Western Cape Government
Environmental Affairs and Development Planning

FORM NO. BAR10/2019

BASIC ASSESSMENT REPORT

THE NATIONAL ENVIRONMENTAL MANAGEMENT ACT, 1998 (ACT NO. 107 OF 1998) AND THE ENVIRONMENTAL IMPACT ASSESSMENT REGULATIONS.

NOVEMBER 2019

(For official use only)	
Pre-application Reference Number (if applicable):	
EIA Application Reference Number:	
NEAS Reference Number:	
Exemption Reference Number (if applicable):	
Date BAR received by Department:	
Date BAR received by Directorate:	
Date BAR received by Case Officer:	

GENERAL PROJECT DESCRIPTION

(This must Include an overview of the project including the Farm name/Portion/Erf number)

The Western Cape Department of Transport and Public Works proposes to undertake repairs or replacements on a combined total of forty bridge and culvert structures located on the following roads:

- TR3305 (N12) – 23 major culverts and 10 bridges,
- DR2307 – 2 major culverts,
- MR584 – 1 major culverts,
- TR3501 (R61) – 2 major culverts, and
- TR5801 (R381) – 2 major culverts.

The project falls within the TR3305 (N12), DR2307, MR584, TR3501 (R61) and TR5801 (R381) road reserves.

The structures will be subject to structural repair work and reinstatement or improvement of erosion protection. All of the structures will be repaired bar one. Structure C11348 will be replaced in-situ.

The main objective for the repair or replacement of the water crossing structure, as identified and determined by engineers, is to limit the impact of overtopping, erosion, and sedimentation. This will be a positive long-term impact arising from the project on the watercourses.

IMPORTANT INFORMATION TO BE READ PRIOR TO COMPLETING THIS BASIC ASSESSMENT REPORT

1. **The purpose** of this template is to provide a format for the Basic Assessment report as set out in Appendix 1 of the National Environmental Management Act, 1998 (Act No. 107 of 1998) ("NEMA"), Environmental Impact Assessment ("EIA") Regulations, 2014 (as amended) in order to ultimately obtain Environmental Authorisation.

2. The Environmental Impact Assessment ("EIA") Regulations is defined in terms of Chapter 5 of the National Environmental Management Act, 19998 (Act No. 107 of 1998) ("NEMA") hereinafter referred to as the "NEMA EIA Regulations".

3. The required information must be typed within the spaces provided in this Basic Assessment Report ("BAR"). The sizes of the spaces provided are not necessarily indicative of the amount of information to be provided.

4. All applicable sections of this BAR must be completed.

5. Unless protected by law, all information contained in, and attached to this BAR, will become public information on receipt by the Competent Authority. If information is not submitted with this BAR due to such information being protected by law, the applicant and/or Environmental Assessment Practitioner ("EAP") must declare such non-disclosure and provide the reasons for believing that the information is protected.

6. This BAR is current as of **November 2019**. It is the responsibility of the Applicant/ EAP to ascertain whether subsequent versions of the BAR have been released by the Department. Visit this Department's website at http://www.westerncape.gov.za/eadp to check for the latest version of this BAR.

7. This BAR is the standard format, which must be used in all instances when preparing a BAR for Basic Assessment applications for an environmental authorisation in terms of the NEMA EIA Regulations when the Western Cape Government Department of Environmental Affairs and Development Planning ("DEA&DP") is the Competent Authority.

8. Unless otherwise indicated by the Department, one hard copy and one electronic copy of this BAR must be submitted to the Department at the postal address given below or by delivery thereof to the Registry Office of the Department. Reasonable access to copies of this Report must be provided to the relevant Organs of State for consultation purposes, which may, if so indicated by the Department, include providing a printed copy to a specific Organ of State.

9. This BAR must be duly dated and originally signed by the Applicant, EAP (if applicable) and Specialist(s) and must be submitted to the Department at the details provided below.

10. The Department's latest Circulars pertaining to the "One Environmental Management System" and the EIA Regulations, any subsequent Circulars, and guidelines must be taken into account when completing this BAR.

11. Should a water use licence application be required in terms of the National Water Act, 1998 (Act No. 36 of 1998) ("NWA"), the "One Environmental System" is applicable, specifically in terms of the synchronisation of the consideration of the application in terms of the NEMA and the NWA. Refer to this Department's Circular EADP 0028/2014: One Environmental Management System.

12. Where Section 38 of the National Heritage Resources Act, 1999 (Act No. 25 of 1999) ("NHRA") is triggered, a copy of Heritage Western Cape's final comment must be attached to the BAR.

13. The Screening Tool developed by the National Department of Environmental Affairs must be used to generate a screening report. Please use the Screening Tool link https://screening.environment.gov.za/screeningtool to generate the Screening Tool Report. The screening tool report must be attached to this BAR.

14. Where this Department is also identified as the Licencing Authority to decide on applications under the National Environmental Management: Air Quality Act (Act No. 29 of 2004) ('NEM:AQA"), the submission of the Report must also be made as follows, for-
Waste Management Licence Applications, this report must also (i.e., another hard copy and electronic copy) be submitted for the attention of the Department's Waste Management Directorate (Tel: 021-483-2728/2705 and Fax: 021-483-4425) at the same postal address as the Cape Town Office.

    Atmospheric Emissions Licence Applications, this report must also be (i.e., another hard copy and electronic copy) submitted for the attention of the Licensing Authority or this Department's Air Quality Management Directorate (Tel: 021 483 2888 and Fax: 021 483 4368) at the same postal address as the Cape Town Office.

DEPARTMENTAL DETAILS

CAPE TOWN OFFICE: REGION 1 and REGION 2 **(Region 1: City of Cape Town, West Coast District)** **(Region 2: Cape Winelands District & Overberg District)**	**GEORGE OFFICE: REGION 3** **(Central Karoo District & Garden Route District)**
BAR must be sent to the following details: Western Cape Government Department of Environmental Affairs and Development Planning Attention: Directorate: Development Management (Region 1 or 2) Private Bag X 9086 Cape Town, 8000 Registry Office 1st Floor Utilitas Building 1 Dorp Street, Cape Town Queries should be directed to the Directorate: Development Management (Region 1 and 2) at: Tel: (021) 483-5829 Fax (021) 483-4372	BAR must be sent to the following details: Western Cape Government Department of Environmental Affairs and Development Planning Attention: Directorate: Development Management (Region 3) Private Bag X 6509 George, 6530 Registry Office 4th Floor, York Park Building 93 York Street George Queries should be directed to the Directorate: Development Management (Region 3) at: Tel: (044) 805-8600 Fax (044) 805 8650

MAPS

Provide a location map (see below) as Appendix A1 to this BAR that shows the location of the proposed development and associated structures and infrastructure on the property.	
Locality Map:	The scale of the locality map must be at least 1:50 000. For linear activities or development proposals 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; • road names or numbers of all the major roads as well as the roads that provide access to the site(s) • a north arrow; • a legend; and • a linear scale. For ocean based or aquatic activity, the coordinates must be provided within which the activity is to be undertaken and a map at an appropriate scale clearly indicating the area within which the activity is to be undertaken. Where comment from the Western Cape Government: Transport and Public Works is required, a map illustrating the properties (owned by the Western Cape Government: Transport and Public Works) that will be affected by the proposed development must be included in the Report.
Provide a detailed site development plan / site map (see below) as Appendix B1 to this BAR; and if applicable, all alternative properties and locations.	
Site Plan:	Detailed site development plan(s) must be prepared for each alternative site or alternative activity. The site plans must contain or conform to the following: • The detailed site plan must preferably be at a scale of 1:500 or at an appropriate scale. The scale must be clearly indicated on the plan, preferably together with a linear scale. • The property boundaries and numbers of all the properties within 50m of the site must be indicated on the site plan. • On land where the property has not been defined, the co-ordinates of the area in which the proposed activity or development is proposed must be provided. • The current land use (not zoning) as well as the land use zoning of each of the adjoining properties must be clearly indicated on the site plan. • The position of each component of the proposed activity or development as well as any other structures on the site must be indicated on the site plan. • Services, including electricity supply cables (indicate aboveground or underground), water supply pipelines, boreholes, sewage pipelines, storm water infrastructure and access roads that will form part of the proposed development **must** be clearly indicated on the site plan. • Servitudes and an indication of the purpose of each servitude must be

	indicated on the site plan. • Sensitive environmental elements within 100m of the site must be included on the site plan, including (but not limited to): o Watercourses / Rivers / Wetlands o Flood lines (*i.e.,* 1:100 year, 1:50 year and 1:10 year where applicable); o Coastal Risk Zones as delineated for the Western Cape by the Department of Environmental Affairs and Development Planning ("DEA&DP"): o Ridges; o Cultural and historical features/landscapes; o Areas with indigenous vegetation (even if degraded or infested with alien species). • Whenever the slope of the site exceeds 1:10, a contour map of the site must be submitted. • North arrow. A map/site plan must also be provided at an appropriate scale, which superimposes the proposed development and its associated structures and infrastructure on the environmental sensitivities of the preferred and alternative sites indicating any areas that should be avoided, including buffer areas.
Site photographs	Colour photographs of the site that shows the overall condition of the site and its surroundings (taken on the site and taken from outside the site) with a description of each photograph. The vantage points from which the photographs were taken must be indicated on the site plan, or locality plan as applicable. If available, please also provide a recent aerial photograph. Photographs must be attached to this BAR as **Appendix C**. The aerial photograph(s) should be supplemented with additional photographs of relevant features on the site. Date of photographs must be included. Please note that the above requirements must be duplicated for all alternative sites.
Biodiversity Overlay Map:	A map of the relevant biodiversity information and conditions must be provided as an overlay map on the property/site plan. The Map must be attached to this BAR as **Appendix D**.
Linear activities or development and multiple properties	GPS co-ordinates must be provided in degrees, minutes and seconds using the Hartebeeshoek 94 WGS84 co-ordinate system. Where numerous properties/sites are involved (linear activities) you must attach a list of the Farm Name(s)/Portion(s)/Erf number(s) to this BAR as an Appendix. For linear activities that are longer than 500m, please provide a map with the co-ordinates taken every 100m along the route to this BAR as **Appendix A3**.

