the road.			
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 <input checked="" type="checkbox"/>	NO	Please explain
The SANRAL is given the power to perform all strategic planning, as well as the planning, design, construction, operation, management, control, maintenance and rehabilitation of all national roads in South Africa in terms of the South African National Roads Agency Limited and National Roads Act, 1998. The N1 is a national road and falls within the jurisdiction of the SANRAL. The development is not bound by the Municipality's approved SDF in order to continue as it is not a residential development or municipal roads development.			
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 <input checked="" type="checkbox"/>	NO	Please explain
The area is in dire need of this project and it is a societal priority as numerous accidents occur on the N1 in this area every year with associated loss of lives.			
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 <input checked="" type="checkbox"/>	NO	Please explain
The contractor will in all probability make use of municipal water, sewage and waste disposal services during the time of construction. There is adequate capacity available at the Kroonstad or Ventersburg Local Municipality for these services.			

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<p>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.)</p>	YES x	NO	Please explain
<p>The SANRAL is given the power to perform all strategic planning, as well as the planning, design, construction, operation, management, control, maintenance and rehabilitation of all national roads in South Africa in terms of the South African National Roads Agency Limited and National Roads Act, 1998. The N1 is a national road and falls within the jurisdiction of the SANRAL. The development is not bound by the Municipality's infrastructure planning in order to continue.</p>			
<p>7. Is this project part of a national programme to address an issue of national concern or importance?</p>	YES	NO x	Please explain
<p>The upgrade of the N1 became important as a result of the deterioration of the road and the numerous accidents that occur in this area every year with associated loss of lives.</p>			
<p>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.)</p>	YES x	NO	Please explain
<p>The N1 is an existing national road from Ventersburg to Kroonstad and the area that is earmarked for upgrading is located from km 0.0 to km 44.9. This existing road will be upgraded in terms of SANRAL's mandate in terms of the South African National Roads Agency Limited and National Roads Act, 1998.</p>			
<p>9. Is the development the best practicable environmental option for this land/site?</p>	YES x	NO	Please explain
<p>The activity falls within the N1 road reserve and the widening of the road will be conducted within the widened N1 road reserve. The potential impacts related to the activity were assessed together with specialist engineering and environmental input and the best practicable environmental option and mitigation measures recommended in the report.</p>			
<p>10. Will the benefits of the proposed land use/development outweigh the negative impacts of it?</p>	YES x	NO	Please explain
<p>The benefits of the proposed development will outweigh the negative impacts as the local communities and road users are in dire need of this project as numerous accidents occur in this area every year with associated loss of lives. The road will, therefore, be widened with a low impact to the environmental but a high positive impact to the community.</p>			
<p>11. Will the proposed land use/development set a precedent for similar activities in the area (local municipality)?</p>	YES	NO x	Please explain
<p>The SANRAL is given the power to perform all strategic planning, as well as the planning, design, construction, operation, management, control, maintenance and rehabilitation of all national roads in South Africa in terms of the South African National Roads Agency Limited and National Roads Act, 1998. The N1 is a national road and falls within the jurisdiction of the SANRAL. This development will therefore not set a precedent for similar activities as it is not bound by the Municipality's infrastructure planning in order to continue.</p>			

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12. Will any person's rights be negatively affected by the proposed activity/ies?	YES	NO x	Please explain
It is not foreseen that any person's rights will be negatively affected by the proposed activity as no community displacement will take place. A public participation process were followed and the comments and concerns taken into account during the environmental process.			
13. Will the proposed activity/ies compromise the "urban edge" as defined by the local municipality?	YES	NO x	Please explain
The SANRAL is given the power to perform all strategic planning, as well as the planning, design, construction, operation, management, control, maintenance and rehabilitation of all national roads in South Africa in terms of the South African National Roads Agency Limited and National Roads Act, 1998. The N1 is a national road and falls within the jurisdiction of the SANRAL and the development is not bound by the Municipality's urban edge in order to continue as it is not a residential development or municipal road development.			
14. Will the proposed activity/ies contribute to any of the 17 Strategic Integrated Projects (SIPs)?	YES	NO x	Please explain
This project is not included in any of the SIP projects.			
15. What will the benefits be to society in general and to the local communities?	Please explain		
<p>The proposed road upgrade could offer several benefits to society in general, including:</p> <ul style="list-style-type: none"> • Decrease accidents due to narrow road being widened and at grade intersections safety enhancement; • Safer driving conditions for the road users as the extended road surface will provide opportunities to pass heavy vehicles. Turn movements and safety at the intersections will improve; • With the upgrade of the road, less maintenance on vehicles are anticipated; • Improved traffic flow of commuter traffic, particularly during peak periods; • Reduced congestion; • Less traffic accidents; • Improved drainage and other services. 			
16. Any other need and desirability considerations related to the proposed activity?	Please explain		
<ul style="list-style-type: none"> • Employment opportunities for the local residents during construction. • Less accidents and associated loss of lives. • Improved traffic flow, particularly during peak periods; • Reduced congestion; • Improved drainage and other services. • Drainage channels will be improved 			
17. How does the project fit into the National Development Plan for 2030?	Please explain		
The SANRAL is given the power to perform all strategic planning, as well as the planning, design, construction, operation, management, control, maintenance and rehabilitation of all national roads in South Africa. The N1 is a national road and falls within the jurisdiction of the SANRAL in terms of the South African National Roads Agency Limited and National Roads Act, 1998.			

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

The following general objective of integrated environmental management have been taken into account:

- a) Identified, predicted and evaluated the actual and potential impact on the environment as a result of the upgrade of the road as well as the socio-economic conditions and cultural heritage,
- b) Investigated alternatives and options for mitigation of activities, with a view to minimizing negative impacts.
- c) Maximizing benefits to the environment as a result of the upgrade of the road;
- d) Ensured that the effects of activities on the environment received adequate consideration before actions are taken in connection with them;
- e) Ensured adequate and appropriate opportunity for public participation in decisions that may affect the environment;
- f) Ensured the consideration of environmental attributes in management and decision-making which may have a significant effect on the environment; and
- g) Identified and employed the modes of environmental management best suited to ensuring that a particular activity is pursued in accordance with the principles of environmental management set out in section 2 of the NEMA.

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

The following have been taken into account:

- Identified all potential activities and associated environmental risks associated with the proposed project;
- Consideration of all relevant ecological, social and economic factors in development;
- Minimised adverse environmental impacts, pollution or degradation of the environment;
- Avoiding or minimising the disturbance to ecosystems;
- That pollution and degradation of the environment are avoided, or, where they cannot be altogether avoided, are minimised and remedied;
- That the disturbance of landscapes and sites that constitute the nation's cultural heritage is avoided, or where it cannot be altogether avoided, is minimised and remedied;
- That waste is avoided, or where it cannot be altogether avoided, minimised and re-used or recycled where possible and otherwise disposed of in a responsible manner;
- That the use and exploitation of non-renewable natural resources is responsible and equitable, and takes into account the consequences of the depletion of the resource;
- That the development, use and exploitation of renewable resources and the ecosystems of which they are part do not exceed the level beyond which their integrity is jeopardised;
- That a risk-averse and cautious approach is applied, which takes into account the limits of current knowledge about the consequences of decisions and actions;
- That negative impacts on the environment and on people's environmental rights be anticipated and prevented, and where they cannot be altogether prevented, are minimised and remedied.
- Promotion of community participation through an extensive and open public participation process with I&APs;
- Delivery of high quality information to government and other decision-makers in order to enable them to make informed decisions regarding the project and avoid unnecessary project delays.

11. APPLICABLE LEGISLATION, POLICIES AND/OR GUIDELINES

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

Title of legislation, policy or guideline	Applicability to the project	Administering authority	Date
EIA Regulations GN R. 544 Activities 11, 18, 22, 39, 40, 47.	Listed activities triggered in terms of the EIA Regulations, 2010	Department of Environmental Affairs	18 June 2010
EIA Regulations, 2010 R. 546: Activity 14.			

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Title of legislation, policy or guideline	Applicability to the project	Administering authority	Date
<p>Department of Environmental Affairs Departmental Guidelines under www.environment.gov.za</p>	<p>Guidance with regard to the execution of the Basic Assessment process</p>	<p>Department of Environmental Affairs</p>	<p>2010</p>
<p>National Environmental Management Act, 1998 (Act No. 107 of 1998)</p> <p>The National Environmental Management Act, 1998 (Act No. 107 of 1998): [NEMA] was enacted in November 1998. NEMA provides for cooperative governance by establishing principles for decision-making on matters affected the environment, institutions that will promote co-operative governance and procedures for coordinating environmental functions, public participation and sustainable development.</p>	<p>General objectives of Integrated Environmental Management as set out in section 23 of NEMA taken into account</p>	<p>The National Department of Environmental Affairs</p>	<p>27 November 1998</p>
<p>National Water Act (Act No. 36 of 1998)</p> <p>The application for a Water Use License in terms of the National Water Act, 1998.</p>	<p>Stream crossings and possible application of Water Use License or general authorization at the Department of Water Affairs</p>	<p>Department of Water Affairs</p>	<p>20 August 1998</p>
<p>National Heritage Resource Act 1999 (Act No. 25 of 1999)</p> <p>In terms of the National Heritage Resources Act, 1999 (Act No. 25 of 1999) comment was obtained from SAHRA.</p>	<p>Any linear activity that exceeds 300 m in extent requires input from SAHRA.</p>	<p>South African Heritage Resources Agency (SAHRA)</p>	<p>1999</p>
<p>Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983)</p>	<p>Any relocation or destruction of a protected plants species requires a permit</p>	<p>Free State Department of Tourism, Environmental & Economic Affairs</p>	<p>1983</p>

12. WASTE, EFFLUENT, EMISSION AND NOISE MANAGEMENT

a) Solid waste management

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

YES <input checked="" type="checkbox"/>	NO <input type="checkbox"/>
10 m ³	

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

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

Waste skips will be provided at the construction camp site and strategically along the route. These waste bins will be regularly emptied by a contractor who in turn will dispose of the waste at a recognized waste disposal site.

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

The solid waste will be disposed of at a recognized waste disposal site. Waste will feed into the Kroonstad or Ventersburg Local Municipality municipal waste stream.

Will the activity produce solid waste during its operational phase?

YES <input type="checkbox"/>	NO <input checked="" type="checkbox"/>
m ³	

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.

The solid waste will be disposed of in the Kroonstad or Ventersburg landfill sites.

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

n/a

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

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

YES <input type="checkbox"/>	NO <input checked="" type="checkbox"/>
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If YES, inform the competent authority and request a change to an application for scoping and EIA. An application for a waste permit in terms of the NEM:WA must also be submitted with this application.

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

YES <input type="checkbox"/>	NO <input checked="" type="checkbox"/>
------------------------------	--

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

b) Liquid effluent

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

YES <input type="checkbox"/>	NO <input checked="" type="checkbox"/>
m ³	

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?

YES <input type="checkbox"/>	NO <input checked="" type="checkbox"/>
------------------------------	--

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.

BASIC ASSESSMENT REPORT

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

YES	NO x
-----	------

If YES, provide the particulars of the facility:

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:

Recycling of wastewater will be undertaken if an asphalt plant with a wet scrubber system will be utilised for the production of asphalt on the road.

c) Emissions into the atmosphere

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

YES	NO x
-----	------

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

YES	NO
-----	----

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

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

During the construction phase some dust might be generated. Dust will be suppressed through regular water spraying of surfaces as indicated in the EMPr.

d) Waste permit

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

YES	NO x
-----	------

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?

YES x	NO
-------	----

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

YES	NO x
-----	------

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 noise will be generated during normal working hours. Mitigation measures for noise generated during construction are included in the EMPr.

13. WATER USE

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

Municipal <input checked="" type="checkbox"/>	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 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.

litres	
YES <input checked="" type="checkbox"/>	NO

14. ENERGY EFFICIENCY

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

The following energy efficient measures will be taken on the project:

- Equipment generating energy will be properly insulated to prevent energy loss.
- Compact fluorescent lights will be installed in the site offices;

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

The use of solar geysers will be investigated for use at the contractor camp site during construction. Compact fluorescent lights will be installed in the site offices.

ALTERNATIVE 2:

UPGRADING THE BI-DIRECTIONAL SINGLE CARRIAGEWAY TO A DIVIDED DUAL CARRIAGEWAY WITH A MEDIAN BY CONSTRUCTING THE NEW CARRIAGEWAY ADJACENT THE N1 TOWARDS THE WEST OF THE EXISTING CARRIAGEWAY

3. PHYSICAL SIZE OF THE ACTIVITY

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

For linear activities:

Alternative:

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

Length of the activity:

	44900m
	44900m
	None

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

Alternative:	Size of the site/servitude:
Alternative A1 (preferred activity alternative)	(44900m x 80 m) = 3 592 000m ²
Alternative A2 (if any)	(44900m x 80 m) = 3 592 000m ²
Alternative A3 (if any)	None

4. SITE ACCESS

Does ready access to the site exist?	YES x	NO
If NO, what is the distance over which a new access road will be built	M	

Describe the type of access road planned:

There is no access road planned. This is an upgrade of an existing road.

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
- locality GPS co-ordinates (Indicate the position of the activity using the latitude and longitude of the centre point of the site for each alternative site. The co-ordinates should be in degrees and decimal minutes. The minutes should have at least three decimals to ensure adequate accuracy. The projection that must be used in all cases is the WGS84 spheroid in a national or local projection).

