DRAFT BASIC ASSESSMENT REPORT (BAR) FOR THE PROPOSED THE PROPOSED UPGRADE OF JENNINGS ROAD, NKOSI LANGALIBALELE MUNICIPALITY

KZN DEDTEA EIA REF: DC23/0003/2018

Date: 23 February 2018

Prepared for:	Prepared by:
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Report Status: draft BAR

Document Details:

Name of Document	Basic Assessment Report: Proposed Upgrading of Jennings Road, Estcourt
Environmental Assessment Practitioner Details	
EAP Company Name	Fuze Environmental Services
Consultant managing the Application	Jenitha Girdary
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Qualifications and Experience	BA Geography Jenitha has been employed in the environmental management sector since 2007. Her 10 years of work experience extends to undertaking Environmental impact assessments, Basic assessments, compiling EMPs, undertaking site visits and field work, permits applications, ECO work, environmental law, legal screenings, co-operative governance, public participation, rehabilitation project management, quality management, and financial management.
Signature	
Proponent Details	
Applicant name	Inkosi Langalibalele Municipality
Representative	P. S. Mkhize
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Comment Period for the draft Basic assessment report and WULA application:

This draft basic assessment report is subject to review comment within a 30-day period. Comments on the draft basic assessment report are also to be valid for the water use license application.

Comments are due by the 03 April 2018 at the latest. No extensions to the deadline will be given due to the construction implementation and completion period ending in June 2018.

(For official use only)

File Reference Number:	
Application Number:	
Date Received:	

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

Kindly note that:

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

SECTION A: ACTIVITY INFORMATION

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

If YES, please complete the form entitled "Details of specialist and declaration of interest" for the specialist appointed and attach in Appendix I.

1. PROJECT DESCRIPTION

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

Description of Activity and Project

The Inkosi Langalibalele Local Municipality proposes to construct and upgrade Jennings Road, located in Ward 10, Colita, Escourt, governed by Uthukela District. The upgrade will occur over approximately 490m and will include installation of drainage, pavements, road improvements and tarring, connections and realignment, amongst others.

One new culvert will be constructed. One existing culvert will be replaced, due to the gabion wall having collapsed and resulting further in a section of road being washed away.

***Road upgrade co-ordinates subject to EIA*:**

Start: 28°59'21.67"S; 29°52'18.71"E

End: 28°59'23.09"S; 29°52'24.40"E

There will be two culverts located within the above upgrade extent, details as follows:

Culvert 1: (1,8m high x 2,4m wide, 12 m long single cell) located at 28°59'20.85"S; 29°52'22.43"E

Culvert 2: (1,5m high x 1,8m wide, 60 m long single cell) at 28°59'20.93"S; 29°52'18.86"E

Images of upgrade site

Dumping noted along Jennings; ephemeral nature of watercourse

The map below provides a description of the affected roadway:

The proposed road horizontal alignments were dictated by the existing alignment and restricted by existing services, boundaries, and structures adjacent to the road.
The proposed alignment is designed to meet the minimum requirements of the design speed. The road will be constructed on the existing road servitude as per approved Township layout. The design speed for the road is 40 km/hr.

The existing vertical alignment of the road is relatively flat to gentle sloping.
The proposed vertical alignment was dictated by the pre-existing site conditions.
The alignment was designed to meet the minimum requirements of the design speed based on the design parameters. Certain design requirements could not be achieved due to limiting excessive earthworks

Based on the Visual Assessment on the roads, incorporation of the Guidelines for Human Settlement Planning and Design ("Red Book") and the Technical Recommendations for Highways (TRH 4, TRH 14 & UTG 1), roads will be upgraded to a Moderate to High Level, higher than the

previously implemented design. All the roads will be designed to a flexible continuously-graded surfacing layer laid to a maximum camber or cross fall of 2%. In accordance to the Street Categorization in the Red Book, the road will be designed to a 6.0 m carriageway, with a 1.2 m wide paved pedestrian side walk to improve overall safety of road users.

To attain a sound pavement structure with a prolonged life span, acceptable vertical/ longitudinal grades, and horizontal alignment for balanced earthworks, safe sighting distances and access to adjoining properties, the design consideration for all the roads shall be as follows:

a) Level of Service and Street Category
Based on the traffic volumes as per Table 8.1 and of the Red Book, the road does not require a robust design to cater for high traffic volumes. The road will be categorized as Paved Access Street (UC >75 vehicles per day).

b) Design Life
Based on stipulations of Table 8.2 of the "Red Book", the life span of the road will be designed for 20 years.

Geometric Design Criteria
Based on the Level of Service and Street Category, the following design input parameters shall apply:
- Design Speed: 40 km/h

- Stopping Sight Distance : 80m

- Maximum Super elevation: 6%

- Minimum K Value on vertical curves : 7%

- Maximum Longitudinal Grade : 6%

The road alignments will be designed to minimise re-alignment, encroachment onto existing services and the extent or cost of bulk earthworks. Furthermore, it must be noted that the above parameters might be taken to the minimum due to available space and existing obstructions on site.

Storm Water Design Approach:
The storm water drainage system and associated structures will be designed in accordance with the Guidelines for Human Settlement Planning and Design ("Red Book") and to conform to the stipulations of the South African Road Agency Drainage.

Design Consideration:
The design flood frequency of 1:2 years for the road and 1:5 for low points will be considered in the storm water design. The Design will accommodate the recent floods patterns and will be in line with the stipulation of Table 6.1 of the Guidelines for Human Settlement Planning and Design ("Red Book").

Piped Drainage:
The pipe size of 450mm-600mm Ø laid to a minimum gradient of 1 in 600, with a combination of standard 1220mm catchpits, kerb inlets and headwalls structures will be utilised for conveyance of the surface run-offs as per Table 6.2 of Red Book. In line with the environmental by-laws and as an erosion mitigation measure on all pipe outlets, concrete dissipation blocks, complete with reno-matress beds will be provided to retard and spread the converged surface run-offs.

Open Surface Drainage:
Based on the design consideration, 1200mm wide and minimum 75mm thick mesh-reinforced concrete lined drains will be provided where necessary and indicated by the Engineer. Grid inlets on catch pits will be utilised to connect to the piped system, where necessary, while stepped concrete discharges and reno-mattress beds will be utilised for direct discharge of the surface

run-off.

Design Output:
Based on the design approach and criteria, the following outputs shall apply for the specific roads:

Pavement:
The stipulations of TRH 4, TRH 8, TRH 14 and UTG 1 will be utilised to conclude the final pavement design, which shall be more or less as follows:

-Culverts fill < 1.1m : 200mm G7 or better compacted to 93% to Density

- Nominal fill < 0 .5m : 200mm G7or better compacted to 95% Density

- Sub base : 150mm G5 compacted to 98% Mod AASTHO Density

- Base course : 150mm G2 layer compacted to 88% Apparent Density

- Surfacing: 30mm medium mix asphalt layer.

- Carriage way: 6m

Drainage:
To conclude the drainage design outputs, the minimum requirements of the South African Road Agency Manual standards will be utilised to conclude the final geometry of the road which shall be as follows:
- Pipe Size : 450-600 Ø mm

- Catch pit Size : 1220mm

- Lined Drains Width : 1m

Culvert sizing
Hydrologic analyses were carried out using SANRAL's Drainage Manual, followed by hydraulic assessments using the HEC-RAS River Analysis System (2005) to check the hydraulic capacity of the structure.
Flood peaks were calculated using the average peak flow values estimated from a combination of methods, namely; the Rational Method, the Alternative Rational Method, the Standard Design Flood Method, the Empirical Method and the SCS-SA Method.

Flood Estimation:
The principal catchment parameters used to estimate the Peak Flows (QT) as per return period:
- Catchment area A = 60 km2

- Longest collector L = 1.35 km

Time of concentration Tc = 15 mins

Return Period (Years)	2	5	10	20	50
Peak Flow (m3/s)	8	13	17	18	25

Hydraulic Assessment
Flood Frequency and Freeboard Requirements:
Jennings Road runs over the structure is classified as a Class 5 road for drainage.
In accordance with SANRAL's Drainage Manual Figure 8.2 the design flood frequency is 10 years for a Class 5 road with Q20 of 18.0 m3/s.
The QT (Q10) requires a positive freeboard of 0.64 m ≈ 0.7 m to the deck soffit (SANRAL Drainage Manual Figure 8.3).

DESCRIPTION OF AFFECTED ENVIRONMENT:

Description of Socio-economic Environment

Inkosi Langalibalele Local Municipality (KZN237) is a category B municipality established through the amalgamation of the Imbabazane and Umtshezi municipalities, situated within the uThukela District in the KwaZulu Natal Province. It is smallest of the three municipalities in the district and makes up a third of its geographic area. Most of the Municipality's population is concentrated in urban farming areas but there are few patches of high-density settlements within the informal areas. The municipality has well- established industrial, commercial and residential areas, rich agricultural farmlands. Estcourt is the largest commercial centre in the Midlands region.

The upgrade is confined to the existing Jennings road in Colita, located in the town of Estcourt. Colita is a low to medium income area. Most of the roads in the area are asphalt, however, there are some gravel sections.

No businesses were noted in the area except for a liquor store.