ACRONYMS

DAFF:	Department of Forestry and Fisheries
DEA:	Department of Environmental Affairs
DEA& DP:	Department of Environmental Affairs and Development Planning
DHS:	Department of Human Settlement
DoA:	Department of Agriculture
DoH:	Department of Health
DWS:	Department of Water and Sanitation
EMPr:	Environmental Management Programme
HWC:	Heritage Western Cape
NFEPA:	National Freshwater Ecosystem Protection Assessment
NSBA:	National Spatial Biodiversity Assessment
TOR:	Terms of Reference
WCBSP:	Western Cape Biodiversity Spatial Plan
WCG:	Western Cape Government

ATTACHMENTS

Note: The Appendices must be attached to the BAR as per the list below. Please use a ✓ **(**tick) or a **x** (cross) to indicate whether the Appendix is attached to the BAR.

The following checklist of attachments must be completed.

APPENDIX			**✓ (Tick) or x (cross)**
Appendix A:	**Maps**		
	Appendix A1:	**Locality Map**	x
	Appendix A2:	**Coastal Risk Zones as delineated in terms of ICMA for the Western Cape by the Department of Environmental Affairs and Development Planning**	n/a
	Appendix A3:	**Map with the GPS co-ordinates for linear activities**	x
Appendix B:	**Appendix B1:**	**Site development plan(s)**	x
	Appendix B2	**A map of appropriate scale, which superimposes the proposed development and its associated structures and infrastructure on the environmental sensitivities of the preferred site, indicating any areas that should be avoided, including buffer areas;**	x
Appendix C:	**Photographs**		x
Appendix D:	**Biodiversity overlay map**		x
Appendix E:	**Permit(s) / license(s) / exemption notice, agreements, comments from State Department/Organs of state and service letters from the municipality.**		

	Appendix E1:	**Final comment/ROD from HWC**	
	Appendix E2:	**Copy of comment from Cape Nature**	
	Appendix E3:	**Final Comment from the DWS**	
	Appendix E4:	**Comment from the DEA: Oceans and Coast**	n/a
	Appendix E5:	**Comment from the DAFF**	n/a
	Appendix E6:	**Comment from WCG: Transport and Public Works**	n/a
	Appendix E7:	**Comment from WCG: DoA**	
	Appendix E8:	**Comment from WCG: DHS**	
	Appendix E9:	**Comment from WCG: DoH**	
	Appendix E10:	**Comment from DEA&DP: Pollution Management**	
	Appendix E11:	**Comment from DEA&DP: Waste Management**	
	Appendix E12:	**Comment from DEA&DP: Biodiversity**	
	Appendix E13:	**Comment from DEA&DP: Air Quality**	
	Appendix E14:	**Comment from DEA&DP: Coastal Management**	n/a
	Appendix E15:	**Comment from the local authority**	
	Appendix E16:	**Confirmation of all services (water, electricity, sewage, solid waste management)**	
	Appendix E17:	**Comment from the District Municipality**	
	Appendix E18:	**Copy of an exemption notice**	n/a
	Appendix E19	**Pre-approval for the reclamation of land**	n/a
	Appendix E20:	**Proof of agreement/TOR of the specialist studies conducted.**	x

	Appendix E21:	**Proof of land use rights**	n/a
	Appendix E22:	**Proof of public participation agreement for linear activities**	x
Appendix F:	**Public participation information: including a copy of the register of I&APs, the comments and responses Report, proof of notices, advertisements and any other public participation information as is required.**		x
Appendix G:	**Specialist Report(s)**		x
Appendix H:	**EMPr**		x
Appendix I:	**Screening tool report**		x
Appendix J:	**The impact and risk assessment for each alternative**		x
Appendix K:	**Need and desirability for the proposed activity or development in terms of this Department's guideline on Need and Desirability (March 2013)/DEA Integrated Environmental Management Guideline**		x
Appendix L	**Development footprint for each structure in m^2** **Size of each structure in m^2, Amount of material that will be removed at each structure**		x
Appendix M	**List of the structures and their co-ordinates**		x
Appendix N	**MMP for Project**		x

SECTION A: ADMINISTRATIVE DETAILS

Highlight the Departmental Region in which the intended application will fall	CAPE TOWN OFFICE:		GEORGE OFFICE:
	REGION 1 (City of Cape Town, West Coast District	REGION 2 (Cape Winelands District & Overberg District)	REGION 3 (Central Karoo District & Garden Route District)
Duplicate this section where there is more than one Proponent Name of Applicant/Proponent:	Western Cape Government: Department of Transport and Public Works		
Name of contact person for Applicant/Proponent (if other):	Mr Dirk Immelman		
Company/ Trading name/State Department/Organ of State:	Western Cape Government: Department of Transport and Public Works		
Company Registration Number:	No company registration as the applicant is not a company		
Postal address:	P O Box 2603		
	Cape Town	Postal code: 8000	
Telephone:	(021) 483-0580	Cell: 083 372 7660	
E-mail:	Dirk.Immelman@westerncape.gov.za	Fax: None	
Company of EAP:	Chameleon Environmental		
EAP name:	Dr Josephine Bothma		
Postal address:	P O Box 11788		
	Silver Lakes	Postal code: 0054	
Telephone:	(012) 809-1704	Cell: 082 571 6920	
E-mail:	Ce.j@mwebbiz.co.za	Fax: 086 6855 080	
Qualifications:	PhD Environmental Management		
EAPASA registration no:	EAPASA Nr 2019/246		
Duplicate this section where there is more than one landowner Name of landowner:	Western Cape Government: Department of Transport and Public Works		
Name of contact person for landowner (if other):	Mr Dirk Immelman		
Postal address:	P O Box 2603		
	Cape Town	Postal code: 8000	
Telephone:	(021) 483-0580	Cell: 083 372 7660	
E-mail:	Dirk.Immelman@westerncape.gov.za	Fax: None	
Name of Person in control of the land:	Western Cape Government: Department of Transport and Public Works		
	Mr Dirk Immelman		
Name of contact	P O Box 2603		

person for person in control of the land: Postal address:		
	Cape Town	Postal code: 8000
Telephone:	(021) 483-0580	Cell: 083 372 7660
E-mail:	Dirk.Immelman@westerncape.gov.za	Fax: None

Duplicate this section where there is more than one Municipal Jurisdiction Municipality in whose area of jurisdiction the proposed activity will fall:	Beaufort West Local Municipality	
Contact person:	Mr. MG Penxa: Acting Municipal Manager	
Postal address:	Private Bag X582	
	Beaufort West	Postal code: 6970
Telephone	(023) 414-8100	Cell: None
E-mail:	Jpenxa2010@yahoo.com	Fax: (023) 414-8108

Duplicate this section where there is more than one Municipal Jurisdiction Municipality in whose area of jurisdiction the proposed activity will fall:	Prince Albert Local Municipality	
Contact person:	Anneleen Vorster: Acting Municipal Manager	
Postal address:	Private Bag X53	
	Prince Albert	Postal code: 6930
Telephone	(023) 541-1320	Cell: None
E-mail:	anneleen@pamun.gov.za	Fax: (023) 541-1321

SECTION B: CONFIRMATION OF SPECIFIC PROJECT DETAILS AS INLCUDED IN THE APPLICATION FORM

1.	Is the proposed development (please tick):	New		Expansion	x
2.	Is the proposed site(s) a brownfield of greenfield site? Please explain.				
The proposed site is a brownfield site as the forty existing culvert- or bridge structures within the road reserves will be either replaced or repaired. All structures will be repaired but one. The culvert structure C11348 on the N12 will be replaced.					
3.	**For Linear activities or developments**				
3.1.	Provide the Farm(s)/Farm Portion(s)/Erf number(s) for all routes:				
There is no farm names farm portions or erf numbers associated with this application as the structures fall within the road reserves of the following roads:					

• TR3305 (N12) – 23 major culverts and 10 bridges, • DR2307 – 2 major culverts, • MR584 – 1 major culverts, • TR3501 (R61) – 2 major culverts, and • TR5801 (R381) – 2 major culverts.		
3.2.	Development footprint of the proposed development for all alternatives.	m²
Please find the development footprint for each structure in Appendix L.		
3.3.	Provide a description of the proposed development (e.g. for roads the length, width and width of the road reserve in the case of pipelines indicate the length and diameter) for all alternatives.	
The project entails the repairs or replacements on a combined total of forty bridge and culvert structures located on the following roads: • TR3305 (N12) – 23 major culverts and 10 bridges, • DR2307 – 2 major culverts, • MR584 – 1 major culverts, • TR3501 (R61) – 2 major culverts, and • TR5801 (R381) – 2 major culverts. This contract also includes the periodic maintenance of Trunk Road 33 Section 5 (TR33/5) between Klaarstroom (km0,00) and Beaufort West (km110,00). <u>However, no listed activity is triggered by the maintenance of the road</u>.		
3.4.	Indicate how access to the proposed routes will be obtained for all alternatives.	
Access to the structures will be obtained from the existing TR3305 (N12), DR2307, MR584, TR3501 (R61) and TR5801 (R381).		