6. LAYOUT/ROUTE PLAN

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

The site or route plans must indicate the following:

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

7. SENSITIVITY MAP

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

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

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

8. SITE PHOTOGRAPHS

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

9. FACILITY ILLUSTRATION

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

10. ACTIVITY MOTIVATION

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

1. Is the activity permitted in terms of the property's existing land use rights?	YES x	NO	Please explain
The upgrade of the road is undertaken in terms of the South African National Roads Agency Soc Limited (SANRAL's) mandate in terms of the South African National Roads Agency Limited and National Roads Act, 1998. The declaration of the N1 as a national road under section 40(1) of the Act creates the land use right within the declared road reserve.			
2. Will the activity be in line with the following?			
(a) Provincial Spatial Development Framework (PSDF)	YES x	NO	Please explain
The SANRAL is given the power to perform all strategic planning, as well as the planning, design, construction, operation, management, control, maintenance and rehabilitation of all national roads in South Africa in terms of the South African National Roads Agency Limited and National Roads Act, 1998. The N1 is a national road and falls within the jurisdiction of the SANRAL and the development is not bound by the Municipality's PSDF in order to continue.			
(b) Urban edge / Edge of Built environment for the area	YES x	NO	Please explain
The SANRAL is given the power to perform all strategic planning, as well as the planning, design, construction, operation, management, control, maintenance and rehabilitation of all national roads in South Africa in terms of the South African National Roads Agency Limited and National Roads Act, 1998. The N1 is a national road and falls within the jurisdiction of the SANRAL and the development is not bound by the Municipality's urban edge in order to continue as it is not a residential development or municipal road development.			
(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 x	NO	Please explain
The SANRAL is given the power to perform all strategic planning, as well as the planning, design, construction, operation, management, control, maintenance and rehabilitation of all national roads in South Africa in terms of the South African National Roads Agency Limited and National Roads Act, 1998. The N1 is a national road and falls within the jurisdiction of the SANRAL and the development is not bound by the Municipality's IDP in order to continue as it is not a residential development or municipal roads development.			
(d) Approved Structure Plan of the Municipality	YES x	NO	Please explain
The SANRAL is given the power to perform all strategic planning, as well as the planning, design, construction, operation, management, control, maintenance and rehabilitation of all national roads in South Africa in terms of the South African National Roads Agency Limited and National Roads Act, 1998. The N1 is a national road and falls within the jurisdiction of the SANRAL and the development is not bound by the Municipality's approved structure plan in order to continue as it is not a residential development or municipal roads development.			

BASIC ASSESSMENT REPORT

<p>(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?)</p>	YES	NO <input checked="" type="checkbox"/>	Please explain
<p>The approval of this application will not compromise the integrity of the existing environmental management priorities for the area and it can be justified in terms of sustainability considerations. No significant long term impact is foreseen as a result of the upgrade of the road.</p>			
<p>(f) Any other Plans (e.g. Guide Plan)</p>	YES	NO <input checked="" type="checkbox"/>	Please explain
<p>No significant long term impact is foreseen as a result of the upgrade of the road.</p>			
<p>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)?</p>	YES <input checked="" type="checkbox"/>	NO	Please explain
<p>The SANRAL is given the power to perform all strategic planning, as well as the planning, design, construction, operation, management, control, maintenance and rehabilitation of all national roads in South Africa in terms of the South African National Roads Agency Limited and National Roads Act, 1998. The N1 is a national road and falls within the jurisdiction of the SANRAL. The development is not bound by the Municipality's approved SDF in order to continue as it is not a residential development or municipal roads development.</p>			
<p>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.)</p>	YES <input checked="" type="checkbox"/>	NO	Please explain
<p>The area is in dire need of this project and it is a societal priority as numerous accidents occur on the N1 in this area every year with associated loss of lives.</p>			
<p>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.)</p>	YES <input checked="" type="checkbox"/>	NO	Please explain
<p>The contractor will in all probability make use of municipal water, sewage and waste disposal services during the time of construction. There is adequate capacity available at the Ventersburg or Kroonstad Local Municipality for these services.</p>			

BASIC ASSESSMENT REPORT

<p>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.)</p>	YES x	NO	Please explain
<p>The SANRAL is given the power to perform all strategic planning, as well as the planning, design, construction, operation, management, control, maintenance and rehabilitation of all national roads in South Africa in terms of the South African National Roads Agency Limited and National Roads Act, 1998. The N1 is a national road and falls within the jurisdiction of the SANRAL. The development is not bound by the Municipality's infrastructure planning in order to continue.</p>			
<p>7. Is this project part of a national programme to address an issue of national concern or importance?</p>	YES	NO x	Please explain
<p>The upgrade of the N1 became important as a result of the deterioration of the road and the numerous accidents that occur in this area every year with associated loss of lives.</p>			
<p>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.)</p>	YES x	NO	Please explain
<p>The N1 is an existing national road from Ventersburg to Kroonstad and the area that is earmarked for upgrading is located from km 0.0 to km 44.9. This existing road will be upgraded in terms of SANRAL's mandate in terms of the South African National Roads Agency Limited and National Roads Act, 1998.</p>			
<p>9. Is the development the best practicable environmental option for this land/site?</p>	YES x	NO	Please explain
<p>The activity falls within the N1 road reserve and the widening of the road will be conducted within the widened N1 road reserve. The potential impacts related to the activity were assessed together with specialist engineering and environmental input and the best practicable environmental option and mitigation measures recommended in the report.</p>			
<p>10. Will the benefits of the proposed land use/development outweigh the negative impacts of it?</p>	YES x	NO	Please explain
<p>The benefits of the proposed development will outweigh the negative impacts as the local communities and road users are in dire need of this project as numerous accidents occur in this area every year with associated loss of lives. The road will, therefore, be widened with a low impact to the environmental but a high positive impact to the community.</p>			
<p>11. Will the proposed land use/development set a precedent for similar activities in the area (local municipality)?</p>	YES	NO x	Please explain
<p>The SANRAL is given the power to perform all strategic planning, as well as the planning, design, construction, operation, management, control, maintenance and rehabilitation of all national roads in South Africa in terms of the South African National Roads Agency Limited and National Roads Act, 1998. The N1 is a national road and falls within the jurisdiction of the SANRAL. This development will therefore not set a precedent for similar activities as it is not bound by the Municipality's infrastructure planning in order to continue.</p>			

BASIC ASSESSMENT REPORT

12. Will any person's rights be negatively affected by the proposed activity/ies?	YES	NO x	Please explain
It is not foreseen that any person's rights will be negatively affected by the proposed activity as no community displacement will take place. A public participation process were followed and the comments taken into account during the environmental process.			
13. Will the proposed activity/ies compromise the "urban edge" as defined by the local municipality?	YES	NO x	Please explain
The SANRAL is given the power to perform all strategic planning, as well as the planning, design, construction, operation, management, control, maintenance and rehabilitation of all national roads in South Africa in terms of the South African National Roads Agency Limited and National Roads Act, 1998. The N1 is a national road and falls within the jurisdiction of the SANRAL and the development is not bound by the Municipality's urban edge in order to continue as it is not a residential development or municipal road development.			
14. Will the proposed activity/ies contribute to any of the 17 Strategic Integrated Projects (SIPS)?	YES	NO x	Please explain
This project is not included in any of the SIP projects.			
15. What will the benefits be to society in general and to the local communities?	Please explain		
<p>The proposed road upgrade could offer several benefits to society in general, including:</p> <ul style="list-style-type: none"> • Decrease accidents due to narrow road being widened and at grade intersections safety enhancement; • Safer driving conditions for the road users as the extended road surface will provide opportunities to pass heavy vehicles. Turn movements and safety at the intersections will improve; • With the upgrade of the road, less maintenance on vehicles are anticipated; • Improved traffic flow of commuter traffic, particularly during peak periods; • Reduced congestion; • Less traffic accidents; • Improved drainage and other services. 			
16. Any other need and desirability considerations related to the proposed activity?	Please explain		
<ul style="list-style-type: none"> • Employment opportunities for the local residents during construction. • Less accidents and associated loss of lives. • Improved traffic flow, particularly during peak periods; • Reduced congestion; • Improved drainage and other services. • Drainage channels will be improved 			
17. How does the project fit into the National Development Plan for 2030?	Please explain		
The SANRAL is given the power to perform all strategic planning, as well as the planning, design, construction, operation, management, control, maintenance and rehabilitation of all national roads in South Africa. The N1 is a national road and falls within the jurisdiction of the SANRAL in terms of the South African National Roads Agency Limited and National Roads Act, 1998.			

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

The following general objective of integrated environmental management have been taken into account:

- h) Identified, predicted and evaluated the actual and potential impact on the environment as a result of the upgrade of the road as well as the socio-economic conditions and cultural heritage,
- i) Investigated alternatives and options for mitigation of activities, with a view to minimizing negative impacts.
- j) Maximizing benefits to the environment as a result of the upgrade of the road;
- k) Ensured that the effects of activities on the environment received adequate consideration before actions are taken in connection with them;
- l) Ensured adequate and appropriate opportunity for public participation in decisions that may affect the environment;
- m) Ensured the consideration of environmental attributes in management and decision-making which may have a significant effect on the environment; and
- n) Identified and employed the modes of environmental management best suited to ensuring that a particular activity is pursued in accordance with the principles of environmental management set out in section 2 of the NEMA.

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

The following have been taken into account:

- Identified all potential activities and associated environmental risks associated with the proposed project;
- Consideration of all relevant ecological, social and economic factors in development;
- Minimised adverse environmental impacts, pollution or degradation of the environment;
- Avoiding or minimising the disturbance to ecosystems;
- That pollution and degradation of the environment are avoided, or, where they cannot be altogether avoided, are minimised and remedied;
- That the disturbance of landscapes and sites that constitute the nation's cultural heritage is avoided, or where it cannot be altogether avoided, is minimised and remedied;
- That waste is avoided, or where it cannot be altogether avoided, minimised and re-used or recycled where possible and otherwise disposed of in a responsible manner;
- That the use and exploitation of non-renewable natural resources is responsible and equitable, and takes into account the consequences of the depletion of the resource;
- That the development, use and exploitation of renewable resources and the ecosystems of which they are part do not exceed the level beyond which their integrity is jeopardised;
- That a risk-averse and cautious approach is applied, which takes into account the limits of current knowledge about the consequences of decisions and actions;
- That negative impacts on the environment and on people's environmental rights be anticipated and prevented, and where they cannot be altogether prevented, are minimised and remedied.
- Promotion of community participation through an extensive and open public participation process with I&APs;
- Delivery of high quality information to government and other decision-makers in order to enable them to make informed decisions regarding the project and avoid unnecessary project delays.

11. APPLICABLE LEGISLATION, POLICIES AND/OR GUIDELINES

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

Title of legislation, policy or guideline	Applicability to the project	Administering authority	Date
EIA Regulations GN R. 544 Activities 11, 18, 22, 39, 40, 47.	Listed activities triggered in terms of the EIA Regulations, 2010	Department of Environmental Affairs	18 June 2010
EIA Regulations, 2010 R. 546: Activity 14.			

BASIC ASSESSMENT REPORT

Title of legislation, policy or guideline	Applicability to the project	Administering authority	Date
<p>Department of Environmental Affairs Departmental Guidelines under www.environment.gov.za</p>	<p>Guidance with regard to the execution of the Basic Assessment process</p>	<p>Department of Environmental Affairs</p>	<p>2010</p>
<p>National Environmental Management Act, 1998 (Act No. 107 of 1998)</p> <p>The National Environmental Management Act, 1998 (Act No. 107 of 1998): [NEMA] was enacted in November 1998. NEMA provides for cooperative governance by establishing principles for decision-making on matters affected the environment, institutions that will promote co-operative governance and procedures for coordinating environmental functions, public participation and sustainable development.</p>	<p>General objectives of Integrated Environmental Management as set out in section 23 of NEMA taken into account</p>	<p>The National Department of Environmental Affairs</p>	<p>27 November 1998</p>
<p>National Water Act (Act No. 36 of 1998)</p> <p>The application for a Water Use License in terms of the National Water Act, 1998.</p>	<p>Stream crossings and possible application of Water Use License or general authorization at the Department of Water Affairs</p>	<p>Department of Water Affairs</p>	<p>20 August 1998</p>
<p>National Heritage Resource Act 1999 (Act No. 25 of 1999)</p> <p>In terms of the National Heritage Resources Act, 1999 (Act No. 25 of 1999) comment was obtained from SAHRA.</p>	<p>Any linear activity that exceeds 300 m in extent requires input from SAHRA.</p>	<p>South African Heritage Resources Agency (SAHRA)</p>	<p>1999</p>
<p>Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983)</p>	<p>Any relocation or destruction of a protected plants species requires a permit</p>	<p>Free State Department of Tourism, Environmental & Economic Affairs</p>	<p>1983</p>

12. WASTE, EFFLUENT, EMISSION AND NOISE MANAGEMENT

a) Solid waste management

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

YES <input checked="" type="checkbox"/>	NO <input type="checkbox"/>
10 m ³	

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

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

Waste skips will be provided at the construction camp site and strategically along the route. These waste bins will be regularly emptied by a contractor who in turn will dispose of the waste at a recognized waste disposal site.

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

The solid waste will be disposed of at a recognized waste disposal site. Waste will feed into the Kroonstad or Ventersburg Local Municipality municipal waste stream.

Will the activity produce solid waste during its operational phase?

YES <input type="checkbox"/>	NO <input checked="" type="checkbox"/>
m ³	

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.

The solid waste will be disposed of in the Kroonstad or Ventersburg landfill sites.

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

n/a

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

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

YES <input type="checkbox"/>	NO <input checked="" type="checkbox"/>
------------------------------	--

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

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

YES <input type="checkbox"/>	NO <input checked="" type="checkbox"/>
------------------------------	--

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

b) Liquid effluent

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

YES <input type="checkbox"/>	NO <input checked="" type="checkbox"/>
m ³	

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?

YES <input type="checkbox"/>	NO <input checked="" type="checkbox"/>
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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.