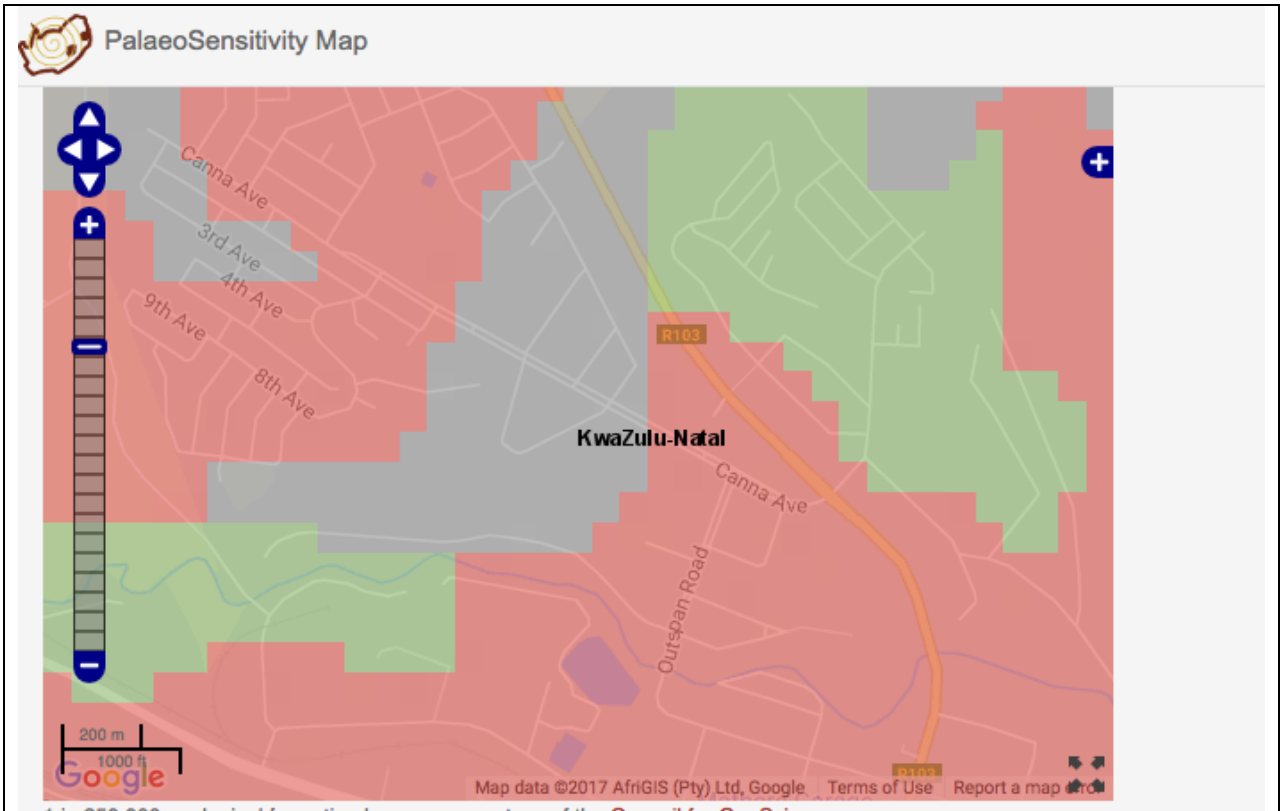
Description of Cultural Environment

There are residences on either side of the road for much of the road. It is believed that the suburb was established about 46 years ago.

Several of the houses have corrugated iron roofs and one of the houses was found to be made from stone and could be older than 60 years. The dwelling is dilapidated and much altered. As the road turns to the north-east, it crosses a watercourse and vacant land. The area is highly disturbed with an existing pipeline as well as with large-scale dumping of litter. It is infested with invasive plant species. No heritage sites were found in this area during the site inspection.

The section from where the road turns to the north-east is untarred and in poor condition. There are houses on either side this section of road as well as power lines. Most of the houses appear to be fairly recently built. The section of Jennings Road in the more recently developed area with low-incoming housing is also untarred. A section of the road runs next to undeveloped land.

No heritage sites were found during the site inspection. This is unsurprising as the Jennings Road environment is highly disturbed by residential activities.



1 in 250 000 geological formation layers are courtesy of the Council for GeoScience

For more information, go to How to Use the Palaeontological (fossil) Sensitivity Map

Colour	Sensitivity	Required Action
RED	VERY HIGH	field assessment and protocol for finds is required

The South African fossil sensitivity map, as shown above, indicates that the project area is situated in an area of very high palaeontological / fossil sensitivity as well as an area of moderate fossil sensitivity. An area of very high fossil sensitivity requires an on-site field assessment and an area of moderate fossil sensitivity requires a desktop palaeontological assessment. However, due to the highly disturbed environment of Jennings Road it is recommended no further palaeontological studies are needed for this project.

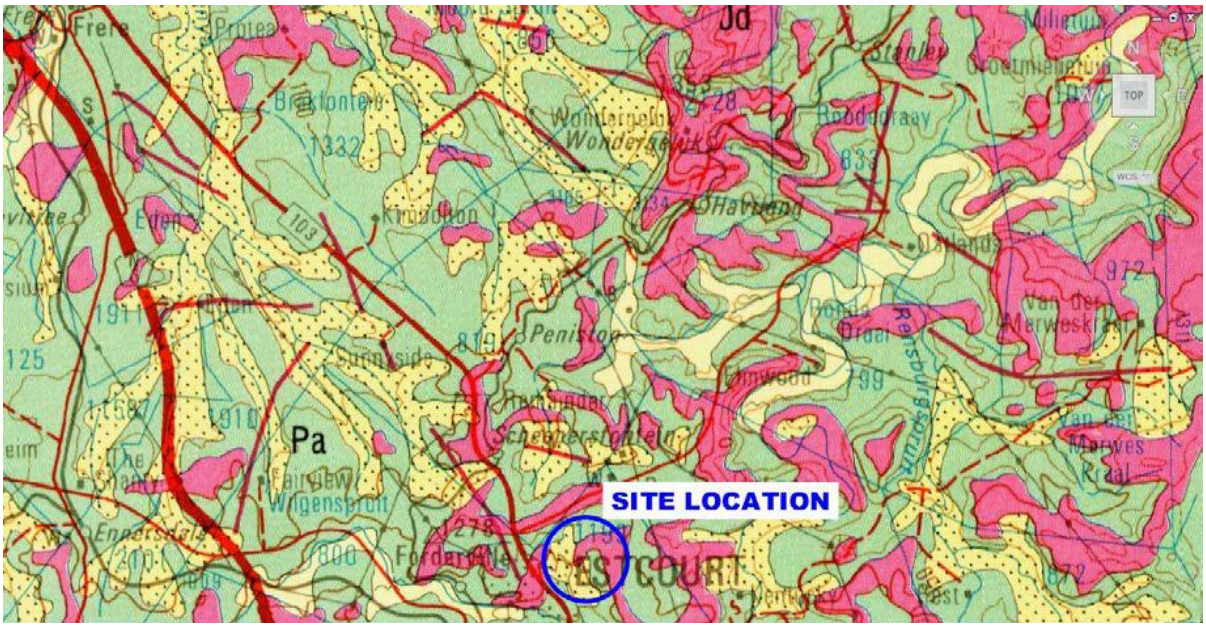
Description of Biophysical Environment:

Rainfall, Climatic, Seismicity and Geology description

The site normally receives about 589 mm of rain per year, with most rainfall occurring mainly during mid-summer. It receives the lowest rainfall (1mm) in June and the highest (107mm) in January. The average midday temperatures for the site range from 18.7°C in June to 26.4°C in January. The region is the coldest during June when the temperature drops to 1.7°C on average during the night.
The Weinert Climatic N-number for the area (Weinert, 1980) which is <5 indicating that the climate is semi-humid and chemical weathering processes are dominant.

According to the published seismic hazard map of South Africa (Kijko, et. al. 2003), the value for the peak ground acceleration at the site is less than 0.12 m/s2. The peak ground acceleration expresses the seismic hazard and the value of 0.12 may be considered a moderate level of seismic hazard. A 10% probability exists that this value will be exceeded in a 50 year period.

According to the 1: 250 000 scale geological map of the area (Harrismith 2828) the site is underlain by fine to medium grained sandstone, red, green and blue mudstone of the Beaufort Group and is shown in the figure below. This was also confirmed by the presence of sandstone outcrop around the site.



The geotechnical investigation revealed that the profile across the site is uniform, comprising of the following horizons:

- **Asphalt;**
- **Subbase layer**
- **Alluvium, and**
- **Pedogenic layer**

Groundwater seepage was not encountered in any of the test pits excavated at the site except where there was a pipe bust. Ferruginisation, which indicates that a changing water regime can be expected, was also noted in the majority of test pits. Problems due to ground water seepage is therefore expected in places, especially during and after a very wet rainy season. There was also a stream cutting through the site

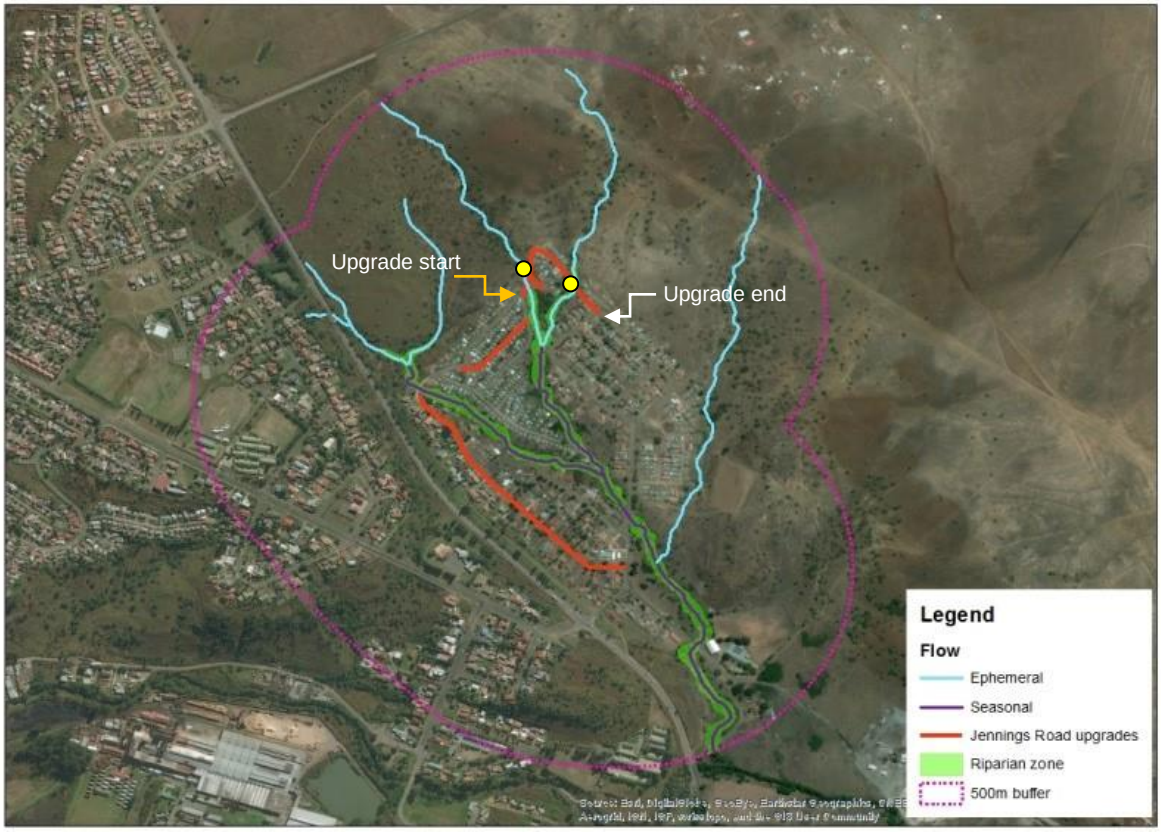
The site is underlain by mudstone and it is therefore unlikely that mineral deposits will be sterilised by the development. As far as could be determined there are no boreholes at or near the site. The proposed development is therefore not expected to have an influence on the groundwater.

Ecology, Wetland and Aquatic Environment

The proposed Jennings road upgrade is located within Colita, Estcourt, which is an urban environment.

The road upgrade site is defined by the existing gravel road and asphalt, housing and infrastructure, as well as the watercourses for the proposed culverts.