3.5.	SG Digit codes of the Farms/Farm Portions/Erf numbers for all alternatives	n	a																			

3.6.	**Starting point co-ordinates for all alternatives** Please find a list of the structures and their co-ordinates included in Appendix M.			
	Latitude (S)	**°**	**‘**	**“**
	Longitude (E)	**°**	**‘**	**“**
	Middle point co-ordinates for all alternatives			
	Latitude (S)	**°**	**‘**	**“**
	Longitude (E)	**°**	**‘**	**“**
	End point co-ordinates for all alternatives			
	Latitude (S)	**°**	**‘**	**“**
	Longitude (E)	**°**	**‘**	**“**

Note: For Linear activities or developments longer than 500m, a map indicating the co-ordinates for every 100m along the route must be attached to this BAR as Appendix A3.		
4.	**Other developments**	
4.1.	Property size(s) of all proposed site(s): Please find a table with the size of each structure included in Appendix L.	See table
4.2.	Developed footprint of the existing facility and associated infrastructure (if applicable): Please find a table with the size of the development footprint for each structure included in Appendix L.	See table
4.3.	Development footprint of the proposed development and associated infrastructure size(s) for all alternatives: The alternative pertains to the replacement of all the structures and not repairing the structures. The development footprint of the alternative will, therefore be the same.	See table
4.4.	Provide a detailed description of the proposed development and its associated infrastructure (This must include details of e.g. buildings, structures, infrastructure, storage facilities, sewage/effluent treatment and holding facilities).	

A combined total of forty bridge and culvert structures will be repaired or replaced and are located on the following roads:

- TR3305 (N12) – 23 major culverts and 10 bridges,
- DR2307 – 2 major culverts,
- MR584 – 1 major culverts,
- TR3501 (R61) – 2 major culverts, and
- TR5801 (R381) – 2 major culverts.

The project falls within the TR3305 (N12), DR2307, MR584, TR3501 (R61) and TR5801 (R381) road reserves and fall under the jurisdiction of the Western Cape Government: Department of Transport and Public Works.

For the structures above, one structure will be demolished and reconstructed while the remaining structures will be subject to structural repair work and reinstatement or improvement of erosion protection.

The proposed site camp will be located on a disturbed portion of the existing Boeteka farm stall property near km95.6 on the right-hand side of Trunk Road 33/5. The site camp shall consist of temporary site building to accommodate the offices of the contractor and engineer as well as the laboratory facilities for material testing. Temporary ablution facilities will also be provided at the site camp and locations where work it to be conducted. These facilities shall be serviced regularly while the effluent will be disposed at treatment plants in Beaufort West or Klaarstroom. The site camp shall also accommodate the contractor's plant and materials as can fit within the allocated area.

There are 15 stop areas along the route which will be used for the stockpiling materials during the course of the project. These disturbed areas are located within the road reserve of TR33/5.

LOCATION OF STOP AREAS		
STOP AREA	**STAKE VALUE**	**SIDE OF ROAD**
1	1.616	RHS
2	5.446	LHS
3	12.818	RHS
4	25.469	LHS
5	31.302	RHS
6	33.684	RHS
7	37.478	LHS
8	48.550	LHS
9	56.403	RHS
10	62.810	LHS
11	65.660	RHS
12	66.889	LHS
13	81.472	RHS
14	85.633	LHS
15	99.175	LHS & RHS

In addition to the above, four temporary stockpile areas were identified on farms situated along TR33/5 for a crushing and screening operation. These stockpile areas are located on disturbed portions of land at the following positions:

ROAD NO	**SIDE OF TR33/5**	**STAKE VALUE**	**FARM NAME**	**APPROXIMATE SIZE**
TR33/5	RHS	4,1 km before start of TR33/5 (km0,00)	Klaarstroom Farm	8 300 m^2
	LHS	km33,20	Zeekoegat Farm	4 200 m^2
		km48.44	Trakaskuilen Farm	4 200 m^2
		km109.20	Weltevreden Farm	10 000 m^2

4.5.	Indicate how access to the proposed site(s) will be obtained for all alternatives.

Access to the structures will be obtained from the existing TR3305 (N12), DR2307, MR584, TR3501 (R61) and TR5801 (R381).

4.6.	SG Digit code(s) of the proposed site(s) for all alternatives:																						

4.7.	Coordinates of the proposed site(s) for all alternatives: Please find a list of the structures and their co-ordinates included in Appendix M.			
	Latitude (S)	°	‘	“
	Longitude (E)	°	‘	“

SECTION C: LEGISLATION/POLICIES AND/OR GUIDELINES/PROTOCOLS

1. Exemption applied for in terms of the NEMA and the NEMA EIA Regulations

Has exemption been applied for in terms of the NEMA and the NEMA EIA Regulations. If yes, include a copy of the exemption notice in Appendix E18.	YES	NO x

2. Is the following legislation applicable to the proposed activity or development.

The National Environmental Management: Integrated Coastal Management Act, 2008 (Act No. 24 of 2008) ("ICMA"). If yes, attach a copy of the comment from the relevant competent authority as Appendix E4 and the pre-approval for the reclamation of land as Appendix E19.	YES	NO x
The National Heritage Resources Act, 1999 (Act No. 25 of 1999) ("NHRA"). If yes, attach a copy of the comment from Heritage Western Cape as Appendix E1.	YES x	NO
The National Water Act, 1998 (Act No. 36 of 1998) ("NWA"). If yes, attach a copy of the comment from the DWS as Appendix E3.	YES x	NO
The National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004) ("NEM:AQA"). If yes, attach a copy of the comment from the relevant authorities as Appendix E13.	YES	NO x
The National Environmental Management Waste Act (Act No. 59 of 2008) ("NEM:WA")	YES	NO x
The National Environmental Management Biodiversity Act, 2004 (Act No. 10 of 2004 ("NEMBA").	YES x	NO
The National Environmental Management: Protected Areas Act, 2003 (Act No. 57 of 2003) ("NEMPAA").	YES x	NO
The Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983). If yes, attach comment from the relevant competent authority as Appendix E5.	YES x	NO

3. Other legislation

List any other legislation that is applicable to the proposed activity or development.

Title of legislation	Applicability to the project	Administering authority	Date
EIA Regulations 2014, as amended GN R. 983 as amended in GN R. 327: Activities 19	Listed activities triggered in terms of the EIA Regulations, 2014 as amended	DEADP	2014 amended in 2017
National Environmental Management Act, 1998 (Act No. 107 of 1998) The National Environmental Management Act, 1998 (Act No. 107 of 1998): [NEMA] was enacted in November 1998. NEMA provides for cooperative governance by establishing principles for decision-making on matters affected the environment, institutions that will promote co-operative governance and procedures for coordinating environmental functions, public participation and sustainable development.	General objectives of Integrated Environmental Management as set out in section 23 of NEMA taken into account	DEADP	1998
Disaster Management Act, 2002 (Act 57 of 2002)	Covid-19 Directions issued for PPP	DEADP	2020

4. Policies

Explain which policies were considered and how the proposed activity or development complies and responds to these policies.
DEADP - One Environmental Management System All aspects of the proposed development will be combined and managed through a broad based Environmental management System implemented by DEADP

5. Guidelines

List the guidelines which have been considered relevant to the proposed activity or development and explain how they have influenced the development proposal.
Maintenance Management Plan (MMP) for a watercourse – July 2017 This guideline was used for drafting the maintenance management plan for the structures
Department of Environmental Affairs Departmental Guidelines under www.environment.gov.za Guidance with regard to the execution of the Basic Assessment process
DEADP guideline on Need and Desirability (March 2013) Guidance with regard to the need and desirability of project
Guideline on Public Participation Guidance with regard to the Public Participation Process for the project

Guideline on Alternatives Guidance with regard to alternatives pertaining to project
Guideline on generic TORS for EAPS and project schedules Guidance with regard to Tors and project schedule

6. Protocols

Explain how the proposed activity or development complies with the requirements of the protocols referred to in the NOI and/or application form
Disaster Management Act, 2002 (Act 57 of 2002) Directions issued for PPP during Covid 19 pandemic

SECTION D: APPLICABLE LISTED ACTIVITIES

List the applicable activities in terms of the NEMA EIA Regulations

Activity No(s):	Provide the relevant **Basic Assessment Activity(ies)** as set out in **Listing Notice 1**	Describe the portion of the proposed development to which the applicable listed activity relates.
No 19	GN R. 983 The infilling or depositing of any material of more than 10 cubic metres into, or removal or moving of soil from a: (i)watercourse.	This listed activity will apply to all the bridge and culvert structures as more than 10 cubic metres of soil will be removed from the structures during the rehabilitation of the structures. Please see a list attached in Appendix O with the amount of material that will be removed at each structure.
Activity No(s):	Provide the relevant **Basic Assessment Activity(ies)** as set out in **Listing Notice 3**	Describe the portion of the proposed development to which the applicable listed activity relates.
	None	

Note:

- The listed activities specified above must reconcile with activities applied for in the application form. The onus is on the Applicant to ensure that all applicable listed activities are included in the application. If a specific listed activity is not included in an Environmental Authorisation, a new application for Environmental Authorisation will have to be submitted.
- Where additional listed activities have been identified, that have not been included in the application form, and amended application form must be submitted to the competent authority.