BASIC ASSESSMENT REPORT

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

YES	NO x
-----	------

If YES, provide the particulars of the facility:

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:

Recycling of wastewater will be undertaken if an asphalt plant with a wet scrubber system will be utilised for the production of asphalt on the road.

c) Emissions into the atmosphere

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

YES	NO x
-----	------

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

YES	NO
-----	----

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

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

During the construction phase some dust might be generated. Dust will be suppressed through regular water spraying of surfaces as indicated in the EMPr.

d) Waste permit

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

YES	NO x
-----	------

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?

YES x	NO
-------	----

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

YES	NO x
-----	------

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 noise will be generated during normal working hours. Mitigation measures for noise generated during construction are included in the EMPr.

13. WATER USE

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

Municipal <input checked="" type="checkbox"/>	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 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.

litres	
YES <input checked="" type="checkbox"/>	NO

14. ENERGY EFFICIENCY

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

The following energy efficient measures will be taken on the project:

- Equipment generating energy will be properly insulated to prevent energy loss.
- Compact fluorescent lights will be installed in the site offices.

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

The use of solar geysers will be investigated for use at the contractor camp site during construction. Compact fluorescent lights will be installed in the site offices.

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): 0

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 x NO
 If YES, please complete the form entitled "Details of specialist and declaration of interest" for each specialist thus appointed and attach it in Appendix I. All specialist reports must be contained in Appendix D.

Property description/physical address:

Province	Free State
District Municipality	Lejweleputswa District Municipality and Fezile Dabi District Municipality
Local Municipality	AMoqhaka Municipality (Kroonstad) and Matjhabeng Municipality (Ventersburg).
Ward Number(s)	Ward 1 (Ventersburg) and Ward 17 (Kroonstad)
Farm name and number	N1 road reserve
Portion number	None (N1 road reserve)
SG Code	None (N1 road reserve)

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:

N1 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 x

BASIC ASSESSMENT REPORT

THERE IS ONLY 1 SITE FOR THIS LINEAR PROJECT

1. GRADIENT OF THE SITE

Indicate the general gradient of the site.

Alternative S1:

Flat	1:50 – 1:20 x	1:20 – 1:15	1:15 – 1:10	1:10 – 1:7,5	1:7,5 – 1:5	Steeper than 1:5
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Alternative S2 (if any): None

Flat	1:50 – 1:20	1:20 – 1:15	1:15 – 1:10	1:10 – 1:7,5	1:7,5 – 1:5	Steeper
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Alternative S3 (if any): None

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
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2. LOCATION IN LANDSCAPE

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

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

3. GROUNDWATER, SOIL AND GEOLOGICAL STABILITY OF THE SITE

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

	Alternative S1:		Alternative S2 (if any): None		Alternative S3 (if any): None	
Shallow water table (less than 1.5m deep)	YES x	NO	YES	NO	YES	NO
Dolomite, sinkhole or doline areas	YES	NO x	YES	NO	YES	NO
Seasonally wet soils (often close to water bodies)	YES x	NO	YES	NO	YES	NO
Unstable rocky slopes or steep slopes with loose soil	YES	NO x	YES	NO	YES	NO
Dispersive soils (soils that dissolve in water)	YES	NO x	YES	NO	YES	NO
Soils with high clay content (clay fraction more than 40%)	YES x	NO	YES	NO	YES	NO
Any other unstable soil or geological feature	YES	NO x	YES	NO	YES	NO
An area sensitive to erosion	YES x	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

BASIC ASSESSMENT REPORT

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.

4. GROUND COVER

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

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

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

5. SURFACE WATER

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

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

BASIC ASSESSMENT REPORT

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

Slootspruit

The Slootspruit is considered a NFEPA system and although the road does not cross this stream two seasonal tributaries of the stream is crossed by the road. These tributaries feed into the Slootspruit and therefore also influence the condition of this stream. They must therefore be considered as sensitive areas where utmost care must be taken in order not to allow degradation of these streams.

Kromspruit

The road crosses the Kromspruit and a tributary of it. This stream is seasonal in nature and is in a degraded state. It is categorised as a Class D: Largely Modified system. It must still be considered a sensitive area and care must be taken to keep impacts on this stream to a minimum.

Rietspruit

The road crosses the Rietspruit and several of its tributaries. This stream is seasonal in nature and is in a degraded state. It is categorised as a Class D: Largely Modified system. It must still be considered a sensitive area and care must be taken to keep impacts on this stream to a minimum.

Blomspruit

The road crosses the Blomspruit as well as a small drainage line which also feeds into this stream. The stream is in a degraded state and is categorised as a Class C: Moderately Modified system. It must still be considered a sensitive area and care must be taken to keep impacts on this stream to a minimum. The area immediately north of the stream also contains an extensive seasonal wetland the area is considered a Class B: Largely natural with few modifications. This wetland must be considered as significant and provides unique habitat, vital ecosystem services and is considered to be in a good condition. It is therefore a sensitive area and care should be taken to minimise all impacts in this area.

Small seasonal pans

The road crosses and skirts several pans. Due to the close proximity of cultivated fields as well as the existing road these pans are degraded. However, these pans are still part of the water cycle and must still be considered sensitive areas and care should be taken to keep impacts on these pans to a minimum. Although the majority of these water related systems are in various degrees degraded they remain sensitive ecological areas as they perform vital ecological functions.

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6. LAND USE CHARACTER OF SURROUNDING AREA

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

Natural area	Dam or reservoir	Polo fields
Low density residential x	Hospital/medical centre	Filling station ^H
Medium density residential	School	Landfill or waste treatment site
High density residential	Tertiary education facility	Plantation
Informal residential ^A	Church	Agriculture x
Retail commercial & warehousing	Old age home	River, stream or wetland x
Light industrial	Sewage treatment plant ^A	Nature conservation area
Medium industrial ^{AN}	Train station or shunting yard ^N	Mountain, koppie or ridge
Heavy industrial ^{AN}	Railway line ^N	Museum
Power station	Major road (4 lanes or more) ^N	Historical building
Office/consulting room	Airport ^N	Protected Area

BASIC ASSESSMENT REPORT

Military or police base/station/compound	Harbour	Graveyard	x
Spoil heap or slimes dam ^A	Sport facilities	Archaeological site	x
Quarry, sand or borrow pit x	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?

None

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:

Following the specialist studies and impact assessment undertaken for the project, the road will be widened with a low impact to the environmental but a high positive impact to the local communities and road users.

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:

None

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

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

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

7. CULTURAL/HISTORICAL FEATURES

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

YES x	NO
Uncertain	

BASIC ASSESSMENT REPORT

1. An informal cemetery dating to recent times was found west of the road, within 10 m from the boundary fence. It is located south of km marker 43.2N. It contains at least 5 graves, of which only one has a headstone with a name and date on it. The other graves are marked with cement slabs or stone cairns.
2. Two old farm labourer homesteads were identified at Borrow pit 8.
3. A stone cairn which might be an informal burial place was identified in close proximity of the two house structures Borrow pit 8.
4. Possible fossil molluscs and associated trace fossils were noted north east of Quarry 42.5 south of Kroonstad.

BASIC ASSESSMENT REPORT

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:

An independent heritage consultant, Dr J van Schalkwyk was appointed by Chameleon Environmental to conduct a Heritage Impact Assessment (HIA) to determine if any sites, features or objects of cultural heritage significance occur within the boundaries of the area where it is planned to upgrade the existing road.

The following conclusions and recommendations are drawn:

- a. The informal cemetery found west of the road, within 10 m from the boundary fence at km 43.2 will not be impacted upon as the road will be widened towards the east of the existing N1.
- b. Two old farm labourer homesteads were identified at Borrow pit 8. Dating these features is difficult as little remains of the various structures. Within the context of farming activities in the larger region, these sites are not viewed to be unique or limited in number and, considering the fact that very little apart from foundations and stone walling remain, these sites are viewed to have low significance.

These sites would not differ from similar sites in contiguous areas or from the larger region and are therefore seen to have a low significance. However, it is a cultural practice that premature babies or infants that died very young are sometime buried within the homestead, either in the courtyard or even within the house.

It is recommended that these sites are left in place and that they are fenced off with danger tape with a buffer of at least 10 metres from the outer most edge of the visible structures for the duration of the activities at the borrow pit. If it is impossible to avoid these sites, they should be documented and excavated by a qualified archaeologist.

- c. A stone cairn which might be an informal burial place was identified in close proximity of the two house structures Borrow pit 8. Its origin is unclear, but, due to its proximity to the house structures, it is proposed to err on the side of caution and to include it here. This site can probably be related to the two identified house structures, making all three of these a unit. Any impact would therefore have an impact on the whole. As all these feature seem to occur on the western edge of the borrow pit, it would be possible to avoid them.

It is recommended that the burial is left in place and that it is fenced off with danger tape with a buffer of at least 10 metres from the outer edge of the grave for the duration of the upgrade of the road. If the burial cannot be avoided, it is recommended that it is relocated after the proper procedure has been followed.

Therefore, from a heritage point of view we recommend that the proposed development can continue, on condition of acceptance of the above mitigation measures. We request that if archaeological sites or graves are exposed during construction work, it should immediately be reported to a heritage consultant so that an investigation and evaluation of the finds can be made.

BASIC ASSESSMENT REPORT

Dr J Almond undertook a paleontological study regarding fossil molluscs and associated trace fossils at Quarry 42.5 south of Kroonstad:

The following conclusion and recommendation is drawn:

The fossil bivalve locality near Kroonstad has been known since at least the 1970s (Kitching *in* Rossouw 1970) but has never been formally studied or sampled. It is of considerable scientific interest because of the unusually large and well-preserved fossil bivalves found along the quarry margins here, both *in situ* within thinly-interbedded sandstone / mudrock packages as well as within numerous sandstone float blocks. Furthermore, the bivalves occur in close association with traces of their burrows, which is an unusual occurrence. The identity of the bivalves has not yet been established. Larger (c. 4-5 cm) and smaller (1 cm or less) individuals may represent different growth stages of the same species or perhaps different taxa. To the author's knowledge, fossil bivalve life assemblages of this type and quality have not been described elsewhere within the Karoo Supergroup of southern Africa.

Since this key fossil site would be seriously impacted by extension of the existing Q42.5 dolerite quarry it is strongly recommended that *before construction commences* a professional palaeontologist be commissioned by the developer to record and judiciously sample near-surface fossil material at the site. The palaeontologist should also make recommendations for realistic conservation or mitigation measures during the construction phase of the Q42.5 quarry development, in consultation with the developer. Any mitigation measures proposed should be incorporated into the Environmental Management Plan (EMP) for the N1 road upgrade project.

The palaeontologist concerned with recording, sampling and mitigation work would need a valid collection permit from the South African Heritage Resources Agency (SAHRA contact details: Ms. Colette Scheermeyer, South African Heritage Resources Agency, 111 Harrington Street. P.O. Box 4637, Cape Town 8000. Tel: 021 462 4502. Email: cscheermeyer@sahra.org.za. Fax: +27 (0)21 462 4509. Web:www.sahra.org.za).

All work would have to conform to international best practice for palaeontological fieldwork and the study (e.g. data recording fossil collection and curation, final report) should adhere to the minimum standards for Phase 2 palaeontological studies recently published by SAHRA (2013).

Will any building or structure older than 60 years be affected in any way?
Is it necessary to apply for a permit in terms of the National Heritage Resources Act, 1999 (Act 25 of 1999)?

YES	NO x
YES x	NO

For the recording, sampling and mitigation work of fossil material at Q42.5

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:

Moqhaka Local Municipality

The Moqhaka Local Municipality is situated within the southern part of the Fezile Dabi District in the Free State province. The seat of local government is Kroonstad.

Demographic Information:

Population: 160 532
Households: 45 661
Population Growth: -0.45% p.a.
Unemployment Rate: 35.20%.

Matjhabeng Local Municipality

The Matjhabeng Local Municipality is situated in the Lejweleputswa District Municipality in the Free State

Demographic Information:

Population: 406 461
Households: 123 195
Population Growth: -0.04% p.a.
Unemployment Rate: 37.00%

Sources: <http://www.localgovernment.co.za/locals/view/41/moqhaka-local-municipality>
<http://www.localgovernment.co.za/locals/view/44/Matjhabeng-Local-Municipality>

Economic profile of local municipality:

Moqhaka Local Municipality

A significant portion of the total households in the Moqhaka Region (33.9%) receives a monthly household income of R 800-00 and below.

- ▣ A high percentage of households (15.2%) do not receive any income.
- ▣ An exceedingly small percentage (16%) of households receive a monthly household income of more than R3 200-00.
- ▣ Households receiving a monthly income of more than R800-00, represent 51%.

Matjhabeng Local Municipality

People in Matjhabeng are relatively poor with almost 55% (of the economically active population)

BASIC ASSESSMENT REPORT

earning no income at all. There has been significant growth in the income bracket earning between R 3500 and R 12800/month.

Sources: <http://www.moghaka.gov.za/index.php/your-council/key-documents/category/23-annualreport>
<http://www.citysolve.co.za/hda/files/pdf/matjhabeng-local-municipality.pdf>

Level of education:

Moqhaka Local Municipality

The education levels at the Moqhaka Municipality for aged 20 + show the following:

No Schooling: 5.40%
 Higher Education: 8.60%
 Matric: 27.80%

Matjhabeng Local Municipality

Educational level statistics of Matjhabeng Local Municipality show that over 10% of the population have no formal education. Just over 30% of the population have primary education and about 35% have secondary education. Less than 5% of the population have tertiary and other higher education.