Illustration depicting road upgrade start and end, with culvert locations in yellow



A system of ephemeral and seasonal watercourses has been identified within the study area. This system ultimately drains into the Klein Boesmans, a tributary of the Bushmans River. The upper ephemeral channels were poorly defined in places and support limited or no riparian vegetation. The active channel was dry at the time of evaluation and has no aquatic or semi aquatic ecosystem present. Sections of the watercourse have been affected by erosion gulleys. Downstream of the confluences of the ephemeral watercourses, the nature of the system becomes seasonal, with the active channel becoming incised with a steep macro bank. Riparian vegetation is present at this point, with a differentiation between marginal and non-marginal vegetation being evident. Although the lower sections of the system may not dry up completely during the dry months, flow is likely to cease with isolated pools remaining. This was evident in the upper reaches upstream and beyond the influence of the sewer leaks. The ephemeral channels are classified as Type A channels and the seasonal sections as Type B channels.

Two sources of raw sewage were identified. These were leaks/failures associated with a collector sewer which runs adjacent to the watercourse.
Illegal dumping and litter was a prominent issue throughout the study area, particularly adjacent to the watercourse and within vacant lots. Rubble and plastic waste were the most commonly dumped materials. In some areas, evidence of burning was apparent. Such activities affect the physical nature of the watercourse and introduce contaminants to the system, compromising the water quality and overall integrity of the system.

The extent of the remaining riparian habitat has been affected by the surrounding formal settlement and associated infrastructure development. Clearance, bank destabilisation, eutrophication, encroachment, dumping of waste and the invasion of exotic species are the most prominent disturbances affecting the integrity of the riparian habitat. These disturbances have resulted in a loss of riparian cover, particularly in the non-marginal zone, a loss of diversity throughout and a change in structure/dominant vegetation types within the riparian zone. One of the less obvious changes include the proliferation of *N. officinale* along the margins of the active

channel due to the eutrophic conditions created by the presence of raw sewage.

The water was malodourous exuding the stench of sewage throughout much of the system. The only exception to this state was isolated pools of water above the sewer leak, lying at the most elevated point. Due to the raw sewage a number of microbial contaminants are expected, most notable *E. coli*, which is expected to be present in immeasurably high concentrations. The risk of other pathogens and parasites occurring within the water is expected to be high. No wetlands were located within 500m of the upgrade.
The impacts of the proposed upgrade are considered to be of moderate to low significance due to the extent of the existing road network.

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

Listed activity as described in GN 327, 325 and 324	Description of project activity
GN 327: Listing Notice 1 **Activity 12 (ii) Infrastructure or structures with a physical footprint of 100 square metres or more;** **(a) within a watercourse;** **(c) where such development occurs within a watercourse or within 32m of a watercourse.**	**The project comprises of the upgrade of a section of gravel road and construction of two culverts.**
GN 327: Listing Notice 1 activity 19: The infilling or depositing of any material of more than 10 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10 cubic metres from a watercourse.	**Culverts will be constructed as part of the upgrade. One new culvert will be constructed, and one existing culvert will be replaced. To allow for construction, it will be necessary to excavate within the watercourse/channel bed and banks. This comprises removing and infilling material in the watercourses. There is a possibility for placement of temporary crossing to enable vehicular movement across the watercourse if required.**

2. FEASIBLE AND REASONABLE ALTERNATIVES

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

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

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

The determination of whether site or activity (including different processes, etc.) or both is appropriate needs to be informed by the specific circumstances of the activity and its environment. After receipt of

this report the, competent authority may also request the applicant to assess additional alternatives that could possibly accomplish the purpose and need of the proposed activity if it is clear that realistic alternatives have not been considered to a reasonable extent.

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

a) Site alternatives

ROAD UPGRADE AND CULVERT SITES

Alternative 1 (preferred alternative)		
Description	Lat (DDMMSS)	Long (DDMMSS)
The Preferred and only options are as per co-ordinates below: **Upgrade start: 28°59'21.67"S; 29°52'18.71"E** **Upgrade End: 28°59'23.09"S; 29°52'24.40"E** **Culvert 1: (1,8m high x 2,4m wide, 12 m long single cell) located at 28°59'20.85"S; 29°52'22.43"E** **Culvert 2: this is the culvert to be replaced (1,5m high x 1,8m wide, 60 m long single cell) at 28°59'20.93"S; 29°52'18.86"E** **The site is located within an urban area characterised predominantly by low to medium income housing.** **There is no alternative site; the road is existing and road reserve has been designated, and in order to upgrade the road, the culvert is required at specific locations to ensure throughflow and drainage; the gravel section will be upgraded to blacktop. There is an existing culvert which will be replaced. One new culvert will be constructed.** **Negatives of preferred site/activity:** **Construction of two culverts over ephemeral, seasonal, degraded watercourses** **Positives of preferred site/activity:** **-Existing road infrastructure for majority of the upgrade** **-No 'green fields' will be affected, work to be undertaken within transformed development footprint** **-No sensitive biodiversity or cultural features will be significantly impacted upon.** **-No disruptions to businesses are expected.**		
Alternative 2		
Description	Lat (DDMMSS)	Long (DDMMSS)
No alternative sites available.		
Alternative 3		
Description	Lat	Long

	(DDMMSS)	(DDMMSS)
n/a		

In the case of linear activities: ***See above***

Alternative:
Alternative S1 (preferred)

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

Latitude (S):	**Longitude (E):**

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

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

b) Lay-out alternatives

Alternative 1 (preferred alternative)		
Description	Lat (DDMMSS)	Long (DDMMSS)
The preferred layout is that described above in this application. **The option of constructing full bridges rather than culverts or causeways was considered, but due to the flow calculations and 1:2-year flood considerations, the expense of constructing a full bridge or causeway, the anticipated volume of traffic, and funds available, this was considered economically unfeasible. The designs must ensure the future structural integrity of the infrastructure.** **Ecologically, the watercourses are degraded ephemeral and seasonal channels; the use of culverts are therefore more suited to the sporadic, seasonal and short flow regimes, no full bridges will be constructed. However, the design of the culverts must not act to constrain flow during rainfall events and must be of the requisite standard of structural integrity.** **In terms of the road upgrade, the most practicable option was to upgrade the road from gravel to tar, add sidewalks, realign where necessary within road reserve, channel storm water, repair impacted sections of the road, and construct a short strip of road for property access purposes in which no road exists. In addition, the layout is constricted due to proximal housing and services.**		
Alternative 2		
Description	Lat (DDMMSS)	Long (DDMMSS)
Alternative 3		
Description	Lat (DDMMSS)	Long (DDMMSS)
N/A		

c) Technology alternatives

Alternative 1 (preferred alternative)
Labour intensive methods will be employed; technology alternatives have not been considered. Large scale machinery will enable construction to proceed at a quicker and easier pace, however this will facilitate far fewer employment opportunities. The use of standard machinery as required in such construction works in conjunction with manual labour is therefore preferable and will be utilized. Additionally, the use of ecologically and ethically produced material, recycled material, 'green' products and materials may be investigated for use, depending on budgetary availability.
Alternative 2
n/a
Alternative 3
n/a

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

Alternative 1 (preferred alternative)		
In terms of input alternatives, tar/bitumen, G5/G7 fill material, reinforced steel and concrete, amongst others, will be used. Design alternatives are considered as per layout alternatives. No other alternatives are available at this stage.		
Alternative 2		
n/a		
Alternative 3		
n/a		

e) No-go alternative

The project is required as part of infrastructure maintenance, upgrading and sustainability increases.

The provision of proper erosion control and crossings over the channels will be achieved.

The new culverts and tarred road will subsequently be able to convey the discharge, additional runoff from hardened surfaces, traffic increases and will also have a higher design life, reduce safety risks and increase access to services.

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

Should the proposed upgrade not be implemented, the existing status quo will be maintained. However, considering the traffic increases and poor condition of sections of the road at present, an upgrade is inevitable.

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

3. PHYSICAL SIZE OF THE ACTIVITY

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

Alternative: *n/a*	**Size of the activity:**
Alternative A1[1] (preferred activity alternative)	m^2
Alternative A2 (if any)	m^2
Alternative A3 (if any)	m^2

or, for linear activities:

Alternative:	**Length of the activity:**
Upgrade start: 28°59'21.67"S; 29°52'18.71"E **Upgrade End: 28°59'23.09"S; 29°52'24.40"E** **<u>Culvert 1</u>: (1,8m high x 2,4m wide, 12 m long single cell) located at 28°59'20.85"S; 29°52'22.43"E** **<u>Culvert 2</u>: (1,5m high x 1,8m wide, 60 m long single cell) at 28°59'20.93"S; 29°52'18.86"E**	**490m**

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

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)	**6m final road width**
Alternative A2 (if any)	m^2
Alternative A3 (if any)	m^2

4. SITE ACCESS

Does ready access to the site exist?	**X YES** ☐
If NO, what is the distance over which a new access road will be built	N/A m

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

Describe the type of access road planned:

No new access is planned for this construction. However, the road will be upgraded and culverts will be constructed, together with storm water facilities.

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

A LOCALITY MAP IS ATTACHED AS APPENDIX A

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

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

6. LAYOUT/ROUTE PLAN

LOCALITY MAP/LAYOUT PLAN IS ATTACHED AS APPENDIX A

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

The site or route plans must indicate the following:

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

7. SENSITIVITY MAP

ATTACHED AS APPENDIX A AND APPENDIX D AS PER SPECIALIST STUDY

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

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

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

8. SITE PHOTOGRAPHS

PHOTOS ARE ATTACHED AS APPENDIX B

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

9. FACILITY ILLUSTRATION

THE LAYOUT/DESIGN PLAN WILL SERVE AS THE FACILITY ILLUSTRATION

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

10. ACTIVITY MOTIVATION

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

1. Is the activity permitted in terms of the property's existing land use rights?	YES	■	Please explain
The road and culvert sites are allocated within the designated road reserve.			
2. Will the activity be in line with the following?			
(a) Provincial Spatial Development Framework (PSDF)	YES	■	Please explain
This is an infrastructure project, thus it can be considered to be part of the psdf, by virtue of increasing commutability, safety and improving road network. A good road network is important for socio-economic growth.			
(b) Urban edge / Edge of Built environment for the area	YES	■	Please explain
The activity is located in Colita, Estcourt, which is an urban, low to medium income suburb located on the outskirts of Estcourt.			