List the applicable waste management listed activities in terms of the NEM:WA

Activity No(s):	Provide the relevant **Basic Assessment Activity(ies)** as set out in **Category A**	Describe the portion of the proposed development to which the applicable listed activity relates.
	None	

List the applicable listed activities in terms of the NEM:AQA

Activity No(s):	Provide the relevant **Listed Activity(ies)**	Describe the portion of the proposed development to which the applicable listed activity relates.
	None	

SECTION E: PLANNING CONTEXT AND NEED AND DESIRABILITY

1.	Provide a description of the preferred alternative.
The repairs or replacements on a combined total of forty bridge and culvert structures located on the following roads: • TR3305 (N12) – 23 major culverts and 10 bridges, • DR2307 – 2 major culverts, • MR584 – 1 major culverts, • TR3501 (R61) – 2 major culverts, and • TR5801 (R381) – 2 major culverts. The project falls within the TR3305 (N12), DR2307, MR584, TR3501 (R61) and TR5801 (R381) road reserves and fall under the jurisdiction of the Western Cape Government: Department of Transport and Public Works. For the structures above, only one i.e. C11348 will be completely demolished and reconstructed while the remaining structures will be subject to structural repair work and reinstatement or improvement of erosion protection.	
2.	Explain how the proposed development is in line with the existing land use rights of the property as you have indicated in the NOI and application form? Include the proof of the existing land use rights granted in Appendix E21.
The structures fall within the TR3305 (N12), DR2307, MR584, TR3501 (R61) and TR5801 (R381) road reserves and fall under the jurisdiction of the Western Cape Government: Department of Transport and Public Works.	
3.	Explain how potential conflict with respect to existing approvals for the proposed site (as indicated in the NOI/and or application form) and the proposed development have been resolved.
There are no existing approvals for the proposed site.	
4.	Explain how the proposed development will be in line with the following?
4.1	The Provincial Spatial Development Framework.
The Western Cape Government: Department Of Transport And Public Works is given the power to perform all planning, design, construction, operation, management, control, maintenance and rehabilitation of all the provincial roads in the Western Cape Province. The TR3305 (N12), DR2307, MR584, TR3501 (R61) and TR5801 (R381 provincial roads fall within their jurisdiction and the development is not bound by the municipality's PSDF in order to continue.	
4.2	The Integrated Development Plan of the local municipality.
The TR3305 (N12), DR2307, MR584, TR3501 (R61) and TR5801 (R381 are provincial roads and fall	

within the jurisdiction of the Western Cape Government: Department of Transport and Public Works and the development is not bound by the Integrated Development Plan in order to continue as it is not a residential development or municipal road development.	
4.3.	The Spatial Development Framework of the local municipality.
The TR3305 (N12), DR2307, MR584, TR3501 (R61) and TR5801 (R381 are provincial roads and fall within the jurisdiction of the Western Cape Government: Department of Transport and Public Works and the development is not bound by the Spatial Development Framework in order to continue as it is not a residential development or municipal road development.	
4.4.	The Environmental Management Framework applicable to the area.
There is no EMF applicable to the area.	
5.	Explain how comments from the relevant authorities and/or specialist(s) with respect to biodiversity have influenced the proposed development.
A specialist study was undertaken by Flori Scientific Services (Mr Johannes Maree). The mitigation measures and recommendations by the specialist were incorporated into the EMPr for the project for implementation by the appointed Contractor.	
6.	Explain how the Western Cape Biodiversity Spatial Plan (including the guidelines in the handbook) has influenced the proposed development.
The Western Cape Biodiversity Spatial Plan (2017) was taken into consideration with this project. All watercourses in the area are delineated as ecological support areas (ESAs). There are no critical biodiversity areas (CBAs) directly within the footprint of the study site. There are sensitive areas that contractors still need to be aware of (even if only working on the road or within the road reserve). These include roads close to or within the Karoo National Park and roads in the south along the lower N12 and R407.	
7.	Explain how the proposed development is in line with the intention/purpose of the relevant zones as defined in the ICMA.
The proposed development is not applicable to the International Coastal Management Act as it is situated in the Karoo.	
8.	Explain whether the screening report has changed from the one submitted together with the application form. The screening report must be attached as Appendix I.
There were no changes to the Screening report.	
9.	Explain how the proposed development will optimise vacant land available within an urban area.
The proposed development is not applicable to any vacant land available within an urban area as existing bridge and culvert structures will be rehabilitated on existing municipal roads.	
10.	Explain how the proposed development will optimise the use of existing resources and infrastructure.
The existing roads infrastructure in the area will be optimised with the rehabilitation of existing bridge and culvert structures. Existing employment resources will be sourced when the contractor is appointed for the construction and maintenance phases of the project.	
11.	Explain whether the necessary services are available and whether the local authority has

	confirmed sufficient, spare, unallocated service capacity. (Confirmation of all services must be included in Appendix E16).
No additional roads or road infrastructure will be constructed as the road structures that will be repaired or replaced are situated on existing municipal roads. The construction yard will be constructed on disturbed land with an existing access road. Power will be acquired from the municipality or Eskom and will be sourced by the appointed Contractor. Generators will be the alternative power source. Water for domestic use only will be sourced by the appointed Contractor. It is anticipated that borehole water could be sought or water could be bought from the land owner.	
12.	In addition to the above, explain the need and desirability of the proposed activity or development in terms of this Department's guideline on Need and Desirability (March 2013) or the DEA's Integrated Environmental Management Guideline on Need and Desirability. This may be attached to this BAR as Appendix K.
Please see the need and desirability of the project attached in Appendix K.	

SECTION F: PUBLIC PARTICIPATION

The Public Participation Process ("PPP") must fulfil the requirements as outlined in the NEMA EIA Regulations and must be attached as Appendix F. Please note that If the NEM: WA and/or the NEM: AQA is applicable to the proposed development, an advertisement must be placed in at least two newspapers.

1. Exclusively for linear activities: Indicate what PPP was agreed to by the competent authority. Include proof of this agreement in Appendix E22.

The public participation process for the project was agreed to by the competent authority with a public participation plan that was submitted to the DEADP for approval prior to commencement of the Public Participation Process.

2. Confirm that the PPP as indicated in the application form has been complied with. All the PPP must be included in Appendix F.

The PPP as indicated in the application for and Public Participation Plan has been complied with.

3. Confirm which of the State Departments and Organs of State indicated in the Notice of Intent/application form were consulted with.

It is confirmed that the State Departments and Organs of State indicated in the Notice of Intent and Public Participation Plan were consulted with.

4. If any of the State Departments and Organs of State were not consulted, indicate which and why.

All were consulted with.

5. if any of the State Departments and Organs of State did not respond, indicate which.

Most of the State Departments and Organs of States responded by acknowledging the notification letter and Background Information Document sent.

6. Provide a summary of the issues raised by I&APs and an indication of the manner in which the issues were incorporated into the development proposal.

There were no issues raised by I&APs.

Note:

A register of all the I&AP's notified, including the Organs of State, and all the registered I&APs must be included in Appendix F. The register must be maintained and made available to any person requesting access to the register in writing.

The EAP must notify I&AP's that all information submitted by I&AP's becomes public information.

Your attention is drawn to Regulation 40 (3) of the NEMA EIA Regulations which states that *"Potential or registered interested and affected parties, including the competent authority, may be provided with an opportunity to comment on reports and plans contemplated in subregulation (1) prior to submission of an application but **must** be provided with an opportunity to comment on such reports once an application has been submitted to the competent authority."*

All the comments received from I&APs on the pre -application BAR (if applicable and the draft BAR must be recorded, responded to and included in the Comments and Responses Report and must be included in Appendix F.

All information obtained during the PPP (the minutes of any meetings held by the EAP with I&APs and other role players wherein the views of the participants are recorded) and must be included in Appendix F.