Sources: <http://www.localgovernment.co.za/locals/demographics/41>
<http://researchspace.ukzn.ac.za/xmlui/bitstream/handle/10413/351/Gosego%20thesis%20-%20Final.pdf?sequence=1>

b) Socio-economic value of the activity

What is the expected capital value of the activity on completion?	R1,2 billion
What is the expected yearly income that will be generated by or as a result of the activity?	R 0
Will the activity contribute to service infrastructure?	YES x NO
Is the activity a public amenity?	YES x NO
How many new employment opportunities will be created in the development and construction phase of the activity/ies?	Approximately 80 per day over a 36 month construction period
What is the expected value of the employment opportunities during the development and construction phase?	Approximately R18 million
What percentage of this will accrue to previously disadvantaged individuals?	Approximately 12 %
How many permanent new employment opportunities will be created during the operational phase of the activity?	None
What is the expected current value of the employment opportunities during the first 10 years?	None
What percentage of this will accrue to previously disadvantaged individuals?	None

9. BIODIVERSITY

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

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

Systematic Biodiversity Planning Category				If CBA or ESA, indicate the reason(s) for its selection in biodiversity plan
Critical Biodiversity Area (CBA)	Ecological Support Area (ESA)	Other Natural Area (ONA)	No Natural Area Remaining (NNR) x	n/a

There is currently no critical biodiversity plan as per provincial conservation available for the Free State Province.

- b) **Indicate and describe the habitat condition on site**

Habitat Condition	Percentage of habitat condition class (adding up to 100%)	Description and additional Comments and Observations (including additional insight into condition, e.g. poor land management practises, presence of quarries, grazing, harvesting regimes etc).
Natural	0%	
Near Natural (includes areas with low to moderate level of alien invasive plants)	20%	The study area outside the road reserve that will be acquired for the widening of the road.
Degraded (includes areas heavily invaded by alien plants)	80 %	The study area within the N1 road reserve is heavily transformed.
Transformed (includes cultivation, dams, urban, plantation, roads, etc)	0%	

BASIC ASSESSMENT REPORT

c) Complete the table to indicate:

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

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

- 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)**

1. Vegetation type

The study area for this development is the road reserve along section 17 of the N1 National Road from route marker N1 - 17, 0,0 S (Ventersburg) to route marker N1 - 17, 44,90 S (Kroonstad). The road reserve on both sides of the road is approximately 10m wide. This road reserve is highly disturbed. The natural vegetation has been transformed to a large degree. Species that would normally occur in this grassland region has been replaced by pioneer species indicating disturbance. A large degree of exotic weeds are also present. The vegetation consists of a grass layer with a high degree weeds and exotics. Main causes of this disturbance are the cutting of vegetation in the reserve, the periodic maintenance, upgrading and rehabilitation of the road and disturbance caused by constant traffic on the road and the impacts associated therewith.

However, portions of additional property on either side of the road will be acquired for the expansion of the road. These portions of property consist of farm land which in turn consists of either cultivated land or natural grazing. Those portions consisting of cultivated land will not be included in this assessment as it does not form part of the conservable natural environment. Those portions consisting of natural grazing is notably degraded due to the proximity to the road but does contain elements of conservation value in some areas.

The vegetation along this section consists of Central Free State Grassland (Gh 6), Winburg Grassy Shrubland (Gh 7) and Vaal-Vet Sandy Grassland (Gh 10). Small portions in the south of the section near the town of Ventersburg consist of Winburg Grassy Shrubland (Gh 7). The vegetation type is considered to be of Least Concern (LC) as it is not currently subjected to any pronounced developmental pressures.

However, the exposed rock sheets do contain several protected species which are of conservational importance. Large portions of the section consist of Central Free State Grassland (Gh 6) which is considered to be a Vulnerable (VU) vegetation type because it is subjected to transformation for cultivation as well as the construction of dams. Within the study area large portions of this vegetation type remains. Due to the proximity of these areas to the road they are also in a degraded condition. Large portions of the section consist of Vaal-Vet Sandy Grassland (Gh 10) which is considered to be an Endangered (EN) vegetation type primarily as a result of transformation for dryland crop cultivation. Within the study area this vegetation type has also been transformed for crop cultivation and only small portions of this vegetation type are intact. Due to the proximity of these areas to the road they are also highly degraded.

2. Aquatic Ecosystem

The section of the N1 National Road that is proposed for rehabilitation and upgrading crosses over several streams and rivers:

Slootspruit

The Slootspruit is considered a NFEPA system and although the road does not cross this stream two seasonal tributaries of the stream is crossed by the road. These tributaries feed into the Slootspruit and therefore also influence the condition of this stream. They must therefore be considered as sensitive areas where utmost care must be taken in order not to allow degradation of these streams.

Kromspruit

The road crosses the Kromspruit and a tributary of it. This stream is seasonal in nature and is in a degraded state. It is categorised as a Class D: Largely Modified system. It must still be considered a sensitive area and care must be taken to keep impacts on this stream to a minimum.

Rietspruit

The road crosses the Rietspruit and several of its tributaries. This stream is seasonal in nature and is in a degraded state. It is categorised as a Class D: Largely Modified system. It must still be considered a sensitive area and care must be taken to keep impacts on this stream to a minimum.

Blomspruit

The road crosses the Blomspruit as well as a small drainage line which also feeds into this stream. The stream is in a degraded state and is categorised as a Class C: Moderately Modified system. It must still be considered a sensitive area and care must be taken to keep impacts on this stream to a minimum. The area immediately north of the stream also contains an extensive seasonal wetland the area is considered a Class B: Largely natural with few modifications. This wetland must be considered as significant and provides unique habitat, vital ecosystem services and is considered to be in a good condition. It is therefore a sensitive area and care should be taken to minimise all impacts in this area.

Small seasonal pans

The road crosses and skirts several pans. Due to the close proximity of cultivated fields as well as the existing road these pans are degraded. However, these pans are still part of the water cycle and must still be considered sensitive areas and care should be taken to keep impacts on these pans to a minimum. Although the majority of these water related systems are in various degrees degraded they remain sensitive ecological areas as they perform vital ecological functions.

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SECTION C: PUBLIC PARTICIPATION

1. ADVERTISEMENT AND NOTICE

Publication name	Volksblad	
Date published	21 February 2013	
Site notice position	Latitude	Longitude
	28°04'39.42"	27°09'09.30"
	27°54'09.74"	27°12'38.77"
	27°41'94.16"	27°14'21.45"
Date placed	25 April 2013	

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

BASIC ASSESSMENT REPORT

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.

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

Title, Name and Surname	Affiliation/ key stakeholder status	Contact details (tel number or e-mail address)
Landowners next to road	See full list in Appendix E2.	See full list in Appendix E2.
Mr Jan Blom	Matjhabeng Local Municipality	057 916-4187 082 820 0183 Jan.blom@matjhabeng.co.za olgav@matjhabeng.co.za
Mr Koos Duvenhage	Matjhabeng Local Municipality	057 916 4187 Koos.Duvenage@matjhabeng.co.za
Mr Fanie Nieuwoudt	Matjhabeng Local Municipality	057 916 4187 fanien@matjhabeng.co.za
Mr Peter Gavhi	Moqhaka Local Municipality (Kroonstad Municipality)	056 216- 9260/1 gavhim@ovi.com
Mrs Mariette Pittaway	Ward Councillor Ward 17 Kroonstad	082 908 1242 mariette@thepittaways.co.za
Mr TL Mabote	Ward Councillor Ward 1 Ventersburg	tebohomabote@ovi.com
Mr. Dirk Coetzee	Ventersburg Tax Payers Association	dirkc007@telkomsa.net

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

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

3. ISSUES RAISED BY INTERESTED AND AFFECTED PARTIES

Summary of main issues raised by I&APs	Summary of response from EAP
Mr J Schutte at km 22.9 was concerned about the possible increase in noise as a result of the planned intersection at the Holfontein Interchange.	A noise specialist was appointed to undertake a noise assessment at Mr Schutte's house. Noise mitigation was recommended and clarified with Mr Schutte for implementation.

BASIC ASSESSMENT REPORT

Most issues raised by I&APs at the two open houses held were from farm owners that requested agricultural under/overpasses to be constructed or access roads to be moved.	The request for agricultural under/overpasses and access roads were accommodated where possible.
Very extensive public participation held. See issues and response report in Appendix E3.	Very extensive public participation held. See issues and response report in Appendix E3.

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.

5. AUTHORITY PARTICIPATION

Authorities and organs of state identified as key stakeholders:

Authority/Organ of State	Contact person (Title, Name and Surname)	Tel No	Fax No	e-mail	Postal address
Free State Department of Tourism, Environmental & Economic Affairs	Ms N Mahase	051 400 4918	051 400-4772	mahasen@detea.fs.gov.za	Private Bag X20801 Bloemfontein 9300
Free State Department of Tourism, Environmental & Economic Affairs	Ms. Laetitia van Rensburg	051 400 4700	051 400-4842	butiem@detea.fs.gov.za	Private Bag X20801 Bloemfontein 9300
South African Heritage Resources Agency	Mr Phillip Hine	021 462 4502	021 462 4509	phine@sahra.org.za (information to be posted on SAHRA website)	PO Box 4637 Cape Town 8000
Department Of Water Affairs	Mr Carlo Schrader	051 405 9000 / 9262	051 4059000	schraderc@dwa.gov.za	PO Box 528 Bloemfontein 9300
Dept. Public Works, Roads & Transport General Manager: Roads & Storm	Mr J Letsie	051 410-6743/4 082 579 7671	051 410-7306	jeff.letsie@mangaung.co.za	PO Box 3704 Bloemfontein 9300

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Authority/Organ of State	Contact person (Title, Name and Surname)	Tel No	Fax No	e-mail	Postal address
Water					
Dept of Agriculture Free State Province	Dr L Moorosi	071 218 3197	None	pahod@agric.fs.gov.za	Private Bag X02 Bloemfontein 9300

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

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

6. CONSULTATION WITH OTHER STAKEHOLDERS

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

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

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

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

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.

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Activity	Impact summary	Significance	Proposed mitigation
<p>Alternative 1 (preferred alternative) Upgrading the bi-directional single carriageway to a divided dual carriageway with a median by constructing the new carriageway adjacent the N1 towards the EAST of the existing carriageway.</p>			
<p><u>Planning and design phase</u></p>	<p><i>Direct impacts:</i></p> <ul style="list-style-type: none"> • Placement and access of construction site camp area. • Designs of drainage systems (culverts and pipes) at sensitive riparian areas. • Design of widening of bridges and culverts. • Design of noise mitigation measures at Mr J Schutte's house from Km 22.580 to Km 22.820. 	<p>Medium</p> <p>Medium</p> <p>Medium</p>	<ul style="list-style-type: none"> • The final design of the road must include the appropriate siting of all construction camps (i.e. site camps and worker accommodation camps, where required), as well as a site layout plan. • The establishment of a construction yard may only occur in an area that has previously been disturbed. This area must be approved by the Environmental Control Officer (ECO) and must be inspected regularly. • Drainage systems shall be adequately designed to allow for run-off from a 1:50 year flood condition. Culverts, pipes and channels shall be concrete lined. In designing culverts along the proposed route, it must be ensured that drainage systems are kept as natural as possible. Natural drainage should be retained, and normal flow ensured at all times. • The bridge design must ensure that the creation of turbulent flow in the system is minimised, in order to prevent downstream erosion. No support pillars should be

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Activity	Impact summary	Significance	Proposed mitigation
			<p>constructed within the active channel.</p> <ul style="list-style-type: none"> Design of noise mitigation measures at Mr J Schutte's house as per the noise specialist study undertaken by Mr Barend van der Merwe dated November 2013.
	<p><u>Indirect impacts:</u> <u>Planning and design phase</u></p> <p>Possible relocation of services i.e. Telkom lines, water pipes and Eskom lines.</p>	High	<ul style="list-style-type: none"> Where service disruption is inevitable, the Contractor must advise the Project Manager at least 7 days in advance, allowing enough time to inform affected parties. Any complaints must be included in the complaints register maintained on site. Updated information boards must be maintained on site and must include contact details for complaints by the public in accordance with details provided by the Engineer.
	<p><u>Cumulative impacts:</u> <u>Planning and design phase</u></p> <p>There are no cumulative impacts associated with the design phase.</p>	None	None
<u>Construction phase</u>	<p><u>Direct impacts:</u></p> <ul style="list-style-type: none"> Possible impacts to the streams and wetlands with the widening of the bridges and extension of culverts 	High	<ul style="list-style-type: none"> The exposed rock sheets occurring at S 28.05806° E 27.15666° contain a high amount of protected succulents

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Activity	Impact summary	Significance	Proposed mitigation
	<p>and pipes;</p> <ul style="list-style-type: none"> • Possible impact to streams and wetlands with the mining of material in borrow pits and quarries; • Possible impact on protected succulents and bulbs in areas to be acquired outside road reserve; • Possible impact on <i>Aloe greatheadii</i> var. <i>davyana</i> (Grass Aloe), <i>Ammocharis coranica</i> (Ground Lily) and <i>Brunsvigia radulosa</i> (Candelabra Lily) populations in areas to be acquired outside road reserve; • Possible impact on mammals and snakes; • Possible erosion of soils and loss of topsoil; • Possible invasion of exotic species; • Possible pollution of solid waste; • Possible sewage pollution; • Possible pollution of fuels and gas as a result of inadequate storage; • Possible pollution by cement or concrete; • Possible noise pollution (especially at the house of Mr J Schutte at km; • Possible dust pollution. • Possible impact on archaeological sites and graves (Cemetery at km 43.2 and two old farm labourer homesteads and stone cairn at borrow pit 8). • Possible fossil molluscs and associated trace fossils north east of Quarry 42.5 south of Kroonstad. 	<p>High</p> <p>High</p> <p>High</p> <p>Medium</p> <p>Medium</p> <p>Medium</p> <p>Medium</p> <p>Medium</p> <p>Medium</p> <p>Medium</p> <p>Medium</p> <p>High</p> <p>High</p>	<p>and bulbs (Appendix C of specialist report by Eko Environmental). Although none of these species occur within the road reserve new land will be acquired for expansion of the road and it is likely that this area will be affected. Where this area is in any way affected by the road construction a permit should be acquired and any protected species within this area should be transplanted to an adjacent area where they will not be affected.</p> <ul style="list-style-type: none"> • Extensive <i>Aloe greatheadii</i> var. <i>davyana</i> (Grass Aloe) and <i>Ammocharis coranica</i> (Ground Lily) populations occurs at S 27.73699° E 27.23250°. Although none of these species occur within the road reserve new land will be acquired for expansion of the road and it is likely that this area will be affected. Where this area is in any way affected by the road construction a permit should be acquired and any protected species within this area should be transplanted to an adjacent area where they will not be affected. • A large, dense and significant population of <i>Brunsvigia radulosa</i>