(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	■	Please explain
The approval of the application will not negatively compromise the IDP but assist in contributing to the solution of the above challenge. Improvement and maintenance of the road infrastructure is noted as a key performance area.			
(d) Approved Structure Plan of the Municipality	YES	NO	Please explain
Application be viewed as congruent with the plan as it is an infrastructure development project.			
(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?)	■	NO	Please explain
The construction of the culverts and road upgrade will not impact on the conservation priorities of the area.			
(f) Any other Plans (e.g. Guide Plan)	YES	NO	Please explain
n/a			
3. Is the land use (associated with the activity being applied for) considered within the timeframe intended by the existing approved SDF agreed to by the relevant environmental authority (i.e. is the proposed development in line with the projects and programmes identified as priorities within the credible IDP)?	YES	■	Please explain
Infrastructure and road transportation projects are in line with the IDP and timeframe.			
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	■	Please explain
The project falls in line with both national (National Development Plan) and local priorities (IDP), in terms of job creation, infrastructure development and maintenance, and access to services and climate change impact concerns. The project is congruent with the local and site-specific contexts within which it is located.			
5. Are the necessary services with adequate capacity currently available (at the time of application), or must additional capacity be created to cater for the development? (Confirmation by the relevant Municipality in this regard must be attached to the final Basic Assessment Report as Appendix I.)	YES	NO	Please explain
No capacity requirements relevant.			
6. Is this development provided for in the infrastructure planning of the municipality, and if not what will the implication be on the infrastructure planning of the municipality (priority and placement of services and opportunity costs)? (Comment by the relevant Municipality in this regard must be attached to the final Basic Assessment Report as Appendix I.)	YES	■	Please explain
This project has been financially budgeted for by the applicant, this funding must be utilized by June 2018.			
7. Is this project part of a national programme to address an issue of national concern or importance?	■	NO	Please explain
This is a local, small scale road upgrade project. However, the NDP identifies road infrastructure, access to basic services and poverty elimination as a priority.			

8. Do location factors favour this land use (associated with the activity applied for) at this place? (This relates to the contextualisation of the proposed land use on this site within its broader context.)	YES	■	Please explain
In context, but area specific.			
9. Is the development the best practicable environmental option for this land/site?	YES	■	Please explain
In terms of social benefits, it is the best option. The road is existing and will need to be converted to black top along the gravel section, a new section is required for connection purposes; the ephemeral watercourses are degraded and subject to sewage feeds and dumping, therefore no significant environmental impacts are expected to occur. It may be the best environmental option as erosion control and proper storm water channelling measures will be constructed.			
10. Will the benefits of the proposed land use/development outweigh the negative impacts of it?	YES	■	Please explain
The positive benefits will outweigh the negative impacts in the socio-economic sense in that that it will improve commutability; improve road network, access to services, job creation.			
11. Will the proposed land use/development set a precedent for similar activities in the area (local municipality)?	■	NO	Please explain .
The road is existing within an urban area, no precedent will be set as there are numerous roads and culverts both in affected suburb and the municipality as a whole.			
12. Will any person's rights be negatively affected by the proposed activity/ies?	■	NO	Please explain
The project will enhance community rights once constructed. However, during construction continuous engagement with the community is vital.			
13. Will the proposed activity/ies compromise the "urban edge" as defined by the local municipality?	■	NO	Please explain
The activity, whilst located on the urban edge, will not comprise the urban edge due to the construction being largely limited to the existing network.			
14. Will the proposed activity/ies contribute to any of the 17 8 Strategic Integrated Projects (SIPS)?	YES	NO	Please explain
This may possibly fall within SIP6, but on a very small scale.			
15. What will the benefits be to society in general and to the local communities?			Please explain
The project will allow improved mobility amongst adjoining areas. The local community will benefit directly form the improved infrastructure, and much needed temporary job creation.			
16. Any other need and desirability considerations related to the proposed activity?			Please explain
Improved mobility and connectedness will accrue to the community. Temporary jobs will be created during construction, using local labour and principles of gender equity.			
17. How does the project fit into the National Development Plan for 2030?			Please explain
The NDP 2030 requires citizens to have access to social equity, employment and basic services. Thus, a good road network will contribute to this by enabling improved mobility and easier service provision and delivery of key services such as healthcare and housing.			

18. Please describe how the general objectives of Integrated Environmental Management as set out in section 23 of NEMA have been taken into account.
NEMA S23 general objectives have been considered as below: ▪ **The affected community, the general public, authorities and state departments have been engaged and consulted with in the BA process from the onset** ▪ **Potential environmental, cultural and socio-economic risks and impacts have been assessed and assigned significance ratings.** ▪ **Lodging of an application for environmental authorisation as required** ▪ **The 'Duty of Care' principle is incorporated into the EMPr.** ▪ **Mitigation measures incorporated into the EMPr for all potential impacts**
19. Please describe how the principles of environmental management as set out in section 2 of NEMA have been taken into account.
As per no.18 above: ▪ **The affected community leaders, the general public, authorities and state departments have been engaged and consulted with in the BA process from the onset** ▪ **Potential environmental, cultural and socio-economic risks and impacts have been assessed and assigned significance ratings.** ▪ **Lodging of an application for environmental authorisation as required** ▪ **The 'polluter pays' principle is incorporated into the EMPr, and S24 Nema.** ▪ **Mitigation measures incorporated into the EMPr for all potential impacts**

11. APPLICABLE LEGISLATION, POLICIES AND/OR GUIDELINES

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

Title of legislation, policy or guideline	Applicability to the project	Administering authority	Date
National Environmental Management Act (No 107 0f 1998; as amended)	**NEMA is the overarching environmental law in SA. NEMA requires integration and consideration of all aspects of the environment, with the 'people first' principle, when considering projects. NEMA is thus considered applicable as this is an infrastructure project. In additional, the EIA regulations are linked to NEMA.**	**Provincial and national**	**1998**
EIA regulations of 2014	**Listed activities as applied for herein are triggered under the EIA Regs, 2014.**	**National and provincial**	**2014**
NEMA: Biodiversity Act (10 of 2004)	**An area to the west of the project site (not the actual site itself) is identified as a CBA. Protection of**	**Provincial and national**	**1998**

	biodiversity elements and permitting requirements as required.		
National Water Act (No 36 of 1998)	**Protection of watercourses during construction, and permit requirements (water use licence) from DWS before working in the watercourses**	**Provincial and national**	**1998**
National Heritage Resources Act (Act 25 of 1999)	**This act needs to be complied with, Amafa requires a heritage study for infrastructure exceeding 300m in length. In addition, the area is classified as having a high likelihood of yielding archaeological and palaeontological specimens.**	**Provincial and national**	**1999**
NEMA: Waste Act (Act 59 of 2008 as amended)	**This act requires the safe and correct, legal disposal of waste generated on site, even if temporary and non-hazardous, according to waste stream, by the generator of waste.**	**Provincial and national**	**2008**
Conservation of Agricultural Resources Act (Act 43 of 1983)	**The proponent is required to implement erosion controls, protect top soil, soil structure and fertility as relevant, implement measures to prevent spreading of alien vegetation, and restore profiles once complete**	**Provincial and national**	**1983**
Hazardous Substances Act (Act 15 of 1973)	**The contractor may be storing chemicals and fuel on site and these activities must be compliant with the HAS.**	**National and provincial**	**1973**
National Spatial Biodiversity Assessment (2011)	**This assessment aims to inform all private and public-sector activities and provides tools for use in planning. The data available on the BGIS website is used in this report**	**National (Sanbi)**	**2011**
IDP for Inkosi Langalibalele and Uthukela municipalites	**All projects to be guided by these documents.**	**Local**	**2016-2017**
All local and provincial regulations and by municipality by laws	**The contract must identify, consider and adhere to all relevant laws (possibly via a legal register)**	**Local and provincial**	**current**
Construction Regulations	**The contractor will build according to these laws**	**Provincial and national**	**2015**
Occupational Health and Safety Act	**The contractor will need to comply with all requirements of the OHSACT.**	**Provincial and national**	**1993**

12. WASTE, EFFLUENT, EMISSION AND NOISE MANAGEMENT

a) Solid waste management

Will the activity produce solid construction waste during the construction/initiation phase?	YES ■
If YES, what estimated quantity will be produced per month?	80 m^3

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

Solid construction waste will be disposed by means of machinery, or hand. Machinery includes tipper trucks as well as flatbed rollers/TLB/excavator. Excavated material (soil, rock) will be used as backfill where feasible.

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

The solid construction waste will be disposed at approved (legal) sites. Waste will be reused (recycled) on site where possible. General waste to be removed via municipal services.

Will the activity produce solid waste during its operational phase?	■ NO
If YES, what estimated quantity will be produced per month?	m^3

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

No solid waste is anticipated during the operational phase

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

Solid waste will be disposed of at a registered landfill, details of nearest registered landfill is currently not available; the contractor will need to provide waybills for disposal of waste.

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

Solid waste (from construction activity) will be disposed at the nearest registered landfill, and reused on site where possible.

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?	■ NO

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

Is the activity that is being applied for a solid waste handling or treatment facility?	■ NO

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

b) Liquid effluent

Will the activity produce effluent, other than normal sewage, that will be disposed of in a municipal sewage system?	■ NO
If YES, what estimated quantity will be produced per month?	m^3
Will the activity produce any effluent that will be treated and/or disposed of on site?	■ NO

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

Will the activity produce effluent that will be treated and/or disposed of at another facility?	■	NO

If YES, provide the particulars of the facility:

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

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

n/a

c) Emissions into the atmosphere

Will the activity release emissions into the atmosphere other that exhaust emissions and dust associated with construction phase activities?	YES	■
If YES, is it controlled by any legislation of any sphere of government?	■	NO

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

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

During construction, CO_2 emissions from construction vehicles will occur. **Dust entrainment from construction vehicles and activities will also occur. The concentration will be low-moderate and will be temporary and limited to the construction work area, for the duration of the construction phase.**

d) Waste permit

Will any aspect of the activity produce waste that will require a waste permit in terms of the NEM:WA?	■	NO

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

e) Generation of noise

Will the activity generate noise?	YES	■
If YES, is it controlled by any legislation of any sphere of government?	■	NO

Describe the noise in terms of type and level:

Low-moderate level noise will result from construction vehicles and machinery and is not expected to exceed the occupational health and safety levels. Noise generated at the site due to construction activity will be temporary.

13. WATER USE

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

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

If water is to be extracted from groundwater, river, stream, dam, lake or any other natural feature, please indicate the volume that will be extracted per month:	litres
Does the activity require a water use authorisation (general authorisation or water use license) from the Department of Water Affairs? **An application for a water use licence (GA) will be submitted to DWS for the construction of culverts.**	**YES** ■

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

14. ENERGY EFFICIENCY

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

During construction, diesel (generators) can be used as an energy source rather than connecting to the grid. Further, construction will be confined to daylight hours to reduce the need for night lighting.

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

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

SECTION B: SITE/AREA/PROPERTY DESCRIPTION

Important notes:

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): 1

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? [redacted] NO

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

Property description/physical address:

Province	**KwaZulu-Natal**
District Municipality	**Uthukela District Municipality**
Local Municipality	**Inkosi Langalibalele Local Municipality**
Ward Number(s)	**10 – Jennings road**
Farm name and number	**Not available**
Portion number	**Not available**
SG Code	**Not available**

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

Current land-use zoning as per local municipality IDP/records: **The site is zoned as road, 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? [redacted] NO

1. GRADIENT OF THE SITE

Indicate the general gradient of the site.