Please note that proof of the PPP conducted must be included in Appendix F. In terms of the required "proof" the following is required:

- a site map showing where the site notice was displayed, dated photographs showing the notice displayed on site and a copy of the text displayed on the notice;
- in terms of the written notices given, a copy of the written notice sent, as well as:
  - if registered mail was sent, a list of the registered mail sent (showing the registered mail number, the name of the person the mail was sent to, the address of the person and the date the registered mail was sent);
  - if normal mail was sent, a list of the mail sent (showing the name of the person the mail was sent to, the address of the person, the date the mail was sent, and the signature of the post office worker or the post office stamp indicating that the letter was sent);
  - if a facsimile was sent, a copy of the facsimile Report;
  - if an electronic mail was sent, a copy of the electronic mail sent; and
  - if a "mail drop" was done, a signed register of "mail drops" received (showing the name of the person the notice was handed to, the address of the person, the date, and the signature of the person); and
- a copy of the newspaper advertisement ("newspaper clipping") that was placed, indicating the name of the newspaper and date of publication (of such quality that the wording in the advertisement is legible).

SECTION G: DESCRIPTION OF THE RECEIVING ENVIRONMENT

All specialist studies must be attached as Appendix G.

1. Groundwater

1.1.	Was a specialist study conducted?	YES	NO x
1.2.	Provide the name and or company who conducted the specialist study.		
None was undertaken			
1.3.	Indicate above which aquifer your proposed development will be located and explain how this has influenced your proposed development.		
None			
1.4.	Indicate the depth of groundwater and explain how the depth of groundwater and type of aquifer (if present) has influenced your proposed development.		
None			

2. Surface water

2.1.	Was a specialist study conducted?	YES x	NO
2.2.	Provide the name and/or company who conducted the specialist study.		
A surface water study was conducted by Johannes Maree of Flori Scientific Services.			
2.3.	Explain how the presence of watercourse(s) and/or wetlands on the property(ies) has influenced your proposed development.		
The proposed project addresses the bridges, major culverts, or small culverts as identified by engineers that need to be repaired or replaced. The bridges are crossings over bigger dominant watercourses in the area. The major culverts are structures crossing smaller watercourses. Smaller structures are mostly for crossings over redirected concentrated storm water run-off. The possible impacts to the watercourses were assessed and the recommendations and mitigation measures as included in the specialist report were included in the EMPr for the project.			

3. Coastal Environment

3.1.	Was a specialist study conducted?	YES	NO x
3.2.	Provide the name and/or company who conducted the specialist study.		
None			
3.3.	Explain how the relevant considerations of Section 63 of the ICMA were taken into account and explain how this influenced your proposed development.		
The ECMA is not applicable to this project.			
3.4.	Explain how estuary management plans (if applicable) has influenced the proposed development.		
	The Estuary management plans are not applicable to this project.		
3.5.	Explain how the modelled coastal risk zones, the coastal protection zone, littoral active zone and estuarine functional zones, have influenced the proposed development.		
	It is not applicable to this project.		

4. Biodiversity

4.1.	Were specialist studies conducted?	YES x	NO

4.2.	Provide the name and/or company who conducted the specialist studies.

An ecological assessment was conducted by Johannes Maree of Flori Scientific Services.

4.3.	Explain which systematic conservation planning and other biodiversity informants such as vegetation maps, NFEPA, NSBA etc. have been used and how has this influenced your proposed development.

The latest data sets were used for the report. The data are the same sets that are nationally used and approved by consultants and relevant government departments.
The source and age of the data used included the following:

- Threatened ecosystems: SANBI (www.bgis.sanbi.org) and NEMBA (G 34809, GoN 1002), 9 December 2011).
- Protected areas: Protected Areas Register (PAR): DEFF – (https://portal.environment.gov.za).
- RDL species: Red List of South Africa Plants (latest update) – (www.redlist.sanbi.org).
- Veld types and ecosystems: Mucina & Rutherford, 2006. Updated 2012, 2018.
- SANBI data sets – latest updated website data (www. bgis.sanbi.org).

- Environmental Screening Tool – Dept. of Environmental Affairs (Now DEFF) (www.environment.gov.za).
- National Freshwater Ecosystem Priority Areas (NFEPA) – DWS & SANBI databases.
- National Wetland Map 5 (2018) – CSIR, SANBI (www.bgis.sanbi.org).
- Western Cape Biodiversity Spatial Plan (2017).

The sensitive areas were identified and appropriate mitigation measures were included in the EMPr for the project for implementation by the appointed contractor.

4.4.	Explain how the objectives and management guidelines of the Biodiversity Spatial Plan have been used and how has this influenced your proposed development.

The Western Cape Biodiversity Spatial Plan (2017) was taken into consideration with this project. All watercourses in the area are delineated as ecological support areas (ESAs). There are no critical biodiversity areas (CBAs) directly within the footprint of the study site.

4.5.	Explain what impact the proposed development will have on the site specific features and/or function of the Biodiversity Spatial Plan category and how has this influenced the proposed development.

There are sensitive areas that contractors still need to be aware of (even if only working on the road or within the road reserve). These include roads close to or within the Karoo National Park and roads in the south along the lower N12 and R407. Mitigation measures were included in the EMPr for the project.

4.6.	If your proposed development is located in a protected area, explain how the proposed development is in line with the protected area management plan.

There are no critical biodiversity areas (CBAs) directly within the footprint of the study site. The Study Site is within, or adjacent to, a few national priority areas. The study site is only along existing roads, and it is only in the north, in the region of Beaufort West, that some sites (crossings) are directly within priority areas.

Along the R381 and R61 the sites (crossings) only border on priority areas as much as the road itself borders on them. Along the unnamed, gravel road, west of Beaufort West there are a few sites (crossings) within the Karoo National Park. This is still along an existing road, but where the road is within the priority area. In the central and southern areas the study site (crossings) are not within, or immediately adjacent to priority areas. The entire Karoo National Park is also an IBA, which includes Beaufort West.

The Swartberg Mountain range, which is situated south of the study site crossings on the R407, is an IBA (Swartberg Mountains IBA) as well as partially a protected area (Groot Swartberg Nature Reserve). The Mountain Range, along with some other elements such as Cape Flora is a World Heritage Site. The three crossings along the R407 and the first few on the N12 are within a 10km radius of the Heritage Site (Protected Areas Register of South Africa). Due to the nature of the project and the existing crossings and roads, which are the study site, the project will have no medium- to long-term negative impacts on any priority areas.

National priority areas include formal and informal (private) protected areas (nature reserves); important bird areas (IBAs); RAMSAR sites; National fresh water ecosystem priority areas (NFEPA) and National protected areas expansion strategy focus areas (NPAES).

The Diepsloot Nature Reserve is situated 4,2km west of the Study Area (Protected Areas Register – DEA Website). There is therefore a nature reserve within a 5km radius of the Study Area.
Source: Flori Scientific Services, 2021

4.7.	Explain how the presence of fauna on and adjacent to the proposed development has influenced your proposed development.

Important bird species and IBA were identified as well as reptiles, invertebrates and faunal species of conservation concern. The Priority Faunal Species likely to occur in the area are the Geometric tortoise, Giant bullfrog, SA hedgehog, Pangolin (Scaly anteater), Honey badger (Ratel), Short-eared trident bat, Rusty bat and the Southern African python.

The study site is not within any butterfly or snake hotspots and only borders on lizard hotspots. The lizard hotspots are in the mountainous area of the Karoo National Park, north of Beaufort West.

Mitigation measures for when such species are encountered are included in the EMPr for the project.
Source: Flori Scientific Services, 2021

5. Geographical Aspects

Explain whether any geographical aspects will be affected and how has this influenced the proposed activity or development.
No geographical aspects will be affected or influenced by the proposed project.

6. Heritage Resources

6.1.	Was a specialist study conducted?	YES x	NO

6.2.	Provide the name and/or company who conducted the specialist study.
A heritage study was undertaken by Dr Johnny van Schalkwyk.	
6.3.	Explain how areas that contain sensitive heritage resources have influenced the proposed development.
	There are no heritage resources that will be affected by the project. The following are included in the EMPr: • If an artefact or grave on-site is uncovered, work in the immediate vicinity shall be stopped immediately and it should immediately be reported to a heritage practitioner so that an investigation and evaluation of the finds can be made. The Contractor shall take reasonable precautions to prevent any person from removing or damaging any such article. • Heritage Western Cape shall be contacted such that an archaeological/heritage resources consultant can be appointed to record the site and excavate if necessary. Work may only resume once clearance is given in writing by the archaeologist/heritage resources consultant. Source: Dr J van Schalkwyk

7. Historical and Cultural Aspects

Explain whether there are any culturally or historically significant elements as defined in Section 2 of the NHRA that will be affected and how has this influenced the proposed development.
No culturally or historically significant elements as defined in Section 2 of the NHRA will be affected by the project.

8. Socio/Economic Aspects

8.1.	Describe the existing social and economic characteristics of the community in the vicinity of the proposed site.

Beaufort West Municipality:
Social Characteristics

The Community Survey (CS) 2016, conducted by Stats SA, indicates that 69% of the population within the Central Karoo district resides in the Beaufort West municipal area. According to the Municipality's SDF the Beaufort West municipal area had a population of 51 074 in 2020.

The number of dwellings in the municipal area is 14935. A high percentage of households (46.3%) indicated that their main dwelling is either an RDP or government subsidized dwelling.

A total of 94.9% dwellings had access to water in 2016, 95.3% dwellings had access to sanitation and 96.1% dwellings had access to electricity.