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Activity	Impact summary	Significance	Proposed mitigation
			<p>(Candelabra Lily) occur at borrow pit 26 (S 27.86394° E 27.20212°) (Appendix C). The species is not rare or endangered but is protected and a permit should be acquired to remove the plants and transplant them to an area where they will not be affected (Appendix C).</p> <ul style="list-style-type: none"> • Borrow pit 2.4-B is situated at a seasonal stream. The stream is situated within a communal grazing area and is degraded. However, it must still be regarded as a sensitive area as it is a vital water transporting body. The stream must be excluded from the borrow pit site and a buffer of 30m must be afforded to it. • Borrow pit 42.5 and rock quarry 42.5 is situated adjacent to a seasonal wetland. The wetland may become water saturated on a seasonal basis. Although not significant the area is in a good condition and must be considered a wetland as confirmed by the guidelines (Department of Water Affairs and Forestry 2005 & Marnewecke 1999) as well as NFEPA. The area provides unique habitat, is in a good condition and provides vital ecosystem

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Activity	Impact summary	Significance	Proposed mitigation
			<p>services and therefore it must be regarded as a sensitive area. The borrow pit and rock quarry must respect a buffer of 30m from this wetland and measures should be implemented to prevent sediment spill into the wetland.</p> <ul style="list-style-type: none"> • There is a high likelihood that several mammal species may inhabit the road reserve. These are limited to opportunistic, widespread species that are well adapted to the disturbed conditions. No animal species may be harmed in any way and no hunting or capturing of animals may be permitted. These animals will move out of the road reserve of their own accord. • In the event of poisonous snakes or other dangerous animals encountered on the site an experienced and certified snake handler or zoologist must remove these animals from the site and re-locate them to a suitable area. • The Slootspruit is considered a National Freshwater Ecosystems Priority Areas (NFEPA) system and although the road does not cross this stream two seasonal tributaries of the stream

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Activity	Impact summary	Significance	Proposed mitigation
			<p>is crossed by the road. These tributaries feed in to the Slootspruit and therefore also influence the condition of this stream. They must therefore be considered as sensitive areas where utmost care must be taken in order not to allow degradation of these streams.</p> <ul style="list-style-type: none"> • The majority of streams and pans being crossed by the N1 National Road are in a degraded with a few being in a good condition (tributaries of Slootspruit and seasonal wetland). In spite of this all must be considered as being sensitive areas, with specific important of the tributaries of the Slootspruit, and no alteration of the flow patterns within these streams must be allowed. The disturbance of the stream banks must also be kept to a minimum. The following recommendations should be adhered to, to ensure that disturbance of the streams, pans and seasonal wetland are kept to a minimum: <ul style="list-style-type: none"> ○ Where culverts are replaced these should be adequate to allow for sufficient water flow and

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Activity	Impact summary	Significance	Proposed mitigation
			<p>should not retard water flow.</p> <ul style="list-style-type: none"> ○ Culvert width should be equal to the stream width, this will minimise channel erosion. ○ The culvert orientation should follow the main channel flow direction of the streams. <ul style="list-style-type: none"> ● Disturbance and sedimentation of the stream bed must be prevented as far as possible. The use of attenuation ponds must be investigated where disturbance of the stream bed will take place. ● Installation of culverts should preferably take place during the dry season (June to September) when zero flows are present within these streams. This will prevent water erosion of the stream bed sediments. ● During installation of culverts, rehabilitation of the road along the stream and widening of the road at these streams, pans and seasonal wetland the riparian vegetation (reeds and sedges) should be removed together with the topsoil and replaced afterwards in bare areas. This will speed up recovery of the riparian vegetation. ● If it is not possible to install culverts during the

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Activity	Impact summary	Significance	Proposed mitigation
			<p>dry season only half of the stream may be blocked off during culvert installation.</p> <ul style="list-style-type: none"> • Where work is to done at the perennial Blomspruit only half the stream should be blocked off at a time and construction time should be kept to a minimum. • Following completion of the culvert installation the area will be susceptible to erosion. This must be prevented by the use of gabions or other geotextiles. • The time period for the installation of culverts should be kept to a minimum. • After cessation of construction the culverts should be regularly inspected for erosion and this should be corrected. • Wherever the removal of topsoil is necessary the topsoil should be stockpiled separately and protected against weed infestation and erosion. • Topsoil should be replaced on top of the soil surface where it has been removed as soon as possible. • Stormwater flow should be managed to promote free draining borrow pits and rock quarries. • No cement or concrete is allowed to mixed directly on the bare soil in the veld. • All excess mixed concrete and cement to be removed to a

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Activity	Impact summary	Significance	Proposed mitigation
			<p>registered solid waste site.</p> <ul style="list-style-type: none"> • No excess imported soils or stone (if used during the construction phase) may be left behind. These materials to be removed within two (2) weeks after completion of the project. • Disturbed surface areas in the construction phase to be rehabilitated. No open trenches to be left. No mounds of soils created during construction to be left. • All waste such as papers, plastics, etc. to be removed on a daily basis. • Extreme care needs to be taken to avoid pollutants such as oils, fuels, etc. getting into the water system. • All hazardous materials such as but not limited to paint, turpentine and thinners must be stored appropriately to prevent these contaminants from entering the terrestrial and water environment; • All construction material, equipment and any foreign objects brought into the area by contractors and staff to be removed within 2 (two) weeks after completion of construction. • Removal of all waste construction material to an approved waste

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Activity	Impact summary	Significance	Proposed mitigation
			<p>disposal site.</p> <ul style="list-style-type: none"> • No water for drinking or construction purposes of any kind may be extracted directly out of existing streams, drainage lines, etc. without the necessary prior authorisations, permits etc. • No water to be taken out of the stream to be used for any purpose of the project during the construction phase of the project. No water from the river / streams to be used as drinking water. • Only certified, chemical, portable toilets to be used. These are not to be situated within 100m of any watercourses or impoundments. These portable toilets to be administered and serviced by a certified, registered company. • Proper rubbish bins to be provided. These to be emptied weekly and the waste to be removed to an official waste disposal site. • No open fires to be made in the veld. • No wood for fires, etc. to be collected from out of the veld. • Appropriate dust-suppression techniques (e.g. the use of water spray vehicles) shall be employed on all exposed surfaces during periods of high wind. • Noise that could cause

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Activity	Impact summary	Significance	Proposed mitigation
			<p>a major disturbance (e.g. blasting) should only be carried out during normal working hours in those areas located in close proximity to communities and/or residences.</p> <ul style="list-style-type: none"> • Mitigation at Mr J Schutte's house from Km 22.580 to Km 22.820: <ul style="list-style-type: none"> ○ Earthberm of 1.0m from the road surface (include the 0.800m cut and 0.200m soil to be deposited onto the side) to be constructed along the eastern side of the southbound carriage way from the section which is in 0.800m cut and up to 300m to the south of the farm house; ○ Pre-cast concrete barriers of 1.0m (used at the e-toll project) to be secured on top of the earthberm or to construct a brick-wall with an effective height of 1.0m; ○ An UTFC 13mm asphalt surface or similar friction course asphalt surface to be used. ○ Grass to be planted along the side walls of the section of the road 100m on both sides of the farmhouse. • It is recommended that the heritage sites

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Activity	Impact summary	Significance	Proposed mitigation
			<p>identified are left in place and that they are fenced off with danger tape with a buffer of at least 10 metres from the outer most edge of the visible structures for the duration of the activities at the borrow pit. If it is impossible to avoid these sites, they should be documented and excavated by a qualified archaeologist.</p> <ul style="list-style-type: none"> • Any relocation of archaeological remains or graves requires a permit from the SAHRA. The proper procedure needs to be followed in terms of specialist study undertaken. • Paleontological remains need to be documented following permit application to SAHRA. • Any relocation of archaeological remains or graves requires a permit from the SAHRA. The proper procedure needs to be followed in terms of specialist study undertaken. • Paleontological remains need to be documented following permit application to SAHRA.
	<p>Indirect impacts:</p> <ul style="list-style-type: none"> • Possible weed invaders as a result of disturbance of soil. • Possible erosion at river banks 	<p>Medium</p> <p>High</p>	<ul style="list-style-type: none"> • All alien vegetation in the road reserve should be removed upon completion of construction. • Bank vegetation cover should be monitored to ensure that sufficient vegetation is present to

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Activity	Impact summary	Significance	Proposed mitigation
	<p>Cumulative impacts:</p> <ul style="list-style-type: none"> • Possible additional traffic on the roads during construction; • Possible influx of people in the area during construction. 	<p>High</p> <p>Medium</p>	<p>bind the bankside soils and prevent further bankside erosion.</p> <ul style="list-style-type: none"> • The additional traffic will be managed by the contractor through the traffic management as included in the tender document to the project. • A Public Liaison Officer (PLO) should be appointed through the relevant ward councillor to manage the employment opportunities on the project.
<p><u>Operational phase (Maintenance phase)</u></p>	<p><u>Direct impacts:</u></p> <ul style="list-style-type: none"> • Possible increase in alien vegetation; • Possible bank failure at aquatic systems present 	<p>Medium</p> <p>High</p>	<ul style="list-style-type: none"> • Mechanical control of alien plants around disturbed areas to be implemented within three months of completion of construction. Thereafter every six months. Mechanical control to be of such a nature as to allow local, indigenous grasses and other pioneers to colonise the previously disturbed areas, thereby keeping out alien invasives. • No chemical control (herbicides) of alien plants to be used. Herbicides could get into the water system and will have a detrimental effect on the environment. • Areas around foundations, culverts, gabions, etc. need to be checked before and after

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Activity	Impact summary	Significance	Proposed mitigation
			<p>the summer rainy season for signs of soil erosion due to stormwater run-off. Such sites need to be modified and rehabilitated to prevent ongoing erosion. These sites need to be monitored more closely than other sites which show no or minimal signs of erosion.</p> <ul style="list-style-type: none"> No inspection or other vehicles to drive through watercourses except where there are existing bridges, roads and other existing crossovers.
	<p>Indirect impacts:</p> <p>There is no indirect impacts associated with the maintenance phase</p>	None	None
	<p>Cumulative impacts:</p> <p>There is no cumulative impacts associated with the maintenance phase</p>	None	None
<p><u>Decommissioning and closure phase.</u></p> <p>This phase only pertains to the decommissioning of the construction camp site. The road itself will not be decommissioned in the foreseeable future.</p>	<p>Direct impacts:</p> <ul style="list-style-type: none"> To ensure that disturbed areas, borrow pits and quarries and the construction site camp are rehabilitated after construction has been completed. 	High	<ul style="list-style-type: none"> The use of hydro-seeding should be investigated for rehabilitation of the road reserve as well as the borrow pit and rock quarry sites where the establishment of vegetation does not occur within a reasonable time period after cessation of construction. After construction the areas cleared of vegetation will be susceptible to infestation

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Activity	Impact summary	Significance	Proposed mitigation
			<p>by invader weed species. The road reserve should be monitored for the presence of invader weed species (Refer to Appendix D of specialist report by Eko Environmental for likely invader species to be removed).</p> <ul style="list-style-type: none"> • All overburden and spoils should be replaced in the borrow pits and rock quarries and the surrounding areas should be levelled to its original state once excavation activities has ceased. • Areas that have become compacted due to construction activities should be ripped. • After cessation of activities on the site the area should be rehabilitated to acceptable standards. • After construction has ceased all construction materials should be removed from the road reserve. • The hydro-seeding mixture must be certified weed free.
	<p>Indirect impacts:</p> <p>There is not indirect impacts associated with the decommissioning phase</p>	None	None
	<p>Cumulative impacts:</p> <p>There is not indirect impacts associated with the decommissioning phase</p>	None	None
Alternative 2			

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Activity	Impact summary	Significance	Proposed mitigation
<p>Upgrading the bi-directional single carriageway to a divided dual carriageway with a median by constructing the new carriageway adjacent the N1 towards the WEST of the existing carriageway..</p>			
<p><u>Planning and design phase</u></p>	<p><i>Direct impacts:</i></p> <ul style="list-style-type: none"> • Placement and access of construction site camp area. • Designs of drainage systems (culverts and pipes) at sensitive riparian areas. • Design of widening of bridges and culverts. • Design of noise mitigation measures at Mr J Schutte's house from Km 22.580 to Km 22.820. 	<p>Medium</p> <p>Medium</p> <p>Medium</p>	<ul style="list-style-type: none"> • The final design of the road must include the appropriate siting of all construction camps (i.e. site camps and worker accommodation camps, where required), as well as a site layout plan. • The final design of the road must include the appropriate siting of all construction camps (i.e. site camps and worker accommodation camps, where required), as well as a site layout plan. • Drainage systems shall be adequately designed to allow for run-off from a 1:50 year flood condition. Culverts, pipes and channels shall be concrete lined. In designing culverts along the proposed route, it must be ensured that drainage systems are kept as natural as possible. Natural drainage should be retained, and normal flow ensured at all times. • The bridge design must ensure that the creation of turbulent flow in the system is minimised, in order to prevent downstream erosion. No support pillars should be constructed within the active channel. • Design of noise