Alternative S1:

Flat	**1:50 – 1:20**	[redacted]				

Alternative S2 (if any): N/A

Flat	1:50 – 1:20	1:20 – 1:15	1:15 – 1:10	1:10 – 1:7,5	1:7,5 – 1:5	Steeper than 1:5

Alternative S3 (if any): N/A

Flat	1:50 – 1:20	1:20 – 1:15	1:15 – 1:10	1:10 – 1:7,5	1:7,5 – 1:5	Steeper than 1:5

2. LOCATION IN LANDSCAPE

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

2.1 Ridgeline		2.4 Closed valley		**2.7 Undulating plain/ low hills**	**X**
2.2 Plateau		2.5 **Open valley**	**X**	2.8 Dune	
2.3 Side slope of hill/mountain		2.6 Plain		2.9 Seafront	
2.10 At sea					

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

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

A geotechnical Report has been prepared and attached as Appendix D.

The alluvial material encountered on site generally consists of Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays, Organic silts and organic silty clays of low plasticity, Silty gravels, gravel-sand silt mixtures and Clayey gravels, gravel-sand-clay mixtures. This layer has low (0.47) to very high (2.05) grading moduli. The fine fractions of this material also exhibit moderate (28.0% to 41.7%) liquid limit and a low (4.0%) to moderate (7.3%) linear shrinkage, indicating that the material has low plasticity characteristics. The material has a low potential expansiveness, according to the method proposed by Van der Merwe (1973).

The pedogenic material encountered on site generally consists of Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity or Organic silts and organic silty clays of low plasticity and Clayey sands, sand-clay mixtures. This layer has low (0.31) to very high (1.45) grading moduli. The fine fractions of this material also exhibit moderate (33.9% to 44.8%) liquid limit and a very moderate (7.0% to 10.0%) linear shrinkage, indicating that the material has low plasticity characteristics. The material has a low potential expansiveness, according to the method proposed by Van der Merwe (1973).

The in-situ alluvial layer has a moderate (1814kg/m3) to high (2126kg/m3) maximum dry density and a moderate to very high optimum moisture content value. The CBR swell values are very low (≤ 0.1%) to high (1.81%) and the tests yielded relatively very low to

moderate CBR values at densities typically specified in the field (93 % to 95 %).
Majority of the in-situ material is classified as >G10 material according to the TRH 14 guidelines (CSIR: 1987) with minor portions of G7. It is not recommended to use a material that is >G10 for the construction of an engineered fill of selected sub-grade layer material and in low stiffness of engineered fills. Where the material is encountered as G7 it is suitable for the construction of an engineered fill of selected sub-grade layer material and in moderate stiffness of engineered fills.

Excavation conditions over much of the site should categorize as 'soft mechanical excavation' according to SANS 1200D "Classification of material for machine excavation" to depths of about 2.00 meters below ground level.

Undermined ground:
No indication of the presence of undermined ground was found during the desk study or field investigation. There are no closed or working shafts or other signs of mining activity within a radius of 1km of the site.

Instability of areas of soluble rock:
No indication of the presence of soluble rock formations was found during the desk study or field investigation.

Unstable natural slopes:
No indication of the presence of unstable natural slopes was found during the desk study or the field investigation.

Seismic activity:
According to Kijko et. al (2003), the peak ground acceleration for the area is less than 0,12 m/s2, with a 10% probability of being exceeded in a 50-year period. The seismic activity in the area is therefore moderate.

Areas subject to flooding:
There was a stream cutting through the site intersecting Jennings Road and Colita Road. A flood line study falls outside of our current scope of work. The site is reasonably flat and the draining of surface water would need proper consideration. It is recommended that a formal flood line study be conducted if deemed necessary.

Other considerations:
The site is underlain by mudstone and it is therefore unlikely that mineral deposits will be sterilised by the development. As far as could be determined there are no boreholes at or near the site. The proposed development is therefore not expected to have an influence on the groundwater.

Construction Materials:
Most portion of the site is underlain by materials classified as >G10, with a small portion of pedogenic material classified as G7 according to the TRH 14 guidelines (CSIR: 1987). It is not recommended to use a material that is >G10 for the construction of an engineered fill of selected sub-grade layer material and in low stiffness of engineered fills. Where the material is encountered as G7 it is suitable for the construction of an engineered fill of selected subgrade layer material and in moderate stiffness of engineered fills.

4. GROUNDCOVER

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

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

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

The riparian zone, where present, is dominated by woody vegetation, with the marginal zone being generally, "well shaded". Vegetation includes a mixture of indigenous and exotic species. The following were identified within the riparian zone: *Acacia sieberiana, Amaranthus spinosus , *Arundo donax** , *Callistemon viminalis** , *Celtis africana , Cymbopogon caesius , Hyparrhenia hirta* , *Juncus effusus* – marginal zone , *Melia azedarach** , *Morus alba** , *Nasturtium officinale** – marginal zone , *Phragmites australis* , *Populus x canescens** , *Salix fragilis** , *Schinus molle** , *Senna didymobotrya** *Solanum mauritianum** , *Sporobolus pyramidalis* , *Ziziphus mucronata***

5. SURFACE WATER

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

Perennial River	[redacted]	**NO**	UNSURE
Non-Perennial River	**YES**	[redacted]	UNSURE
Permanent Wetland	[redacted]	**NO**	UNSURE
Seasonal Wetland	[redacted]	**NO**	UNSURE
Artificial Wetland	[redacted]	**NO**	UNSURE
Estuarine / Lagoonal wetland	[redacted]	**NO**	UNSURE

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

A wetland, aquatic and ecological report is attached as Appendix D.

Please refer to section 9 for summary details.

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:

X Natural area	Dam or reservoir	Polo fields

There is CBA zone to the west of the project area. This will not be affected as the upgrade site is located east of this zone.		
Low density residential	Hospital/medical centre	Filling station [H]
X Medium density residential **Houses are present within the area and along the road, as it is a built-up area. These will be impacted on via noise, dust emissions, safety and security issues**	**X School** **These will be impacted on via noise, dust emissions, safety and security issues**	Landfill or waste treatment site
X High density residential Houses are present within 500m of the site. These will be impacted on via noise, dust emissions, safety and security issues	Tertiary education facility	Plantation
Informal residential[A]	Church	Agriculture
Retail commercial & warehousing	Old age home	**X River, stream or wetland** **The culverts will be built across the ephemeral watercourses so the impacts of construction will be direct viz, excavation, foundations, formwork, construction on bank etc. The application is to conduct work over the watercourses and road upgrading linked to the watercourses. Impacts on the watercourse are as per assessment, section D, below.**
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
Military or police base/station/compound	Harbour	Graveyard
Spoil heap or slimes dam[A]	Sport facilities	Archaeological site
Quarry, sand or borrow pit	Golf course	Other land uses (describe)

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

N/A

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

N/A

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

N/A

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

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

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

7. CULTURAL/HISTORICAL FEATURES

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:	■	**NO**
	Uncertain	
A specialist heritage study has been conducted, refer to appendix D for the complete study. According to this study, the area is classified as having a high likelihood of yielding palaeontological resources. The specialist has suggested that due to the transformed nature of the site, no palaeontological study be undertaken, and that no impacts are expected on cultural, historical or palaeontological resources.		

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

Several of the houses have corrugated iron roofs and one of the houses was found to be made from stone and could be older than 60 years. **The South African fossil sensitivity map indicates that the project area is situated in an area of very high palaeontological / fossil sensitivity as well as an area of moderate fossil sensitivity. An area of very high fossil sensitivity requires an on-site field assessment and an area of moderate fossil sensitivity requires a desktop palaeontological assessment. However, due to the highly disturbed environment of Jennings Road it is recommended no further palaeontological studies are needed for this project.** **No heritage resources were found along Jennings Road including the vacant areas adjacent to the road.**

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

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

8. SOCIO-ECONOMIC CHARACTER

a) Local Municipality

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

Level of unemployment:

No data is available for Nkosi Langalibalele. Data presented here has been extracted from the date available for Uthukela District municipality as a whole:

Approximately 286, 410 (i.e. 42.8%) of the population has no source of income and about 184, 170 (i.e. 27.5%) earn less than R400 per month which translate to almost 70.3% of the population live below the poverty line. Approximately 2,894 of the population in uThukela earn over R25, 600 per month.

The unemployment rate in the municipality decreased from 58.8% in 2001 to 39.6% in 2011. The level of unemployment in the district is bigger to that of the province, which was 49.0% in 2001 and 33.0% in 2011. Alfred Duma local municipality has the highest levels of unemployment with the rate being 92.2% in 2016, whilst the lowest unemployment rate in 2011 was in Okhahlamba local municipality at 43.4%.The number of people who are not economically active increased from 207 830 in 2001 to 268 503 in 2011 (29% increase), compared to an increase in employed people of 21%.

Economic profile of local municipality:

The main economic activities within the municipality are: Tourism, Agriculture, Manufacturing, Transport and Communication, Government Services, Finance and Business Services, Agriculture and Forestry.

The following available economic indicators are presented below:

Poverty

Category	Census 2011	Community Survey 2016
Poverty head count	11.2%	11.4%
Intensity of poverty	41.9%	43.3%

Households and Services

Households/Services	Census 2011	Community Survey 2016
Total households	43 299	51 910
Average household size	4.9	4.7
Female headed household	50.0%	50.2%
Child headed households	1.7%	2.0%
Access to piped water	83.5%	72.7%
Access to electricity	72.1%	79.7%
Access to sanitation	40.9%	87.8%
Tenure status (% owned)	66.6%	63.3%

Access to Housing

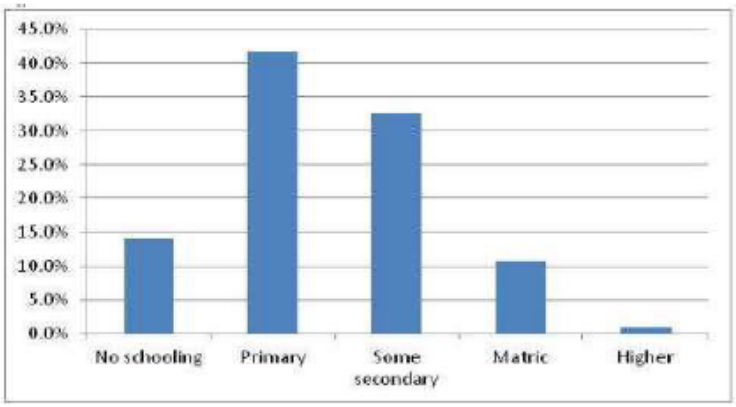
Census 2011		Community Survey 2016	
Number	Percentage	Number	Percentage

Formal dwelling	34 134	78.8	37 746	72.7
Traditional dwelling	7 863	18.1	9 407	18.1
Informal dwelling	929	0.2	4 675	9.0
Other	374	0.08	82	0.2

Level of education:

While no specific education profiles are available for Nkosi Langalibabale, information is available from Uthukela District Municipality. A small percentage of the population in the district has post-matric qualifications at only 1%, 14% of the population has no schooling, 41% have primary school education and 33% have limited secondary schooling, with 10.9% achieving matric. The implication is a limited supply of skilled labour in the municipality.