Economic Characteristics

The unemployment rate of the municipality is 25.4%. Youth unemployment remains a concern for the municipality with data indicating that the unemployment rate for persons aged 15-24 in Census 2011 stood at 45,5%; 4.9% higher than the district rate. Unemployment among females within the Beaufort West municipality in 2011 in this age group remains higher than their male counterparts with 53.2% of those unemployed being female. The percentage of males employed in 2011 is 59.3% while females constituted 41.3% of youth employed.
Source: Beaufort West Municipality IDP 2017-2022

Prince Albert Municipality:
Social Characteristics

According to the Department of Social Development's 2018 projections, Prince Albert municipal area currently has a population of 14 510, rendering it the second smallest municipal area within the Western Cape. It is however the second most populated municipal area in the Central Karoo District after Beaufort West with 51 074 people. The total number of households in the municipal are 4 183 in 2016.

A total of 97.9% of dwellings had access to water in 2016, 95.6% had access to sanitation and 96.8% had access to electricity. 96.8% had access to refuse removal.

Economic Characteristics

Over the last decade, the unemployment rate has been fluctuating. Unemployment in Prince Albert area started at 19.3 per cent in 2009, rising to 20.3 in 2010, tapering off and fluctuating thereafter, eventually coming in at 18.1 per cent in 2019. The Prince Albert unemployment of 18.1 per cent in 2019 is slightly less than the District's 22.0. per cent and the Province's 19.4 per cent.
Source: Prince Albert Municipality Draft Amended Integrated Development Plan 2021/2022

8.2.	Explain the socio-economic value/contribution of the proposed development.

The value of the project is R24,623,889.50.

The socio-economic contribution of the proposed development is that the safety of the roads will be significantly improved. The culverts will be properly cleaned and repaired to ensure the safety of the traveling public as water will not be able accumulate at the structures due to debris that blocks the structures. This will also accommodate the predicted increase in traffic volume and avoid high driver frustration. The repair and cleaning of the culverts could lead to less traffic accidents as driving conditions will be improved. With less traffic accidents, the possibility of injury and death of travelling public is also reduced.

8.3.	Explain what social initiatives will be implemented by applicant to address the needs of the community and to uplift the area.

Social initiatives are provided through the contractor participation goals (CPG). This includes economic upliftment of the communities within the Beaufort West and Prince Albert Local Municipalities through local employment opportunities and using local and emerging contractors for the execution of selected construction activities.

The project could provide both short and long term employment opportunities, especially employment for industry. The development could provide employment to unskilled labour in both road and associated developments especially local Small, Medium and Micro Enterprises from the previously disadvantaged communities.

8.4.	Explain whether the proposed development will impact on people's health and well-being (e.g. in terms of noise, odours, visual character and sense of place etc) and how has this influenced the proposed development.

It is anticipated that short term construction activities will create noise, dust and visual impacts. However, the proposed construction sites are not in close proximity to any communities and the impacts are considered to be low.

SECTION H: ALTERNATIVES, METHODOLOGY AND ASSESSMENT OF ALTERNATIVES

1. Details of the alternatives identified and considered

1.1.	Property and site alternatives to avoid negative impacts, mitigate unavoidable negative impacts and maximise positive impacts.

Provide a description of the **preferred property and site alternative**.

The project falls within the existing TR3305 (N12), DR2307, MR584, TR3501 (R61) and TR5801 (R381) road reserves and fall under the jurisdiction of the Western Cape Government: Department of Transport and Public Works.

There is only one site alternative for this project as the project entail the repair or replacement of forty existing structures:

- TR3305 (N12) – 23 major culverts and 10 bridges,
- DR2307 – 2 major culverts,
- MR584 – 1 major culverts,
- TR3501 (R61) – 2 major culverts, and
- TR5801 (R381) – 2 major culverts.

Provide a description of any other property and site alternatives investigated.

There is no other property or site alternative as existing structures will be repaired or replaced.

Provide a motivation for the preferred property and site alternative including the outcome of the site selectin matrix.
The bridge and culvert structures are existing structures in the road reserves that were constructed with the various roads in order to provide adequate drainage for the roads.
Provide a full description of the process followed to reach the preferred alternative within the site.
The structures are existing structures in the road reserves that were constructed in order to provide adequate drainage for the roads when the roads were originally constructed. There are, therefore, no other site alternatives applicable.
Provide a detailed motivation if no property and site alternatives were considered.
The structures are existing structures in the road reserves that were constructed in order to provide adequate drainage for the roads when the roads were originally constructed.
List the positive and negative impacts that the property and site alternatives will have on the environment.
<u>Positive impacts:</u> **Short term Employment Creation** New employment opportunities will be created during the construction phase. This includes much needed employment for existing industry, i.e. contractors (especially local Small, Medium and Micro Enterprises from the previously disadvantaged communities), consultants and suppliers. The benefits to the local community from employment could be dependent on the extent of local recruitment. During the operational phase, the roads project could improve the well-being of populations in the area, and potentially improve the economy as a result of improved transport infrastructure. **Long Term Employment Creation** Sustainable employment opportunities will be created for industry (contractors, consultants) during the maintenance of the road. Periodic upgrading, maintenance and rehabilitation of the structures will be conducted over the next 20 years. **Enhance Tourism** The road could enhance tourism through by offering an improved, safer road for all road-users. **Improve Safety** It is anticipated that there will be less flooding of the roads which will be much safer for all road users, especially heavy vehicles. The rehabilitation of the structures could also provide: • Less traffic accidents; • Improved drainage and other services; • Less traffic congestion and driver frustration; **Skills Development** With the construction phase, skills development could occur with practical training in management and technical skills. This could also include unskilled labour training and the use of small and medium

enterprises.

Sustainability

- Alien vegetation will be removed;
- Erosion will be curbed;

Possible negative impacts

The possible negative impacts relate mainly to the construction phase of the project and the construction yard:

- Possible impact on water courses;
- Possible impact on fauna and flora;
- Possible soil erosion;
- Possible pollution of solid waste;
- Possible sewage pollution;
- Possible pollution of fuels and gas as a result of inadequate storage;
- Possible pollution by cement or concrete;
- Possible noise pollution;
- Possible dust pollution;
- Possible impact on heritage sites and graves.

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

1.2.	Activity alternatives to avoid negative impacts, mitigate unavoidable negative impacts and maximise positive impacts.

Provide a description of the **preferred activity alternative**.

The preferred activity alternative is that most of the culverts and bridges are repaired except culvert C11348 that will be replaced.

Provide a description of any other activity alternatives investigated.

The other activity alternative that was considered is that all the structures are replaced in-situ instead of being repaired only.

Provide a motivation for the preferred activity alternative.

If the culverts are replaced, it is foreseen that it will amount to R212,588,000.00 for the construction of the culverts. It they are repaired only, it is estimated that it will amount to approximately R24,623,889.50 only.

This cost difference is significant and, given the need to achieve value for money for road users and taxpayers, this alternative is not supported.

Provide a detailed motivation if no activity alternatives exist.

An activity alternative was considered.

List the positive and negative impacts that the activity alternatives will have on the environment.

Positive impacts
Short term Employment Creation

New employment opportunities will be created during the construction phase. This includes much needed employment for existing industry, i.e. contractors (especially local Small, Medium and Micro Enterprises from the previously disadvantaged communities), consultants and suppliers. The benefits to the local community from employment could be dependent on the extent of local recruitment.

During the operational phase, the roads project could improve the well-being of populations in the area, and potentially improve the economy as a result of improved transport infrastructure.

Long Term Employment Creation

Sustainable employment opportunities will be created for industry (contractors, consultants) during the maintenance of the road. Periodic upgrading, maintenance and rehabilitation of the structures will be conducted over the next 20 years.

Enhance Tourism

The road could enhance tourism through by offering an improved, safer road for all road-users.

Improve Safety

It is anticipated that there will be less flooding of the roads which will be much safer for all road users, especially heavy vehicles. The rehabilitation of the structures could also provide:

- Less traffic accidents;
- Improved drainage and other services;
- Less traffic congestion and driver frustration.

Skills Development

With the construction phase, skills development could occur with practical training in management and technical skills. This could also include unskilled labour training and the use of small and medium enterprises.

Sustainability

- Alien vegetation will be removed;
- Erosion will be curbed;

Possible negative impacts

The possible negative impacts relate mainly to the construction phase of the project and the construction yard:

- Possible impact on water courses;
- Possible impact on fauna and flora;
- Possible soil erosion;
- Possible pollution of solid waste;
- Possible sewage pollution;
- Possible pollution of fuels and gas as a result of inadequate storage;
- Possible pollution by cement or concrete;
- Possible noise pollution;

- Possible dust pollution;
- Possible impact on heritage sites and graves.

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

Economic implications

Should all the structures be replaced, it will amount to an increase of approximately R187,964,110.50 to the cost of the project. This cost difference is significant and, given the need to achieve value for money for road users and taxpayers, this alternative is not supported

1.3.	Design or layout alternatives to avoid negative impacts, mitigate unavoidable negative impacts and maximise positive impacts

Provide a description of the preferred design or layout alternative.

There are no design or layout alternatives. The design of the structures was already conducted when the roads were originally built. The structures will not be designed again but will only be repaired.

Provide a description of any other design or layout alternatives investigated.

No other design or layout alternative as investigated as the structures are existing structures within the road reserves.