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Activity	Impact summary	Significance	Proposed mitigation
			mitigation measures at Mr J Schutte's house as per the noise specialist study undertaken by Mr Barend van der Merwe dated November 2013.
	<p><u>Indirect impacts:</u> <u>Planning and design phase</u></p> <p>Possible relocation of services i.e. Telkom lines, water pipes and Eskom lines.</p>	High	<ul style="list-style-type: none"> • Where service disruption is inevitable, the Contractor must advise the Project Manager at least 7 days in advance, allowing enough time to inform affected parties. • Any complaints must be included in the complaints register maintained on site. • Updated information boards must be maintained on site and must include contact details for complaints by the public in accordance with details provided by the Engineer.
	<p><u>Cumulative impacts:</u> <u>Planning and design phase</u></p> <p>There are no cumulative impacts associated with the design phase.</p>	None	None
<u>Construction phase</u>	<p><u>Direct impacts:</u></p> <ul style="list-style-type: none"> • Possible impacts to the streams and wetlands with the widening of the bridges and extension of culverts and pipes; • Possible impact to streams and wetlands with the 	High High	<ul style="list-style-type: none"> • The exposed rock sheets occurring at S 28.05806° E 27.15666° contain a high amount of protected succulents and bulbs (Appendix C of specialist report by Eko Environmental). Although none of these

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Activity	Impact summary	Significance	Proposed mitigation
	<p>mining of material in borrow pits and quarries;</p> <ul style="list-style-type: none"> • Possible impact on protected succulents and bulbs in area to be acquired outside road reserve; • Possible impact on <i>Aloe greatheadii</i> var. <i>davyana</i> (Grass Aloe), <i>Ammocharis coranica</i> (Ground Lily) and <i>Brunsvigia radulosa</i> (Candelabra Lily) populations in areas to be acquired outside road reserve; • Possible impact on mammals and snakes; • Possible erosion of soils and loss of topsoil; • Possible invasion of exotic species; • Possible pollution of solid waste; • Possible sewage pollution; • Possible pollution of fuels and gas as a result of inadequate storage; • Possible pollution by cement or concrete; • Possible noise pollution (especially at the house of at Mr J Schutte); • Possible dust pollution; • Possible impact on archaeological sites and graves (An informal cemetery west of the road, within 10 m from the boundary fence. Two old farm labourer homesteads and stone cairn at borrow pit 8. • Possible fossil molluscs and associated trace fossils north east of Quarry 42.5 south of Kroonstad. 	<p>High</p> <p>High</p> <p>Medium</p> <p>Medium</p> <p>Medium</p> <p>Medium</p> <p>Medium</p> <p>Medium</p> <p>Medium</p> <p>High</p> <p>High</p>	<p>species occur within the road reserve new land will be acquired for expansion of the road and it is likely that this area will be affected. Where this area is in any way affected by the road construction a permit should be acquired and any protected species within this area should be transplanted to an adjacent area where they will not be affected.</p> <ul style="list-style-type: none"> • Extensive <i>Aloe greatheadii</i> var. <i>davyana</i> (Grass Aloe) and <i>Ammocharis coranica</i> (Ground Lily) populations occurs at S 27.73699° E 27.23250°. Although none of these species occur within the road reserve new land will be acquired for expansion of the road and it is likely that this area will be affected. Where this area is in any way affected by the road construction a permit should be acquired and any protected species within this area should be transplanted to an adjacent area where they will not be affected. • A large, dense and significant population of <i>Brunsvigia radulosa</i> (Candelabra Lily) occur at borrow pit 26 (S 27.86394° E 27.20212°) (Appendix C). The

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Activity	Impact summary	Significance	Proposed mitigation
			<p>species is not rare or endangered but is protected and a permit should be acquired to remove the plants and transplant them to an area where they will not be affected (Appendix C).</p> <ul style="list-style-type: none"> • Borrow pit 2.4-B is situated at a seasonal stream. The stream is situated within a communal grazing area and is degraded. However, it must still be regarded as a sensitive area as it is a vital water transporting body. The stream must be excluded from the borrow pit site and a buffer of 30m must be afforded to it. • Borrow pit 42.5 and rock quarry 42.5 is situated adjacent to a seasonal wetland. The wetland may become water saturated on a seasonal basis. Although not significant the area is in a good condition and must be considered a wetland as confirmed by the guidelines (Department of Water Affairs and Forestry 2005 & Marnewecke 1999) as well as NFEPA. The area provides unique habitat, is in a good condition and provides vital ecosystem services and therefore it must be regarded as a sensitive area. The borrow pit and rock

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Activity	Impact summary	Significance	Proposed mitigation
			<p>quarry must respect a buffer of 30m from this wetland and measures should be implemented to prevent sediment spill into the wetland.</p> <ul style="list-style-type: none"> • There is a high likelihood that several mammal species may inhabit the road reserve. These are limited to opportunistic, widespread species that are well adapted to the disturbed conditions. No animal species may be harmed in any way and no hunting or capturing of animals may be permitted. These animals will move out of the road reserve of their own accord. • In the event of poisonous snakes or other dangerous animals encountered on the site an experienced and certified snake handler or zoologist must remove these animals from the site and re-locate them to a suitable area. • The Slootspruit is considered a National Freshwater Ecosystems Priority Areas (NFEPA) system and although the road does not cross this stream two seasonal tributaries of the stream is crossed by the road. These tributaries feed in to the Slootspruit and therefore also influence

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Activity	Impact summary	Significance	Proposed mitigation
			<p>the condition of this stream. They must therefore be considered as sensitive areas where utmost care must be taken in order not to allow degradation of these streams.</p> <ul style="list-style-type: none"> • The majority of streams and pans being crossed by the N1 National Road are in a degraded with a few being in a good condition (tributaries of Slootspruit and seasonal wetland). In spite of this all must be considered as being sensitive areas, with specific important of the tributaries of the Slootspruit, and no alteration of the flow patterns within these streams must be allowed. The disturbance of the stream banks must also be kept to a minimum. The following recommendations should be adhered to, to ensure that disturbance of the streams, pans and seasonal wetland are kept to a minimum: <ul style="list-style-type: none"> ○ Where culverts are replaced these should be adequate to allow for sufficient water flow and should not retard water flow. ○ Culvert width should be equal to the

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Activity	Impact summary	Significance	Proposed mitigation
			<p>stream width, this will minimise channel erosion.</p> <ul style="list-style-type: none"> ○ The culvert orientation should follow the main channel flow direction of the streams. ● Disturbance and sedimentation of the stream bed must be prevented as far as possible. The use of attenuation ponds must be investigated where disturbance of the stream bed will take place. ● Installation of culverts should preferably take place during the dry season (June to September) when zero flows are present within these streams. This will prevent water erosion of the stream bed sediments. ● During installation of culverts, rehabilitation of the road along the stream and widening of the road at these streams, pans and seasonal wetland the riparian vegetation (reeds and sedges) should be removed together with the topsoil and replaced afterwards in bare areas. This will speed up recovery of the riparian vegetation. ● If it is not possible to install culverts during the dry season only half of the stream may be blocked off during culvert installation.

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Activity	Impact summary	Significance	Proposed mitigation
			<ul style="list-style-type: none"> • Where work is to be done at the perennial Blomspruit only half the stream should be blocked off at a time and construction time should be kept to a minimum. • Following completion of the culvert installation the area will be susceptible to erosion. This must be prevented by the use of gabions or other geotextiles. • The time period for the installation of culverts should be kept to a minimum. • After cessation of construction the culverts should be regularly inspected for erosion and this should be corrected. • Wherever the removal of topsoil is necessary the topsoil should be stockpiled separately and protected against weed infestation and erosion. • Topsoil should be replaced on top of the soil surface where it has been removed as soon as possible. • Stormwater flow should be managed to promote free draining borrow pits and rock quarries. • No cement or concrete is allowed to be mixed directly on the bare soil in the veld. • All excess mixed concrete and cement to be removed to a registered solid waste site. • No excess imported

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Activity	Impact summary	Significance	Proposed mitigation
			<p>soils or stone (if used during the construction phase) may be left behind. These materials to be removed within two (2) weeks after completion of the project.</p> <ul style="list-style-type: none"> • Disturbed surface areas in the construction phase to be rehabilitated. No open trenches to be left. No mounds of soils created during construction to be left. • All waste such as papers, plastics, etc. to be removed on a daily basis. • Extreme care needs to be taken to avoid pollutants such as oils, fuels, etc. getting into the water system. • All hazardous materials such as but not limited to paint, turpentine and thinners must be stored appropriately to prevent these contaminants from entering the terrestrial and water environment; • All construction material, equipment and any foreign objects brought into the area by contractors and staff to be removed within 2 (two) weeks after completion of construction. • Removal of all waste construction material to an approved waste disposal site. • No water for drinking or construction purposes

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Activity	Impact summary	Significance	Proposed mitigation
			<p>of any kind may be extracted directly out of existing streams, drainage lines, etc. without the necessary prior authorisations, permits etc.</p> <ul style="list-style-type: none"> • No water to be taken out of the stream to be used for any purpose of the project during the construction phase of the project. No water from the river / streams to be used as drinking water. • Only certified, chemical, portable toilets to be used. These are not to be situated within 100m of any watercourses or impoundments. These portable toilets to be administered and serviced by a certified, registered company. • Proper rubbish bins to be provided. These to be emptied weekly and the waste to be removed to an official waste disposal site. • No open fires to be made in the veld. • No wood for fires, etc. to be collected from out of the veld. • Appropriate dust-suppression techniques (e.g. the use of water spray vehicles) shall be employed on all exposed surfaces during periods of high wind. • Noise that could cause a major disturbance (e.g. blasting) should only be carried out

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Activity	Impact summary	Significance	Proposed mitigation
			<p>during normal working hours in those areas located in close proximity to communities and/or residences.</p> <ul style="list-style-type: none"> • Mitigation at Mr J Schutte's house from Km 22.580 to Km 22.820: <ul style="list-style-type: none"> ○ Earthberm of 1.0m from the road surface (include the 0.800m cut and 0.200m soil to be deposited onto the side) to be constructed along the eastern side of the southbound carriage way from the section which is in 0.800m cut and up to 300m to the south of the farm house; ○ Pre-cast concrete barriers of 1.0m (used at the e-toll project) to be secured on top of the earthberm or to construct a brick-wall with an effective height of 1.0m; ○ An UTFC 13mm asphalt surface or similar friction course asphalt surface to be used. ○ Grass to be planted along the side walls of the section of the road 100m on both sides of the farmhouse. • It is recommended that the heritage sites identified are left in place and that they are fenced off with danger tape with

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Activity	Impact summary	Significance	Proposed mitigation
			<p>a buffer of at least 10 metres from the outer most edge of the visible structures for the duration of the activities at the borrow pit. If it is impossible to avoid these sites, they should be documented and excavated by a qualified archaeologist.</p> <ul style="list-style-type: none"> • Any relocation of archaeological remains or graves requires a permit from the SAHRA. The proper procedure needs to be followed in terms of specialist study undertaken. • Paleontological remains need to be documented following permit application to SAHRA.
	<p>Indirect impacts:</p> <ul style="list-style-type: none"> • Possible weed invaders as a result of disturbance of soil. • Possible erosion at river banks 	<p>Medium</p> <p>High</p>	<ul style="list-style-type: none"> • All alien vegetation in the road reserve should be removed upon completion of construction. • Bank vegetation cover should be monitored to ensure that sufficient vegetation is present to bind the bankside soils and prevent further bankside erosion.
	<p>Cumulative impacts:</p> <ul style="list-style-type: none"> • Possible additional traffic on the roads during construction; • Possible influx of people in the area during construction. 	<p>High</p> <p>Medium</p>	<ul style="list-style-type: none"> • The additional traffic will be managed by the contractor through the traffic management as included in the tender document to the project. • A Public Liaison Officer (PLO) should be appointed through the

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Activity	Impact summary	Significance	Proposed mitigation
			relevant ward councillor to manage the employment opportunities on the project.
<p><u>Operational phase (Maintenance phase)</u></p>	<p><u>Direct impacts:</u></p> <ul style="list-style-type: none"> • Possible increase in alien vegetation; • Possible bank failure at aquatic systems present 	<p>Medium</p> <p>High</p>	<ul style="list-style-type: none"> • Mechanical control of alien plants around disturbed areas to be implemented within three months of completion of construction. Thereafter every six months. Mechanical control to be of such a nature as to allow local, indigenous grasses and other pioneers to colonise the previously disturbed areas, thereby keeping out alien invasives. • No chemical control (herbicides) of alien plants to be used. Herbicides could get into the water system and will have a detrimental effect on the environment. • Areas around foundations, culverts, gabions, etc. need to be check before and after the summer rainy season for signs of soil erosion due to stormwater run-off. Such sites need to be modified and rehabilitated to prevent ongoing erosion. These sites need to be monitored more closely than other sites which show no or minimal signs of erosion. • No inspection or other vehicles to drive through