The number of people with no schooling dropped between 2005 and 2010 with a further decline between 2010 and 2011 in uThukela, while the number of people with grade 0-11 shows a significant increase over the period under review. The number of people with matric only has shown a large increase.



Source: Statistics South Africa, 2011

b) Socio-economic value of the activity

What is the expected capital value of the activity on completion?	R9 000 000
What is the expected yearly income that will be generated by or as a result of the activity?	N/A
Will the activity contribute to service infrastructure?	YES
Is the activity a public amenity?	X NO
How many new employment opportunities will be created in the development and construction phase of the activity/ies?	100
What is the expected value of the employment opportunities during the development and construction phase?	R3 000 000
What percentage of this will accrue to previously disadvantaged individuals?	99 %
How many permanent new employment opportunities will be created during the operational phase of the activity?	0
What is the expected current value of the employment opportunities during the first 10 years?	N/A
What percentage of this will accrue to previously disadvantaged individuals?	N/A

9. BIODIVERSITY

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

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	**The site for the upgrade and culvert constructions are not located within a CBA, ESA, ONA. However, the suburb to the west of the project area is shown as hosting a CBA.**

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)	2%	**The open space/vacant lots bordering the road, as well as the riparian area and seasonal and ephemeral watercourses have specimens of indigenous vegetation**
Degraded (includes areas heavily invaded by alien plants)	40%	**The culvert sites are heavily degraded by human activities, largely sewage discharge and dumping. An increase in invasive woody species has been noted along the ephemeral and seasonal channels.**
Transformed (includes cultivation, dams, urban, plantation, roads, etc)	58%	**The road upgrade is located within a low to medium income urban area; the site is thus largely transformed by settlement.**

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.

<table>
<tr><th colspan="2">Terrestrial Ecosystems</th><th colspan="7">Aquatic Ecosystems</th></tr>
<tr><td rowspan="5">Ecosystem threat status as per the National Environmental Management: Biodiversity Act (Act No. 10 of 2004)</td><td>Critical</td><td rowspan="2" colspan="3">Wetland (including rivers, depressions, channelled and unchanneled wetlands, flats, seeps pans, and artificial wetlands)</td><td rowspan="2" colspan="2">Estuary</td><td rowspan="2" colspan="2">Coastline</td></tr>
<tr><td>Endangered</td></tr>
<tr><td>Vulnerable</td><td rowspan="3">X Least Threatened</td></tr>
<tr><td colspan="2"></td></tr>
<tr><td colspan="2"></td><td>X YES</td><td>NO</td><td>UNSURE</td><td>YES</td><td>X NO</td><td>YES</td><td>X NO</td></tr>
</table>

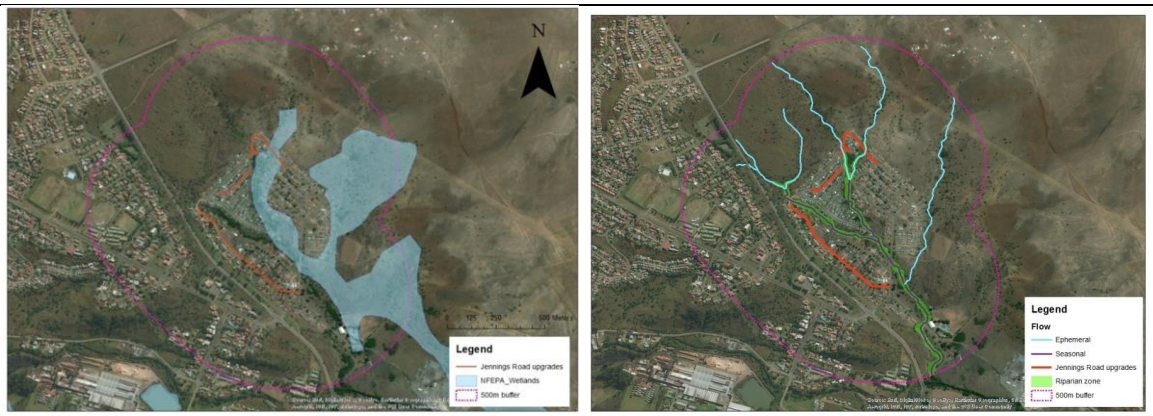
d) Please provide a description of the vegetation type and/or aquatic ecosystem present on site, including any important biodiversity features/information identified on site (e.g. threatened species and special habitats)

A system of ephemeral and seasonal watercourses has been identified within the study area. This system ultimately drains into the Klein Boesmans, a tributary of the Bushmans River. The upper ephemeral channels were poorly defined in places and support limited or no riparian vegetation. The active channel was dry at the time of evaluation and has no aquatic or semi aquatic ecosystem present.

Sections of the watercourse have been affected by erosion gulleys. Downstream of the confluences of the ephemeral watercourses, the nature of the system becomes seasonal, with the active channel becoming incised with a steep macro bank. Riparian vegetation is present at this point, with a differentiation between marginal and non-marginal vegetation being evident. Although the lower sections of the system may not dry up completely during the dry months, flow is likely to cease with isolated pools remaining. This was evident in the upper reaches upstream and beyond the influence of the sewer leaks. The ephemeral channels are classified as Type A channels and the seasonal sections as Type B channels.

The riparian zone, where present, is dominated by woody vegetation, with the marginal zone being generally, "well shaded". Vegetation includes a mixture of indigenous and exotic species. The following were identified within the riparian zone. The riparian zone, where present, is dominated by woody vegetation, with the marginal zone being generally, "well shaded". Vegetation includes a mixture of indigenous and exotic species. The following were identified within the riparian zone: *Acacia sieberiana, Amaranthus spinosus,*Arundo donax**, *Callistemon viminalis**, *Celtis Africana, Cymbopogon caesius, Hyparrhenia hirta, Juncus effusus* – marginal zone, *Melia azedarach**, *Morus alba**, *Nasturtium officinale** – marginal zone *Phragmites australis, Populus x canescens**, *Salix fragilis**, *Schinus molle**, *Senna didymobotrya**, *Solanum mauritianum**, *Sporobolus pyramidalis, Ziziphus mucronate.***

Map below showing areas that were assessed as part of the study, A, B and C. Section C is specifically subject to this EIA.



Maps showing NFEPA wetlands near site (section C) as well the two ephemeral watercourses that will be affected by construction (Section C)

The extent of the remaining riparian habitat has been affected by the surrounding formal settlement and associated infrastructure development. Clearance, bank destabilisation, eutrophication, encroachment, dumping of waste and the invasion of exotic species are the most prominent disturbances affecting the integrity of the riparian habitat. These disturbances have resulted in a loss of riparian cover, particularly in the non-marginal zone, a loss of diversity throughout and a change in structure/dominant vegetation types within the riparian zone. One of the less obvious changes include the proliferation of *N. officinale* along the margins of the active channel due to the eutrophic conditions created by the presence of raw sewage. The riparian habitat has thus been classified as being "largely modified to greatly modified" or EC – "D/E" according to the results of the VEGRAI model.

No invertebrate or ichthyofaunal sampling was done within the watercourse due to its condition. Given the amount of sewage present within the system it is highly unlikely that fish utilise the system.
Aquatic invertebrates will be limited to only the most tolerant biota such as Oligocheata, Syrphidae, Culicidae and Chironomidae.

The water was malodourous exuding the stench of sewage throughout much of the system. The only exception to this state was isolated pools of water above the sewer leak, lying at the most elevated point. Due to the raw sewage a number of microbial contaminants are expected, most notable *E. coli*, which is expected to be present in immeasurably high concentrations. The risk of other pathogens and parasites occurring within the water is expected to be high. Examples include numerous viruses such as Hepatitis A and *Ascaris* (Roundworm) ova. In addition, nutrient levels within the contaminated section are expected to be high – eutrophic to hypereutrophic conditions – potentially resulting in other issues such as algal blooms and low or anoxic conditions. The water quality is thus best described as critically modified.

Site based observations confirmed that the affected watercourse and associated riparian habitat has become degraded as a result of surrounding development and associated infrastructure. Exotic invasion was considered to be significant, the riparian vegetation footprint has been reduced and the in-stream biotic community severely affected by poor water quality as a result of raw sewage flowing into the watercourse. Based on these observations, the PES of the affected stream is considered to be at best "largely modified", EC: D with a "low" EIS rating.

No wetlands were identified with 500 m of the proposed Jennings Road upgrade, however a drainage system consisting of ephemeral and seasonal watercourses was a feature of the study area. Riparian vegetation was associated with the seasonal channel areas and was dominated by woody vegetation. Exotic invasion was prominent, particularly by *Salix fragilis*. The riparian habitat is described as being "largely/greatly modified.". During the site visit, two major sewer leaks were identified. The flow within most of the watercourse consisted of raw sewage. As a result, no aquatic sampling was undertaken. Based on

observations, the aquatic ecosystem was severely affected by the raw sewerage, with no visible signs of aquatic fauna. *Nasturtium officinale* had invaded the channel area in response to the elevated nutrients. The water within the channel was grey and malodourous. The drainage system flows into the Klein Boesmans and ultimately the Bushmans River. Based on the observations within the study area, the continuous sewer leaks are likely to be influencing the aquatic systems associated with the lower Klein Boesmans and Bushmans River.

The PES of the drainage system within the study area was assigned as EC: "D" or "largely modified". This classification is primarily based on very poor water quality (raw sewage), degraded riparian and aquatic habitat and a lack of biodiversity.

The impacts of the proposed upgrade are considered to be of moderate to low significance due to the extent of the existing road network. Identified impacts included the following:

- **Construction related impacts – specifically issues associated with the construction activities, such as the movement of plant and the potential for contamination.**
- **Habitat loss and disturbances – the loss of riparian habitat associated with the establishment of the road and new crossings in Section C.**
- **Additional storm water runoff – a slight increase in runoff as a result of increased hardened surfaces.**
- **Hydrological changes – linked to the slight increase in storm water runoff.**
- **Erosion and scour – possible additional channel scour and erosion will arise, should significant hydrological changes arise.**

Mitigation measures to ameliorate the above have been identified and included in the specialist study and EMPr.

SECTION C: PUBLIC PARTICIPATION

1. ADVERTISEMENT AND NOTICE

Publication name	Estcourt and Midlands News	
Date published	24 November 2017	
Site notice position	Latitude	Longitude
	No co-ordinates available, but notices were set up at various point along Jennings road, as well as the liquor store.	
Date placed	24 November 2017	

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

Newspaper advert published on 24 November 2017 in the Estcourt news:

Outreach Project, hosted yet another workshop.
This time in Ward Eight with the how discrimination expresses itself in various forms.
One said it was a giant to tackle in pledging to: zero to discrimination, zero to new infection, zero to stigma and zero to ignorance".