Provide a motivation for the preferred design or layout alternative.

The design of the structures was already conducted when the roads were originally built. The structures will not be designed again but will only be repaired.

Provide a detailed motivation if no design or layout alternatives exist.

The design of the structures was already conducted when the roads were originally built. The structures will not be designed again but will only be repaired.

With the repair of the structures, no new design is applicable.

List the positive and negative impacts that the design alternatives will have on the environment.

No impacts as the design of the structures were already conducted when the roads were originally built. The structures will not be designed again but will only be repaired.

With the repair of the structures, no new design is applicable.

1.4.	Technology alternatives (e.g., to reduce resource demand and increase resource use efficiency) to avoid negative impacts, mitigate unavoidable negative impacts and maximise positive impacts.

Provide a description of the preferred technology alternative:

No technology alternative as considered.

Provide a description of any other technology alternatives investigated.

No technology alternative was investigated.

Provide a motivation for the preferred technology alternative.

No technology alternative was investigated.

Provide a detailed motivation if no alternatives exist.	
The existing culverts will be repaired and cleaned and no technology alternative is applicable to this project.	
List the positive and negative impacts that the technology alternatives will have on the environment.	
No impacts as these are existing structures that will only be repaired.	
1.5.	Operational alternatives to avoid negative impacts, mitigate unavoidable negative impacts and maximise positive impacts.
Provide a description of the preferred operational alternative.	
No operational alternative was investigated. The structures are existing structures within the road reserves and are already operational.	
Provide a description of any other operational alternatives investigated.	
No operational alternative was investigated.	
Provide a motivation for the preferred operational alternative.	
Once the structures are repaired and cleaned, they will be fully functional again.	
Provide a detailed motivation if no alternatives exist.	
No operational alternative was investigated. The structures are existing structures within the road reserves and are already operational.	
List the positive and negative impacts that the operational alternatives will have on the environment.	
No operational alternative was investigated. The structures are existing structures within the road reserves and are already operational.	
1.6.	The option of not implementing the activity (the 'No-Go' Option).
Provide an explanation as to why the 'No-Go' Option is not preferred.	
Should the structures not be repaired and cleaned, they will deteriorate further and the road users on the roads could experience increasingly unsafe driving conditions as it is anticipated that the roads could be flooded regularly during the rainy season. The repair of the culverts will also accommodate the predicted increase in traffic volume and avoid high driver frustration. The current high volumes of heavy vehicle traffic are a major safety and capacity concern. The volume of heavy vehicles is expected to increase significantly over the next 20 years. If the culverts are not repaired and cleaned, it is anticipated that accidents on this road will increase in future. This could result in an increase in injury and death of the travelling public and an increase in health care costs.	
1.7.	Provide and explanation as to whether any other alternatives to avoid negative impacts, mitigate unavoidable negative impacts and maximise positive impacts, or detailed motivation if no reasonable or feasible alternatives exist.
None	
1.8.	Provide a concluding statement indicating the preferred alternatives, including the preferred location of the activity.
Two activity alternatives were assessed. • The preferred activity alternative is to repair the culverts and replace only culvert C11348.	

- The second activity alternative is the replace all the culverts.

The preferred activity alternative is favoured for the following reasons:

- It has a lower construction cost.
- The safety to the traveling public will be significantly improved with less overtopping of the road anticipated.
- Improved traffic flow.
- Reduced congestion is anticipated.
- The environmental impact is deemed to be low.

The preferred location and design of these culverts are because they are existing culverts within the road reserves with existing designs.

2. "No-Go" areas

Explain what "no-go" area(s) have been identified during identification of the alternatives and provide the co-ordinates of the "no-go" area(s).
The construction footprint should be as small as possible around the culverts and no pristine areas outside the road reserve should be disturbed.

3. Methodology to determine the significance ratings of the potential environmental impacts and risks associated with the alternatives.

Describe the methodology to be used in determining and ranking the nature, significance, consequences, extent, duration of the potential environmental impacts and risks associated with the proposed activity or development and alternatives, the degree to which the impact or risk can be reversed and the degree to which the impact and risk may cause irreplaceable loss of resources.
The purpose of the impact assessment is to identify and evaluate the significance of potential impacts on identified receptors and resources; to develop and describe mitigation measures that will be taken to avoid or minimise any potential adverse effects and enhance potential benefits; and to report the significance of the residual impacts that remain following mitigation. Potential environmental impacts on the environment will be determined in terms of the following in order to determine the significance of each impact: • Probability (how likely is it that the impact will occur?) • Magnitude (how severe will the impact be?) • Duration (how long will the impact last?) • Scale of the impact (what size of the area will be affected?) Thereafter, mitigation measures will be proposed in order to reduce or eliminate negative impacts and enhance positive impacts. The impact of the proposed ring road on the environment will be considered for the pre-construction, construction and operational phases. The necessary mitigation measures will be consolidated in the form of an Environmental Management Programme (EMPr).

Assessment of Significance

All human activity imposes some level of change to the natural and social environment, because of physical interactions with natural systems or other human activities. To provide information to decision makers and other stakeholders on the importance of different project impacts, the EIA team makes an evaluation of the significance of each such change.
The significance of every environmental impact identified will be determined using the following approach:

In assessing the potential significance of an impact two aspects will be considered:

i) Occurrence
ii) Severity

Occurrence will be sub-divided into:

- Probability of occurrence
- Duration of occurrence

Severity will be sub-divided into:

- Magnitude (severity) of impact
- Scale/extent of impact

In order to assess each of these factors for each impact, ranking scales were employed as follows:

Table 1: Ranking Scales

Probability:	**Duration:**
5 - Definite/don't know	5 - Permanent
4 - Highly probable	4 - Long-term*
3 - Medium probability	3 - Medium-term (5-15 years)
2 - Low probability	2 - Short-term (0-5 years)
1 - Improbable	1 - Immediate
0 - None	0 - None
Scale:	**Magnitude:**
5 - International	10 - Very high/don't know
4 - National	8 - High
3 - Regional	6 - Moderate
2 - Local	4 - Low
1 - Site only	2 - Minor
0 – None	0 - None

*impact ceases after operational life of the activity

Once the above factors had been ranked for each impact, the overall risk (environmental significance) of each impact will be assessed using the following formula: SP = (*magnitude (M)* + *duration* (D) + *scale (S)*) x *probability (P)*. The maximum value is 100 significance points (SP). Environmental impacts will be rated as either of **High**, **Moderate** or **Low** significance on the following basis:

SP ≥ 60	indicates high environmental significance;
SP 31 ≥ 59	indicates moderate environmental significance;
SP ≤ 30	indicates low environmental significance.

4. Assessment of each impact and risk identified for each alternative

Note: The following table serves as a guide for summarising each alternative. The table should be repeated for each alternative to ensure a comparative assessment. The EAP may decide to include this section as Appendix J to this BAR.

Alternative:	
PLANNING, DESIGN AND DEVELOPMENT PHASE	
Potential impact and risk:	Possible impacts to the water courses
Nature of impact:	Establishment of construction yard and accommodation facilities
Extent and duration of impact:	Site only and short term
Consequence of impact or risk:	Pollution of rivers Low risk
Probability of occurrence:	Low
Degree to which the impact may cause irreplaceable loss of resources:	Low
Degree to which the impact can be reversed:	High
Indirect impacts:	Possible impact on water life
Cumulative impact prior to mitigation:	Possible impact on farmers downstream
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Medium
Degree to which the impact can be avoided:	High
Degree to which the impact can be managed:	High
Degree to which the impact can be mitigated:	High
Proposed mitigation:	• Providing the contractor with a clear set of requirements, to be included in the contractor's works agreement, for the management of activities within the watercourse, protecting the watercourse, and rehabilitating the watercourse, • No stockpiling of materials and the construction of temporary campsites, field offices, etc. in the watercourses, or within 50m of the edge of any watercourse, including seasonal drainage lines. • Although no buffer zones have been delineated. A buffer zone (no-go zone) of 32m from the edge of all watercourses must be observed at all times outside of the actual site area / work area involved at the crossing. In other words, upstream and downstream, outside of the work footprint including access path, no activities may take place within 32 metres of the edge of that watercourse. These activities include, but are not limited to, parking of vehicles, stockpiling of materials and equipment, placement of portable toilets, lunchtime / break

	areas, etc. • Limiting the use of detours through the watercourses. Only existing roads for access to be used. No new (even temporary) access roads may be constructed across any watercourses as this can trigger the need for a Water Use Licence Application (WULA) process. • No construction vehicles may drive through any watercourses. Existing roads to be used. • All hazardous materials must be stored appropriately to prevent these contaminants from entering the water environment; • An independent specialist must conduct aquatic monitoring of all watercourses during the construction phase of the project. The monitoring does not need to be a full-blown SASS5 (macro-invertebrate monitoring) protocol. The monitoring must include general observation of erosion, siltation, spillage and activities within watercourses and 32m buffer zones. If any serious or problematic direct project related impacts are observed on watercourses then water samples can be taken both upstream and downstream to determine the impacts.
Residual impacts:	None
Cumulative impact post mitigation:	None
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Low
Potential impact and risk:	Possible impact on vegetation species in road reserve.
Nature of impact:	Possible destruction of vegetation
Extent and duration of impact:	Site only and short term
Consequence of impact or risk:	Destruction of vegetation Low risk
Probability of occurrence:	Low
Degree to which the impact may cause irreplaceable loss of resources:	Low
Degree to which the impact can be reversed:	High
Indirect impacts:	Possible exotic species invasion
Cumulative impact prior to mitigation:	None
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Low
Degree to which the impact can be avoided:	High
Degree to which the impact can be	High