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Activity	Impact summary	Significance	Proposed mitigation
			watercourses except where there are existing bridges, roads and other existing crossovers.
	<p>Indirect impacts:</p> <p>There is no indirect impacts associated with the maintenance phase</p>	None	None
	<p>Cumulative impacts:</p> <p>There is no cumulative impacts associated with the maintenance phase</p>	None	None
<p><u>Decommissioning and closure phase</u></p> <p>This phase only pertains to the decommissioning of the construction camp site. The road itself will not be decommissioned in the foreseeable future.</p>	<p>Direct impacts:</p> <ul style="list-style-type: none"> • To ensure that disturbed areas, the construction site camp and borrow pits/quarries are rehabilitated after construction has been completed. 	High	<ul style="list-style-type: none"> • The use of hydro-seeding should be investigated for rehabilitation of the road reserve as well as the borrow pit and rock quarry sites where the establishment of vegetation does not occur within a reasonable time period after cessation of construction. • After construction the areas cleared of vegetation will be susceptible to infestation by invader weed species. The road reserve should be monitored for the presence of invader weed species (Refer to Appendix D of specialist report by Eko Environmental for likely invader species to be removed). • All overburden and spoils should be replaced in the borrow pits and rock quarries and the surrounding areas should

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Activity	Impact summary	Significance	Proposed mitigation
			be levelled to its original state once excavation activities has ceased. <ul style="list-style-type: none"> • Areas that have become compacted due to construction activities should be ripped. • After cessation of activities on the site the area should be rehabilitated to acceptable standards. • After construction has ceased all construction materials should be removed from the road reserve. • The hydro-seeding mixture must be certified weed free.
	<p>Indirect impacts:</p> <p>There is not indirect impacts associated with the decommissioning phase</p>	None	None
	<p>Cumulative impacts:</p> <p>There is not indirect impacts associated with the decommissioning phase</p>	None	None
No-go option			
	<p>Direct impacts:</p> <ul style="list-style-type: none"> • Increase in unsafe driving conditions; • Increase in traffic accidents; • Increase in loss of lives. 	High	Upgrade the road
	<p>Indirect impacts:</p> <p>Possible traffic accidents as a result of poor driving conditions. Possible injury and death of travelling public.</p>	High	Upgrade the road
	<p>Cumulative impacts:</p> <p>High health care costs as a result of traffic accidents.</p>	High	None

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

2. ENVIRONMENTAL IMPACT STATEMENT

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

Alternative A (preferred alternative)

1. Introduction

The preferred alternative entails the Upgrade of National Route 1 Section 17 from Ventersburg (km 0.0) to Kroonstad (km 44.9) by upgrading the bi-directional single carriageway to a divided dual carriageway with a median by constructing the new carriageway adjacent the N1 towards the **EAST** of the existing carriageway.

2. This option is favoured for the following reasons

- The safety to the traveling public will be significantly improved as the traffic will be flowing optimally.
- The road could be upgraded to acceptable horizontal and vertical geometric requirements.
- This option drastically lowers the possibilities of head-on collisions.
- This option accommodates future capacity upgrades if required.
- It is anticipated that the traffic accidents that occur on this road will be reduced with this option.
- The existing culverts out/in-let structures will only have to be lengthened and replaced on the eastern side of the road.
- It is anticipated that the road upgrade will cater for future traffic demand and will support economic growth. This will benefit the communities in the area including local residents, motorists, the road freight industry and its customers. The upgrade of the road will, therefore, ensure safer driving conditions for the traveling public by enabling vehicles to travel more efficiently and smoothly with less congestion.

3. Possible Environmental Impacts

The main possible environmental impacts associated with this alternative is the following:

- Possible impacts to the streams and wetlands with the widening of the bridges and extension of culverts and pipes;
- Possible impact to streams and wetlands with the mining of material in borrow pits and quarries;
- Possible impact on protected succulents and bulbs in areas to be acquired outside road reserve;
- Possible impact on *Aloe greatheadii* var. *davyana* (Grass Aloe), *Ammocharis coranica*

(Ground Lily) and *Brunsvigia radulosa* (Candelabra Lily) populations in areas to be acquired outside road reserve;

- Possible impact on mammals and snakes;
- Possible erosion of soils and loss of topsoil;
- Possible invasion of exotic species;
- Possible pollution of solid waste;
- Possible sewage pollution;
- Possible pollution of fuels and gas as a result of inadequate storage;
- Possible pollution by cement or concrete;
- Possible noise pollution (especially at the residence of Mr J Schutte);
- Possible dust pollution;
- Possible impact on archaeological sites and graves (An informal cemetery west of the road at km and two old farm labourer homesteads and stone cairn at borrow pit 8 will not be impacted upon).
- Possible fossil molluscs and associated trace fossils north east of Quarry 42.5 south of Kroonstad.

Should the mitigation measures as included in the EMPr for the project are adhered to, the possible impacts related to this project will be medium to low.

4. Specialist Studies Undertaken

Four specialist studies were undertaken for this project i.e.

- a. Report on the biodiversity, ecological and wetland assessment of the proposed upgrading of National Route 1, Section 17 from Ventersburg to Kroonstad, Free State Province as well as the associated borrow pits and quarries undertaken by Eko Environmental dated October 2013.
- b. Cultural heritage impact assessment for the Upgrade of a Section of National Route 1, between Kroonstad and Ventersburg, Free State Province undertaken by Dr J van Schalkwyk dated December 2013.
- c. Environmental Noise Assessment for the Upgrade of the National Route 1 Section 17 between Kroonstad and Ventersburg (Section opposite Mr J Schutte Farmhouse) dated November 2013.
- d. Palaeontological specialist assessment: Combined desktop and field-based study on the Proposed Upgrade of National Route 1, Section 17, from Ventersburg (Km 0.0) To Kroonstad (Km 44.9), Free State by Dr John E. Almond dated January 2014.

5. Recommendations by Specialist Reports

The following recommendations were included in the specialist reports and included in the EMPr for the project:

5.1 Biodiversity, Ecological and Wetland Assessment

The following are recommended by this study:

- The establishment of a construction yard may only occur in an area that has previously been disturbed. This area must be approved by the Environmental Control Officer (ECO) and must be inspected regularly.
- The exposed rock sheets occurring at S 28.05806° E 27.15666° contain a high amount of protected succulents and bulbs (Appendix C). Although none of these species occur within the road reserve new land will be acquired for expansion of the road and it is likely that this area will be affected. Where this area is in any way affected by the road construction a permit should be acquired and any protected species within this area should be transplanted to an adjacent area where they will not be affected (Appendix C).
- An extensive *Aloe greatheadii* var. *davyana* (Grass Aloe) and *Ammocharis coranica* (Ground Lily) populations occurs at S 27.73699° E 27.23250° (Appendix C). Although none of these species occur within the road reserve new land will be acquired for expansion of the road and it is likely that this area will be affected. Where this area is in any way affected by the road construction a permit should be acquired and any protected species within this area should be transplanted to an adjacent area where they will not be affected (Appendix C).
- A large, dense and significant population of *Brunsvigia radulosa* (Candelabra Lily) occur at borrow pit 26 (S 27.86394° E 27.20212°) (Appendix C). The species is not rare or endangered but is protected and a permit should be acquired to remove the plants and transplant them to an area where they will not be affected (Appendix C).
- Borrow pit 2.4-B is situated at a seasonal stream (Map 3). The stream is situated within a communal grazing area and is degraded. However, it must still be regarded as a sensitive area as it is a vital water transporting body. The stream must be excluded from the borrow pit site and a buffer of 30m must be afforded to it.
- Borrow pit 42.5 and rock quarry 42.5 is situated adjacent to a seasonal wetland (Map 4). The wetland may become water saturated on a seasonal basis. Although not significant the area is in a good condition and must be considered a wetland as confirmed by the guidelines (Department of Water Affairs and Forestry 2005 & Marnewecke 1999) as well as NFEPA (Map 2). The area provides unique habitat, is in a good condition and provides vital ecosystem services and therefore it must be regarded as a sensitive area. The borrow pit and rock quarry must respect a buffer of 30m from this wetland and measures should be implemented to prevent sediment spill into the wetland.
- There is a high likelihood that several mammal species may inhabit the road reserve. These are limited to opportunistic, widespread species that are well adapted to the disturbed conditions. No animal species may be harmed in any way and no hunting or capturing of animals may be permitted. These animals will move out of the road reserve of their own accord.
- In the event of poisonous snakes or other dangerous animals encountered on the site an experienced and certified snake handler or zoologist must remove these animals from the site and re-locate them to a suitable area.
- The Slootspruit is considered a National Freshwater Ecosystems Priority Areas (NFEPA) system and although the road does not cross this stream two seasonal tributaries of the stream is crossed by the road (Map 2 & 5). These tributaries feed in to the Slootspruit and therefore also influence the condition of this stream. They must therefore be considered as sensitive areas where utmost care must be taken in order not to allow degradation of these streams.
- The majority of streams and pans being crossed by the N1 National Road are in a degraded with a few being in a good condition (tributaries of Slootspruit and seasonal wetland) (Table 2 & Map 1 & 2, 5 - 10). In spite of this all must be considered as being sensitive areas, with specific important of the tributaries of the Slootspruit, and no alteration of the flow patterns

within these streams must be allowed. The disturbance of the stream banks must also be kept to a minimum. The following recommendations should be adhered to, to ensure that disturbance of the streams, pans and seasonal wetland are kept to a minimum:

- Where culverts are replaced these should be adequate to allow for sufficient water flow and should not retard water flow.
- Culvert width should be equal to the stream width, this will minimise channel erosion.
- The culvert orientation should follow the main channel flow direction of the streams.
- Disturbance and sedimentation of the stream bed must be prevented as far as possible. The use of attenuation ponds must be investigated where disturbance of the stream bed will take place.
- Installation of culverts should preferably take place during the dry season (June to September) when zero flows are present within these streams. This will prevent water erosion of the stream bed sediments.
- During installation of culverts, rehabilitation of the road along the stream and widening of the road at these streams, pans and seasonal wetland the riparian vegetation (reeds and sedges) should be removed together with the topsoil and replaced afterwards in bare areas. This will speed up recovery of the riparian vegetation.
- If it is not possible to install culverts during the dry season only half of the stream may be blocked off during culvert installation.
- Where work is to be done at the perennial Blomspruit only half the stream should be blocked off at a time and construction time should be kept to a minimum.
- Following completion of the culvert installation the area will be susceptible to erosion. This must be prevented by the use of gabions or other geotextiles.
- The time period for the installation of culverts should be kept to a minimum.
- After cessation of construction the culverts should be regularly inspected for erosion and this should be corrected.
- Wherever the removal of topsoil is necessary the topsoil should be stockpiled separately and protected against weed infestation and erosion.
- Topsoil should be replaced on top of the soil surface where it has been removed as soon as possible.
- Stormwater flow should be managed to promote free draining borrow pits and rock quarries.
- The use of hydro-seeding should be investigated for rehabilitation of the road reserve as well as the borrow pit and rock quarry sites where the establishment of vegetation does not occur within a reasonable time period after cessation of construction.
- After construction the areas cleared of vegetation will be susceptible to infestation by invader weed species. The road reserve should be monitored for the presence of invader weed species (Refer to Appendix D for likely invader species to be removed).
- All overburden and spoils should be replaced in the borrow pits and rock quarries and the surrounding areas should be levelled to its original state once excavation activities have ceased.
- Areas that have become compacted due to construction activities should be ripped.
- After cessation of activities on the site the area should be rehabilitated to acceptable standards.
- After construction has ceased all construction materials should be removed from the road reserve.

5.2 Heritage Assessment

The following is recommended by this study:

The aim of the survey was to locate, identify, evaluate and document sites, objects and structures of cultural significance found within the area in which it is proposed to upgrade a section of the N1 national road, as well as fourteen borrow pits and quarries that are to be used for these upgrades.

The cultural landscape qualities of the region essentially consist of a rural setup. In this the human occupation is made up of a pre-colonial element consisting of limited Stone Age and Iron Age occupation, as well as a much later colonial (farmer) component. In recent years an urban element developed, expanding at a phenomenal rate, largely as a result of mining development in the region.

- An informal cemetery dating to recent times was found west of the road, within 10 m from the boundary fence. It contains at least 5 graves, of which only one has a headstone with a name and date on it. The other graves are marked with cement slabs or stone cairns. It is located south of km marker N1-17X; 43.2N. The cemetery is approximately 10m west from the edge of the exiting road reserve. As the road will only be widened here on the eastern side, there will not be an impact on the graves. However, it is recommended that the cemetery should be fenced off with danger tape for the duration of the construction in order to prevent any accidental damage. If that is impossible, the graves will have to be relocated after proper procedures have been followed – see Appendix 3.
- Two old farm labourer homesteads were identified at Borrow pit 8. Dating these features is difficult as little remains of the various structures. Within the context of farming activities in the larger region, these sites are not viewed to be unique or limited in number and, considering the fact that very little apart from foundations and stone walling remain, these sites are viewed to have low significance.

These sites would not differ from similar sites in contiguous areas or from the larger region and are therefore seen to have a low significance. However, it is a cultural practice that premature babies or infants that died very young are sometime buried within the homestead, either in the courtyard or even within the house.

As all these feature seem to occur on the western edge of the borrow pit, it would be possible to avoid them.

It is recommended that these sites are left in place and that they are fenced off with danger tape with a buffer of at least 10 metres from the outer most edge of the visible structures for the duration of the activities at the borrow pit. If it is impossible to avoid these sites, they should be documented and excavated by a qualified archaeologist.

- A stone cairn which might be an informal burial place was identified in close proximity of the two house structures at Borrow pit 8. Its origin is unclear, but, due to its proximity to the house structures, it is proposed to err on the side of caution and to include it here. This site can probably be related to the two identified house structures, making all three of these a unit. Any impact would therefore have an impact on the whole.
- As all these feature seem to occur on the western edge of the borrow pit, it would be possible to avoid them.