Lions Christmas cakes are available

Lions clubs throughout South Africa have been selling Lions Christmas cakes since 1975 and all monies raised are used to finance projects in the community.
Not only do the cakes make excellent corporate and year end gifts, but they are ideal to keep in the grocery cupboard to enjoy throughout the year.
These delicious 1kg cakes are baked to perfection and are made with top quality fruit and ingredients. Definitely good value for money.
To place your order contact Pat Louw on 082 926 7550, any member of the Lions Club of Estcourt or pop into Mercury Launderers at 158 Victoria Street.

Delicious 1kg cakes baked to perfection and are made with top quality fruit and ingredients.

Get your news updates via WhatsApp

Receiving your daily news updates just got simpler!
The Estcourt News will now be sending out news updates via WhatsApp.
Here is how to get started:
1. Add Estcourt News as a contact. The number is **082 874 5560**.
2. Send us a WhatsApp with your name and surname so we can make sure you get onto our news list.
3. We accept you on WhatsApp.

Honorary Convocation Day

An honorary Convocation Day was held on November 11 at the Ethekwini Community Church by Rector Dr TS Mthiyane. Reverend Ndlovu and Mrs IT Ndlovu were honoured with certificates.

NOTICE OF APPLICATION FOR ENVIRONMENTAL AUTHORIZATION AND NOTICE OF APPLICATION FOR A WATER USE LICENCE FORTHE CONSTRUCTION UPGRADE OF JENNINGS ROAD, INKOSI LANGALIBALELE LOCAL MUNICIPALITY

Project description:The Inkosi Langalibalele Local Municipality proposes to construct and upgrade Jennings Road, located in Ward 10,Colita, Escourt. The 4085m of work to be undertaken will include installation of drainage, culverts, road improvements, connections and realignment.
In terms of the EIA Regulations, December 2014, the project will be subject to a Basic Assessment process. The National Water Act, 2008, also requires that the project be subject to a Water Use Licence application in terms of Section 21(c)(i) from the Department of Water Affairs, regarding alteration of/ construction within/near a watercourse and within 500m of a wetland.

Location: approximate start is at 28 59 43.96S; 29 52 23.57E and end at 28 59 24.77S; 29 52 23.44E

Should you wish to register as an Interested and Affected party (I&AP) to become involved in the above processes and to subsequently comment on or object to the project, you may do so within 14 days from the date of publication of this notice.

Registration and comments must be submitted to:
Ms. Jenitha Girdary
Tel: 082 083 1691
Email:jenitha@fuzeenvironmental.co.za

Site notices placed at the municipality, and a liquor store on Jennings road

Site Notices placed at conspicuous points along Jennings Road.



2. DETERMINATION OF APPROPRIATE MEASURES

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

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

See complete CR report attached below; also attached as Appendix E. The IAP register is also attached as Appendix E.

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

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

3. ISSUES RAISED BY INTERESTED AND AFFECTED PARTIES

See complete CR report attached below; also attached as Appendix E

4. COMMENTS AND RESPONSE REPORT

See complete CR report attached below; also attached as Appendix E

The practitioner must record all comments received from I&APs and respond to each comment before the Draft BAR is submitted. The comments and responses must be captured in a comments and

response report as prescribed in the EIA regulations and be attached to the Final BAR as Appendix E3.

5. AUTHORITY PARTICIPATION

See complete CR report attached below and also attached as Appendix E

Authorities and organs of state identified as key stakeholders:

Include proof that the Authorities and Organs of State received written notification of the proposed activities as appendix E4.
In the case of renewable energy projects, Eskom and the SKA Project Office must be included in the list of Organs of State.

6. CONSULTATION WITH OTHER STAKEHOLDERS

See complete CR report attached below and also attached as Appendix E

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

COMMENTS AND RESPONSE REPORT

The Comments and Responses Report (CRR) captures the comments and issues raised by all role players during the Environmental Impact Assessment (EIA) and Water Use License Application processes for the proposed Jennings road upgrade. This CRR is a record of all the comments and issues raised during the initial public participation phase.

Comments included here are from the preliminary stage. This included:

- **BID distribution to IAPs, Authorities and stakeholders**
- **Placement of on-site notices along Jennings Road (four notices were placed here), with one notice placed at the municipality.**
- **Placement of newspaper advert in the Estcourt News**

No Public Meeting will be held for this project. The final BAR will not be circulated for comment to IAPs/Authorities due to time constraints relating to fiscal planning and implementation.

***The submission of this draft BAR for comment comprises of the major core phase of the public participation exercise; comments arising from the circulation of the draft BAR will be included in the final report submitted to DEDTEA and DWS for authorization*.**

IAP, AUTHORITY, GOVERNMENT DEPARTMENTS, STAKEHOLDER & CONTACT DETAILS	COMMENT	EAP RESPONSE
Department of Agriculture, Forestry, and Fisheries		
N. Sontangane Tel: 033 392 7721 Email: NandiphaS@daff.gov.za NandiphaS@nda.agric.za PMBResourceCentre@daff.gov.za	Comment on BID -The specialist study commissioned includes an ecological study which is highly supported by the department. This study will assist in determing the impact the project may have on indigenous trees and/or protected tree species in terms of the NFA.	-Noted. A wetland/riparian study is attached which comments on the vegetation found along the site extent.
Department of Water and Sanitation		
N. Terry Tel: 031 336 2809 Email: ndout@dws.gov.za P.O Box 1018 Durban 4000	Comments on BID - No comments received.	- Reminders for comments on BID submitted.
Amafa Heritage KZN		
B.Pawandiwa Tel: 033 394 6543 Fax: 342 6097 Email: bernadetp@amafapmb.co.za P. O. Box 2685 Pietermaritzburg 3200	Amafa is being engaged by the Heritage Specialist for comment on the application, comments will be included in the final BAR.	

Ezemvelo KZN Wildlife		
Asanthia Nerissa Pillay *Nerissa.Pillay@kznwildlife.com* Tel: 033 845 1999 Fax: 033 845 1499 P.O Box 13053 Cascades, Pietermaritzburg 3202	Comments on BID - No comments received.	-Reminders for comments on BID submitted.
KZN Department of Human Settlements		
T. Biyela *N. Pillay* Tel: 031 336 5416 Email: Thula.Biyela@kzndhs.gov.za Private Bag X5467 Durban 4000	Comments on BID - No comments received.	- Reminders for comments on BID submitted.

SECTION D: IMPACT ASSESSMENT

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

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

Provide a summary and anticipated significance of the potential direct, indirect and cumulative impacts that are likely to occur as a result of the planning and design phase, construction phase, operational phase, decommissioning and closure phase, including impacts relating to the choice of site/activity/technology alternatives as well as the mitigation measures that may eliminate or reduce the potential impacts listed. This impact assessment must be applied to all the identified alternatives to the activities identified in Section A(2) of this report.
A complete impact assessment in terms of Regulation 19(3) of GN 733 must be included as Appendix F.

Assumptions, Limitations and Gaps in knowledge:

A description of impacts used in this assessment was based on professional experience and judgement, projects conducted for similar projects within similar environments, as well as specialist input, site investigations and site-specific evaluations during the summer months. In assessing the risks and impacts, the Precautionary Principle was applied.

The assessment is also underpinned by the project information, available drawings and layouts provided by the Applicant (via the engineer) at the time of the assessment and is taken to be correct.

IMPACT AND RISK ASSESSMENT

CONSTRUCTION, POST CONSTRUCTION/OPERATIONAL PHASE IMPACTS

Alternative A1 and S1: **Refer to EMPR for mitigation measures**

Aspect	Description of impact and risk	Brief Mitigation Summary
Direct and Indirect Impacts during Construction		
General Construction Related Impacts		
Geotechnical and design aspects	• Geology must be considered during construction, and selection of materials • An adequate design is required to ensure the integrity of the structures and the sporadic flow regimes	• All trenches and excavations must be properly backfilled and compacted in 150 mm thick layers and compacted to 95% of modified AASHTO density. • No accumulation of surface water is permitted and the entire development must be properly drained. • Control of both surface and potential subsoil seepage is essential on this site to protect the proposed road layer works against the ingress of water. Control of surface drainage should be by means of the installed surface drains. • The site is relatively flat with minor cuts anticipated, however where large cuts are to be made, an assessment of the stability of the cuts may be required. A competent a geotechnical engineer should assess the stability of the cuts as well as design lateral support if needed • The anticipated range of 2000 – 25000 average daily traffic (ADT) and the average daily truck traffic (ADDT) values throughout the design life of the pavement results in a Class 3 road category being required. The class 3 road is defined as a district distributor road primarily built for major public transport. • The CBR values for most part of the site indicates that the underlain clayey material is of quality less than G10, suggesting that the in-situ strength is unsuitable for subgrade material and competent material must be introduced with a minimum quality of a G6 or better material. The pavement design engineer can expect suitable road material in the

		nearby quarry. The in-situ pedogenic material is highly variable in density and should be ripped and re-compacted for suitable for roadbed pavement material. No borrow pit was included in the investigation however there is a good commercial quarry in about 4km from the site. • There is a stream that separate Jennings Road and Colita Road, this area requires a fill embankment and culvert underneath the road, so a conservative infinite slope is considered prior to the final pavement design dimensions of the road reserve, culvert and embankment fill material. The height of the embankment will be determined by the 1 in 50 year flood plain and thus the sizing of the culvert below the road. • The watercourse affected by the Section C crossing is ephemeral and flow is variable. Consideration must be taken of the highest probable flow. The culvert should allow for high flows to pass easily through the culvert with minimal attenuation. The lower resistance offered by the culvert to surface flow, the lower the expected level of channel scour that can be expected from this structure
Watercourse and Soil Impacts **Surface and ground water quality, storm water runoff, erosion** (general construction impacts)-	• Limited construction footprint expected for Section C crossing. Disturbances likely to be localised and temporary in nature. • Surface water impacts can occur due to hydrocarbon spills, mixing of cement directly on the ground and on unprotected surfaces, cement/concrete spills, waste mismanagement. These spills can in turn be carried off via runoff. • Spillage of cement powder, waste, can cause pollution of both surface and subsurface water and eventually pollute downstream areas via the river channel. • Increased hard panned area will be available from tarring of the road and pavement construction.	• Where clearing of the road reserve is required, measures such as sand bags, berms and silt curtains must be employed to control surface runoff and reduce the risk of material being washed into the watercourse • Oil spill kits must be available on site. • Oil/hydrocarbon/chemical/cement spills must be prevented in the first instance and cleaned immediately upon discovery. • Formal storm water management measures and erosion protection measures must be implemented.