It is recommended that the burial is left in place and that it is fenced off with danger tape with a buffer of at least 10 metres from the outer edge of the grave

5.3 Noise Assessment

The following is recommended in this study:

The sensitive receivers in the vicinity of the highway are already exposed to high ambient noise levels created by the existing traffic volumes. These prevailing noise levels are typical of noise levels along busy highways and the projected noise increase with the widening of the carriage way, in both directions and taking into account the projected traffic growth is calculated to not exceed 1.9dBA to 3.0dBA. In terms of SANS 10103 of 2008, this will elicit little to sporadic complaints from people in the vicinity of the highway. The human ear will however not identify such an increase in the noise level and the increase will only be noticeable by doing a noise survey.

Following the detail investigations and since the current ambient noise levels experienced by sensitive receivers next to the highway are already high, the significance rating of the existing highway is already medium. The introduction of a further lane in both directions will result in a high significance rating if no mitigation measures are implemented. The recommended noise mitigation measures will change the significance rating to medium which will be in line with the current significance rating of medium.

For the operational period it is proposed that the following mitigation measures are implemented to ensure that the significance rating is reduced to medium which will be in line with the current significance rating:

- Earthberm of 1.0m from the road surface (include the 0.800m cut and 0.200m soil to be deposited onto the side) to be constructed along the eastern side of the southbound carriage way from the section which is in 0.800m cut and up to 300m to the south of the farm house;
- Pre-cast concrete barriers of 1.0m (used at the e-toll project) to be secured on top of the earthberm or to construct a brick-wall with an effective height of 1.0m;
- An UTFC 13mm asphalt surface or similar friction course asphalt surface to be used.
- Grass to be planted along the side walls of the section of the road 100m on both sides of the farmhouse.

Noise monitoring should furthermore be carried out for a period of two years during the operational phase of the project. This will be necessary to identify a noise increase (7.0dBA or above the currently prevailing noise levels) that could lead to the requirement of additional noise mitigation measures.

5.4 Paleontological Assessment

The following conclusions and recommendations are drawn from this study:

The study area along the N1 between Ventersburg and Kroonstad is underlain by Late Permian lacustrine to continental sediments of the Karoo Supergroup (Ecca and Lower Beaufort Groups) that are extensively intruded by Early Jurassic dolerites of the Karoo Dolerite Suite. These bedrocks are for the most part mantled by Quaternary sands, soils and other superficial deposits of low palaeontological sensitivity. Exposure levels of potentially fossiliferous Karoo sediments are correspondingly very low, with the exception of occasional road cuttings, quarries, borrow pits and dams.

Of the twelve borrow pit sites and two quarry sites associated with the N1 upgrade project, almost all are excavated into fresh to deeply-weathered Karoo dolerite that is of no palaeontological heritage

significance. Karoo Supergroup sandstones occur in the vicinity of borrow pit 2.4B near Ventersburg. However, no fossil remains were recorded here and the sedimentary bedrocks are baked by nearby dolerite intrusions. Pending the discovery of significant new fossil remains (e.g. fossil vertebrates, petrified wood) during excavation, no further palaeontological studies or professional mitigation are therefore recommended for any of these borrow pits or quarries, with the notable exception of the Q42.5 quarry site that is discussed further below. The Environmental Control Officer (ECO) for the project should be alerted to the potential for, and scientific significance of, new fossil finds during the construction phase of the road development.

Important assemblages of fossil non-marine bivalves (clams / mussels), closely associated with fossil burrows made by the same group, as well as other low-diversity trace fossil assemblages and rare petrified wood are recorded in the vicinity of the Q42.5 quarry. The site is located just west of the N1 and approximately 3.7 km south of the outskirts of Kroonstad. Fossil bivalves preserved as moulds and shelly coquinas occur in situ as well as within sandstone float blocks at several points to the west and east of the quarry and are expected to occur widely in the subsurface (See GPS data table and map in the Appendix). The fossiliferous beds here overlie a dolerite sill and are mapped within the Lower Beaufort Group outcrop area. However, they are probably better referred to the Ecca Group, possibly as deltaic deposits within the uppermost Volksrust Formation of Late Permian age, but this requires confirmation.

The fossil bivalve locality near Kroonstad has been known since at least the 1970s (Kitching in Rossouw 1970) but has never been formally studied or sampled. It is of considerable scientific interest because of the unusually large and well-preserved fossil bivalves found along the quarry margins here, both in situ within thinly-interbedded sandstone / mudrock packages as well as within numerous sandstone float blocks. Furthermore, the bivalves occur in close association with traces of their burrows, which is an unusual occurrence. The identity of the bivalves has not yet been established. Larger (c. 4-5 cm) and smaller (1 cm or less) individuals may represent different growth stages of the same species or perhaps different taxa. To the author's knowledge, fossil bivalve life assemblages of this type and quality have not been described elsewhere within the Karoo Supergroup of southern Africa.

Since this key fossil site would be seriously impacted by extension of the existing Q42.5 dolerite quarry it is strongly recommended that before construction commences a professional palaeontologist be commissioned by the developer to record and judiciously sample near-surface fossil material at the site. The palaeontologist should also make recommendations for realistic conservation or mitigation measures during the construction phase of the Q42.5 quarry development, in consultation with the developer. Any mitigation measures proposed should be incorporated into the Environmental Management Plan (EMP) for the N1 road upgrade project.

The palaeontologist concerned with recording, sampling and mitigation work would need a valid collection permit from the South African Heritage Resources Agency (SAHRA contact details: Ms. Colette Scheermeyer, South African Heritage Resources Agency, 111 Harrington Street. P.O. Box 4637, Cape Town 8000. Tel: 021 462 4502. Email: cscheermeyer@sahra.org.za. Fax: +27 (0)21 462 4509. Web:www.sahra.org.za).

All work would have to conform to international best practice for palaeontological fieldwork and the study (e.g. data recording fossil collection and curation, final report) should adhere to the minimum standards for Phase 2 palaeontological studies recently published by SAHRA (2013).

6. Advantages and Disadvantages of the Preferred Alternative

(i) Advantages

- The informal cemetery to the west of the road at km 43,2 will not be impacted on with this alternative as the road will be widened towards the east.
- Less wetlands will be impacted upon with this alternative as more wetlands occur towards the west of the existing road.
- A dam west of the existing road at approximately km 20 will not be impacted upon with this alternative.

(ii) Disadvantages

- An existing Telkom infrastructure will require relocation.

7. Sustainable Development

It will be attempted to implement the following:

- Compact fluorescent lights will be installed in the site offices;
- All solid waste will be separated in different containers to make recycling possible;
- Where new toilets will be installed dual flush device toilets will be installed;
- Storm water will be managed and improved to reduce erosion by installing gabion boxes;
- Where new grassing is done, it will be done by using locally indigenous vegetation;
- Training of staff will be done to implement good housekeeping. This will be done during toolbox talks.
- A Designated Environmental Officer will address the staff on good housekeeping actions.

8. Final Conclusion

The impacts related to the widening of the rivers as well as the extension of the culverts will be high during construction but is not anticipated to have any long term impact as the flow dynamics will not be altered.

The vegetation that is currently in the road reserve is regarded as degraded and heavily invaded by alien plants. The impact related to the clearing of vegetation in the road reserve, is therefore, considered low. The protected succulents and bulbs in areas to be acquired outside road reserve should be transplanted before construction commences. Any Grass Aloes, Ground Lilies and Candelabra Lilies populations in areas to be acquired outside road reserve should be transplanted before construction commences.

The noise impact study undertaken at Mr J Schutte's house from Km 22.580 to Km 22.820 found that since the current ambient noise levels experienced by sensitive receivers next to the highway are already high, the significance rating of the existing highway is already medium. The introduction of a further lane in both directions will result in a high significance rating if no mitigation measures are implemented. The recommended noise mitigation measures will change the significance rating to medium which will be in line with the current significance rating of medium.

Since this key fossil site would be seriously impacted by extension of the existing Q42.5 dolerite quarry it is strongly recommended that before construction commences a professional palaeontologist be commissioned by the developer to record and judiciously sample near-surface fossil material at

the site. The palaeontologist should also make recommendations for realistic conservation or mitigation measures during the construction phase of the Q42.5 quarry development, in consultation with the developer. Any mitigation measures proposed should be incorporated into the Environmental Management Plan (EMP) for the N1 road upgrade project.

A palaeontologist was appointed to undertake the necessary recording, sampling and mitigation work (Dr J Almond) and will apply for a valid collection permit from the South African Heritage Resources Agency.

From a heritage point of view, it is recommended that the proposed development can continue, on condition of acceptance of the mitigation measures as included in the report. Should any archaeological sites or graves be exposed during construction work, it should immediately be reported to a heritage consultant so that an investigation and evaluation of the finds can be made.

The traffic disruption during the 36 month construction period is considered high but is a short term impact. The construction related impacts are also considered to be short terms and with mitigation measures, to be of low impact.

The primary findings for the upgrade of National Route 1 Section 17 from Ventersburg (km 0.0) to Kroonstad (km 44.9) by upgrading the bi-directional single carriageway to a divided dual carriageway with a median by constructing the new carriageway adjacent to the N1 towards the EAST of the existing carriageway would probably result in:

- No negative environmental impacts of high significance with mitigation;
- Positive impacts related to improved traffic flow and reduced traffic accidents;
- Potential positive impacts due to increased economic activity, employment and training and capacity building.

Therefore, alternative 1 (preferred alternative) presents a better option than the alternative 2 for the proposed project in terms of the parameters investigated. The essence of the Basic Assessment process is aimed at ensuring informed decision-making and environmental accountability, and to assist in achieving environmentally sound and sustainable development. No long-term environmental impact should arise with this alternative. We believe that the urgency to complete this project due to safety concerns warrants the request for urgent authorization of this project.

In conclusion, it is believed the information contained in this report and the documentation attached hereto is sufficient to make a decision in respect of the activity applied for. This report covers the full suite of potential environmental issues related to the proposed development, and that sufficient information regarding the identification, assessment and potential mitigation of impacts has been presented to facilitate informed decision making by the appropriate authorities.

Based on the specialist studies undertaken within this BA, both benefits and negative impacts are anticipated as a result of the proposed project. The findings of this BAR have highlighted these impacts and prioritised them in terms of high, medium or low significance. It is therefore recommended that this project be authorized by the authorities with the condition that the mitigation measures as stipulated in the EMP should be adhered to. The authorities need to use this document to aid the decision-making process with respect to the future outcome of this proposal.

An Environmental Management Programme is included detailing the management of the environmental aspects during the design, construction and decommissioning period.

Alternative B

Alternative 2 entails upgrading the bi-directional single carriageway to a divided dual carriageway with a median by constructing the new carriageway adjacent the N1 towards the WEST of the existing carriageway.

1. Possible Environmental Impacts

The possible environmental impacts related to this alternative are higher than Alternative 1 as a result of the following:

- The informal cemetery to the west of the road at km 43,2 will be impacted on with this alternative and will have to be relocated.
- More wetlands will be impacted upon with this alternative as more wetlands occur towards the west of the existing road.
- A dam west of the existing road at approximately km 20 will be impacted upon with this alternative.

The other possible impacts identified and construction related impacts will be similar to Alternative 1.

2. Advantages and Disadvantages of this Alternative

(i) Advantages

- May upgrade road to acceptable horizontal and vertical geometric requirements.
- Drastically lowers possibilities of head-on collisions.

(ii) Disadvantages

- Higher environmental impacts as indicated.
- This option does not accommodate future capacity upgrades as the cemetery will have to be relocated.
- An existing Telkom infrastructure will require relocation.

From information received from the consulting engineers and potential environmental impacts that were identified during the Basic Assessment process that are associated with this alternative, the construction of this alternative is, therefore, not recommended.

Alternative C

None

No-go alternative (compulsory)

Should the road not be upgraded, the traffic on the N1 could experience increasingly unsafe driving conditions. The vertical and horizontal alignments and intersections of the road need to be upgraded to ensure the safety of the traveling public. This will also accommodate the predicted increase in traffic volume and avoid high driver frustration.

The current high volumes of heavy vehicle traffic are a major safety and capacity concern. The volume of heavy vehicles is expected to increase significantly over the next 20 years. Traffic volumes

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and design principals determine that the road needs to be upgraded to ensure the safety of the traveling public. If this is not done, it is anticipated that accidents on this road will increase in future.

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 x

NO

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.

- The mitigation measures included in the EMPr should be adhered to;
- A designated Environmental Officer should be appointed during the construction period. The DEO will be responsible for the monitoring, reviewing and verifying of compliance with the EMPr by the applicant.
- Regular environmental audits should be undertaken, both internal and external by an independent auditor.
- During the construction phase, the premises and the works site must be maintained by the contractor in a reasonably neat and orderly condition and free from accumulation of waste materials and rubbish during the entire construction period.

Is an EMPr attached?

YES x

NO

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.

Preparation of Basic Assessment Report

This Basic Assessment Report was prepared by Dr Jenine Bothma of Chameleon Environmental Consultants:

PO Box 11788
Silver Lakes
0054
15 Els Street, Silver Lakes, Pretoria
Tel: 012 809-1704
Cell: 082 571 6920
Fax: 086 6855 080
E-Mail:ce.j@mwebbiz.co.za

Dr Bothma is certified as an Environmental Assessment Practitioner with the Interim Certification Board for Environmental Assessment Practitioners of South Africa.

Assumptions and Limitations

- a. The following assumptions have been made for the purposes of this report:
 - All information received from sources contributing to this project is correct;
 - That the SANRAL would consider the recommendations derived from this study, and
 - That the Department of Environmental Affairs would be the decision making authority with regard to this application.

- b. Limitations
 - None.

- c. Knowledge Gaps
 - None

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.

Dr Josephine Bothma _____
NAME OF EAP

SIGNATURE OF EAP

DATE

SECTION F: APPENDIXES

The following appendixes must be attached:

Appendix A: Maps and co-ordinates taken every 250 meters

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