	Surrounding soils are susceptible to erosion. • Excavation, earth moving, and vehicular movement will increase the susceptibility of the site to erosion during the construction phase • The flood peak, flow volumes and velocities experienced by the watercourse have been altered from their natural state due to the existing surrounding development. The additional runoff produced by the runoff is unlikely to significantly alter the prevailing hydrological conditions. • Additional erosion and scour is expected to occur downstream of the new crossing in Section C.	
Access (general construction impacts)	• Increase in traffic resulting from construction can be expected.	• Existing accesses are to be used.
Waste (general construction impacts)	• Generation of waste will be expected during construction.	• Adequate waste management facilities
Noise (general construction impacts)	• Operation of construction equipment, movement staff will generate a potential for increased noise at the work area.	• Vehicles must adhere to speed limits and be serviced according to a service schedule.
Air quality (general construction impacts)	• Dust entrainment and vehicular emissions (exhaust fumes) are expected during construction, from driving of vehicles on cleared surfaces, and operation of equipment, stripped groundcover/soil/bare surfaces, stockpiles	• Vehicles must adhere to speed limits at all times. • Dampening of exposed surfaces must be undertaken to reduce dust emissions, as required.

Waste management (general construction impacts)	• Waste will be generated by construction activity and crew. This includes waste rock/spoil, plastic, paper, steel, concrete rubble, bitumen, recyclables etc.	• Waste receptacles (bins or skips, or sealable drums) are required on site for waste management
Safety, security (general construction impacts)	• During construction, opportunities may be presented for crime to occur. • Safety risks to staff and community members via excavations and construction traffic can occur.	• The site camp must be fenced, work areas to be demarcated, and warning signage must be used.
Heritage and Palaeontology	• During construction, subsurface artefacts and fossils may be uncovered from excavations. No cultural elements are expected to be affected. No relocation of communities or cultural and religious elements will be required.	• For any chance finds of heritage resources, such as graves or archaeological residues, all work must cease in the area affected and the Contractor must immediately inform the Project Manager. A registered heritage specialist must be called to site for inspection. The relevant heritage resource agency (Amafa) must also be informed about the finding. • The heritage specialist will assess the significance of the resource and provide guidance on the way forward. • Written permission (permits) must be obtained from Amafa if heritage resources are to be altered, destroyed or removed. • All heritage resources found in close proximity to the construction area must be protected by a 5m buffer in which no construction can take place. The buffer material (danger tape, fencing, etc.) must be highly visible to construction crews.
Habitat disturbance and loss	• Loss of marginal and non-marginal riparian habitat is expected. • Habitat loss will be localised and limited in extent. • Loss of habitat only expected in Section C. Riparian habitat disturbance will occur in Section C where	• The proposed foot print of the upgrades must be limited to the road reserve. All construction activities must be limited to points proximal to this area.

	clearance of sufficient area will be required to allow the construction of a 6 m wide road and new culvert. The habitat that will be disturbed is of low ecological value consisting of *A. sieberiana* and number of exotic species. Some encroachment has occurred on either side due to residential development. The habitat is not forest and is secondary in nature. A number of footpaths traverse the area. The affected watercourse is ephemeral and does not support a stable aquatic community or aquatic habitat. As such, the resultant impact of the clearance and construction activities will only be of medium significance. Opportunity exists to reduce this through rehabilitation and maintenance measures such as revegetation and alien invasive plant control.	
Storm water run off	• The majority of the route of the proposed road upgrade has already been hard panned, either with black top or compressed gravel. This, in conjunction with the surrounding development has increased the runoff potential of the study site. The proposed upgrade will only result in a relatively small area of additional hard panning and repair/formalisation of the remainder of the route. The influence on the current storm water runoff potential will be minimal if not insignificant	• Storm water management needs to be undertaken during the construction phase and a formal storm water control system must be included in the road design for the operational phase. • Temporary measures such as sand bag berms and silt curtains must be employed must be implemented during the construction phase. The formal storm water management system must include measures to retard flow prior to release. • Gabion mattresses and scour protection measures must be placed at the evacuation points
Hydrological changes	• The hydrology of the system has already been altered due to existing roads and surrounding development. Proposed upgrade will only provide minor changes to the road network and expected runoff. • The flood peak, flow volumes and velocities experienced by the watercourse have been altered from their natural state due to the existing	• The watercourse affected by the Section C crossing is ephemeral and flow is variable. Consideration must be taken of the highest probable flow. The culvert should allow for high flows to pass easily through the culvert with minimal attenuation. The lower resistance offered by the culvert to surface flow, the lower the expected level of channel scour that can be expected from this structure.

	surrounding development. The additional runoff produced by the runoff is unlikely to significantly alter the prevailing hydrological conditions.	
Erosion and Sedimentation	• Due to the limited changes to the hydrology expected, current erosion and scour forces area likely to remain. Additional degradation is expected but linked to prevailing conditions rather than changes brought about by the upgrade.	• Where clearing of the road reserve is required, measures such as sand bags, berms and silt curtains must be employed to control surface runoff and reduce the risk of material being washed into the watercourse
Post Construction and Operation		
Rehabilitation	• Disturbed areas can pose weed and erosion concerns, collapse of embankments and structural failure, should proper reinstatement and rehab not occur.	• Rapid revegetation of disturbed areas is essential. This is best done using grass turf or seed. Due to the small disturbance footprint associated with the proposed road upgrade, the use of instant turf is the most effective grassing method and the most suitable form an aesthetic perspective. Within Section C, where construction related disturbance will occur within the active channel and riparian area, the use of *Eragrositis tef* seed is recommended. This stabilises the soil and allows natural vegetation to become established through natural succession. Due to the dominance of exotic plant species within the riparian habitat, any disturbance is likely to result in new opportunities for such plants to invade other areas. As such, the control of alien invasive plants within disturbed and revegetated areas following construction is important
Cumulative impacts		

Impacts on watercourses (-)	• During operation, fuel leakages from vehicles will infiltrate the channels, disperse into the Klein Bosmans river and eventually, incrementally affect aquatic life via connecting river systems. However, there is a certain degree to which river systems can assimilate such impacts. These impacts will also be a sustained regime from the other crossings in the area.	n/a
Socio-economic (+)	• The project construction will provide temporary employment for locals. • No impacts are expected on businesses in the area, but conversely the local markets will benefit from the upgrade through increased business and sales opportunities, including supply and delivery of materials. • In the long term, an enhanced road network will enable increased connectively and further access to basic services.	• Local labour must be given preference for job opportunities, with women being further preference. • In addition, in terms of routine maintenance of the infrastructure, women should additionally be given preference for such work.
No Go		
The project is required as part of infrastructure maintenance, upgrading and sustainability increases. The provision of proper erosion control and crossings over the channels will be achieved. The new culverts and tarred road will subsequently be able to convey the discharge, additional runoff from hardened surfaces, traffic increases and will also have a higher design life, reduce safety risks and increase access to services. With climate change often resulting in an increase in flood and storm events, ageing structures and road surfaces will erode and will need		

increased repair and maintenance interventions. Improving the road network will cater for increases in both traffic and runoff, will enhance adaptability and further promote socio-economic development. Reducing the need and frequency of maintenance interventions will free funds that may be used elsewhere for socio-economic growth.

Should the proposed upgrade not be implemented, the existing status quo will be maintained. However, considering the traffic increases and poor condition of sections of the road at present, an upgrade is inevitable.

IMPACTS RATING:

Impact		**Before**							**After**						
		N	M	S	E	D	P	Total	N	M	S	E	D	P	Total
Construction related impacts		-1	1	2	1	1	1	-4	-1	1	2	1	1	0.8	-3.6
Habitat disturbance and loss		-1	2	2	1	4	1	-20	-1	1	2	1	4	1	-10
Increased storm water runoff		-1	1	2	1	4	1	-10	-1	1	2	1	4	0.8	-8.4
Hydrological changes		-1	1	2	1	4	1	-10	-1	1	2	1	4	0.8	-8.4
Erosion and sedimentation		-1	1	2	1	4	1	-10	-1	1	2	1	4	0.8	-8.4
Socio-economic		1	1	1	2	1	4	+12	1	1	2	2	2	12	+12

2. ENVIRONMENTAL IMPACT STATEMENT

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

IMPACT STATEMENT

Impact	Significance without mitigation	Significance with mitigation
Construction activities (as described above)	**Low**	**Low**
Habitat loss and disturbance	**Medium**	**Low**
Hydrological changes	**Medium**	**Low**
Erosion and sedimentation	**Low**	**Low**
Heritage and Palaeontological	**Low**	**Low**

Taking into account the assessment and rating above, the activity and project construction will unavoidably have an impact on the environment during the construction phase. However, mitigation measures, once adopted, as per the EMPr and specialist recommendations, will ensure that impacts are reduced to low or medium significance. Thus, based on the above, the option of activity or project construction is permissible.

Alternative A (preferred alternative)

As above

Alternative B

N/A

Alternative C

N/A

No-go alternative (compulsory)

The project is required as part of infrastructure maintenance, upgrading and sustainability increases. **The provision of proper erosion control and crossings over the channels will be achieved.** **The new culverts and tarred road will subsequently be able to convey the discharge, additional runoff from hardened surfaces, traffic increases and will also have a higher design life, reduce safety risks and increase access to services.** **With climate change often resulting in an increase in flood and storm events, ageing structures and road surfaces will erode and will need increased repair and maintenance interventions. Improving the road network will cater for increases in both traffic and runoff, will enhance adaptability and further promote socio-economic development. Reducing the need and frequency of maintenance interventions will free funds that may be used elsewhere for socio-economic growth.** **Should the proposed upgrade not be implemented, the existing status quo will be maintained. However, considering the traffic increases and poor condition of sections of the road at present, an upgrade is inevitable.**

SECTION E. RECOMMENDATION OF PRACTITIONER

Is the information contained in this report and the documentation attached hereto sufficient to make a decision in respect of the activity applied for (in the view of the environmental assessment practitioner)?	**X YES**	NO

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

N/A

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

It is recommended that alternative A1 and S1 (i.e. construction of the culverts and upgrade of the road) be accepted from an environmental and social perspective.

The mitigation measures and controls specified in the EMPr, attached as appendix G, and the specialist studies must be complied with to ensure environmental protection.

The construction phase must be monitored by an ECO, on a monthly basis, who should monitor compliance with the EMPr.

Is an EMPr attached?	X YES	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.

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.

FUZE ENVIRONMENTAL SERVICES CC – JENITHA GIRDARY

NAME OF EAP

SIGNATURE OF EAP

23/02/2018

DATE

Jenitha Girdary

SECTION F: APPENDIXES

The following appendixes must be attached:

Appendix A: Maps

Appendix B: Photographs

Appendix C: Facility illustration(s)

Appendix D: Specialist reports (including terms of reference)

Appendix E: Public Participation

Appendix F: Impact Assessment

Appendix G: Environmental Management Programme (EMPr)

Appendix H: Details of EAP and expertise

Appendix I: Specialist's declaration of interest

Appendix J: Additional Information