managed:	
Degree to which the impact can be mitigated:	High
Proposed mitigation:	• No indigenous trees, shrubs or reeds outside of the project corridor to be removed. • Construction site camp or any stockpile areas to be erected in previously disturbed areas. • Alien plants must be controlled along the alignment and servitude. • See EMPr
Residual impacts:	None
Cumulative impact post mitigation:	None
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Low
Potential impact and risk:	Possible impact on mammals and snakes in road reserve
Nature of impact:	Possible destruction of mammals and snakes
Extent and duration of impact:	Site only and short term
Consequence of impact or risk:	Destruction of mammals and snakes Low risk
Probability of occurrence:	Low
Degree to which the impact may cause irreplaceable loss of resources:	Low
Degree to which the impact can be reversed:	High
Indirect impacts:	Possible loss of species
Cumulative impact prior to mitigation:	None
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Low
Degree to which the impact can be avoided:	High
Degree to which the impact can be managed:	High
Degree to which the impact can be mitigated:	High
Proposed mitigation:	• There is a high likelihood that several mammal species may inhabit the road reserve. These are limited to opportunistic, widespread species that are well adapted to the disturbed conditions. No animal species may be harmed in any way and no hunting or capturing of animals may be permitted. These animals will move out of the road reserve of their own accord. • In the event of poisonous snakes or other

	dangerous animals encountered on the site an experienced and certified snake handler or zoologist must remove these animals from the site and re-locate them to a suitable area. • See EMPr
Residual impacts:	None
Cumulative impact post mitigation:	None
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Low
Potential impact and risk:	Possible erosion of soils
Nature of impact:	Possible soil erosion due to extreme flow of water
Extent and duration of impact:	Site only and long term
Consequence of impact or risk:	Gully formation and loss of topsoil
Probability of occurrence:	Low
Degree to which the impact may cause irreplaceable loss of resources:	High
Degree to which the impact can be reversed:	High
Indirect impacts:	Possible loss of topsoil Possible increase in alien vegetation
Cumulative impact prior to mitigation:	Possible loss of topsoil Possible increase in alien vegetation
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Medium
Degree to which the impact can be avoided:	High
Degree to which the impact can be managed:	High
Degree to which the impact can be mitigated:	High
Proposed mitigation:	• Bank vegetation should not be removed, if possible, and cover should be monitored to ensure that sufficient vegetation is present to bind the bankside soils and prevent bankside erosion. • Potential erosion areas to be inspected and corrected where necessary. • Water used for dust suppression must be used in quantities small enough not to generate run-off and result in soil erosion; • Other acceptable stabilising methods could also be incorporated as per the Engineer's instructions. • See EMPr
Residual impacts:	None

Cumulative impact post mitigation:	None
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Low
Potential impact and risk:	Possible pollution of solid waste at site camp
Nature of impact:	Pollution due to littering and incorrect disposal of solid waste
Extent and duration of impact:	Site only and short term
Consequence of impact or risk:	Waste pollution, low risk
Probability of occurrence:	Low
Degree to which the impact may cause irreplaceable loss of resources:	Low
Degree to which the impact can be reversed:	High
Indirect impacts:	Possible rodent infestation
Cumulative impact prior to mitigation:	Possible health risks
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Medium
Degree to which the impact can be avoided:	High
Degree to which the impact can be managed:	High
Degree to which the impact can be mitigated:	High
Proposed mitigation:	• Proper rubbish/waste bins to be provided. These to be emptied weekly and the waste to be removed to an official waste disposal site. Once again only by officially registered waste-disposal companies and only to official waste sites. • See EMPr
Residual impacts:	None
Cumulative impact post mitigation:	None
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Low
Potential impact and risk:	Possible sewage pollution
Nature of impact:	Sewage pollution at the camp site and on neighbouring farms
Extent and duration of impact:	Site only and short term
Consequence of impact or risk:	Possible soil pollution Possible water pollution Low risk
Probability of occurrence:	Low
Degree to which the impact may cause	Low

irreplaceable loss of resources:	
Degree to which the impact can be reversed:	High
Indirect impacts:	Possible water pollution
Cumulative impact prior to mitigation:	Possible health risks
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Medium
Degree to which the impact can be avoided:	High
Degree to which the impact can be managed:	High
Degree to which the impact can be mitigated:	High
Proposed mitigation:	• Safe and effective sewage treatment will require temporary septic tanks at the construction camp site as well as at the construction site at the road structures. • The temporary septic tanks should be serviced weekly by a reputable service provider. • Any sewage spillage should be immediately cleaned as per the ECO and Engineer's instructions. • See EMPr
Residual impacts:	None
Cumulative impact post mitigation:	None
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Low
Potential impact and risk:	Possible pollution of fuels and gas
Nature of impact:	Possible pollution of fuels and gas due to incorrect storage
Extent and duration of impact:	Site only and short term
Consequence of impact or risk:	Possible soil pollution Possible water pollution Low risk
Probability of occurrence:	Low
Degree to which the impact may cause irreplaceable loss of resources:	Low
Degree to which the impact can be reversed:	High
Indirect impacts:	Possible water pollution downstream
Cumulative impact prior to mitigation:	Possible health risks
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Medium

Degree to which the impact can be avoided:	High
Degree to which the impact can be managed:	High
Degree to which the impact can be mitigated:	High
Proposed mitigation:	• The contractor shall take cognisance of the limits set by legislation for the storage of fuels and acquire the necessary authorisation for storage capacity beyond these. • All fuel shall be stored in a secure area in steel tanks supplied and maintained by the fuel suppliers. An adequate bund wall, 110% of volume, shall be provided for fuel and diesel areas to accommodate any leakage spillage or overflow of these substances. • The area inside the bund wall shall be lined with an impervious lining to prevent infiltration of the fuel into the soil. • Any leakage, spillage or overflow of fuel shall be attended to without delay. See EMPr
Residual impacts:	None
Cumulative impact post mitigation:	None
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Low
Potential impact and risk:	Possible pollution by cement or concrete
Nature of impact:	Possible pollution by cement or concrete due to incorrect mixing and storage
Extent and duration of impact:	Site only and short term
Consequence of impact or risk:	Possible soil pollution Possible water pollution Low risk
Probability of occurrence:	Low
Degree to which the impact may cause irreplaceable loss of resources:	Low
Degree to which the impact can be reversed:	High
Indirect impacts:	Possible water pollution downstream
Cumulative impact prior to mitigation:	Possible health risks
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Medium
Degree to which the impact can be avoided:	High
Degree to which the impact can be	High

managed:	
Degree to which the impact can be mitigated:	High
Proposed mitigation:	• No concrete or mounds of building sand and other materials may be stored temporary during the construction phase within 50m of any watercourses, because a heavy rainstorm can wash these materials into the watercourse. • Streams and rivers shall be protected from direct or indirect spillage of cement or concrete. In the event of a spillage, the contractor shall be liable to arrange for professional service providers to clear the affected area. See EMPr
Residual impacts:	None
Cumulative impact post mitigation:	None
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	
Potential impact and risk:	Possible noise pollution
Nature of impact:	Possible noise pollution due to heavy vehicles and construction activities
Extent and duration of impact:	Site only and short term
Consequence of impact or risk:	Possible noise pollution Low risk as it is not a high density area
Probability of occurrence:	High
Degree to which the impact may cause irreplaceable loss of resources:	Low
Degree to which the impact can be reversed:	High
Indirect impacts:	Possible disturbance to animals and humans
Cumulative impact prior to mitigation:	Possible impact on communication between individuals
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Medium
Degree to which the impact can be avoided:	High
Degree to which the impact can be managed:	High
Degree to which the impact can be mitigated:	High
Proposed mitigation:	• The contractor shall endeavour to keep noise generating activities to a minimum. Noises that could cause a major disturbance, for instance crushing activities, should only be carried out during the hours prescribed by the conditions of contract

	(i.e. normal hours). • Should such noise generating activities have to occur at any time outside normal hours the people in the vicinity of the noise-generating activity shall be warned about the noise well in advance and the activities kept to a minimum. • Relevant legislation shall also be taken into consideration, and any practical mitigation measures adopted. • No noise generating activity outside of normal hours, regardless of its proximity to residences, can take place without application to the engineer for approval. The application shall be accompanied by the noise containment measures proposed. See EMPr
Residual impacts:	None
Cumulative impact post mitigation:	None
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Low
Potential impact and risk:	Possible dust pollution
Nature of impact:	Possible dust pollution due to heavy vehicles and construction activities
Extent and duration of impact:	Site only and short term
Consequence of impact or risk:	Possible dust pollution Low risk as it is not a high density area
Probability of occurrence:	High
Degree to which the impact may cause irreplaceable loss of resources:	Low
Degree to which the impact can be reversed:	High
Indirect impacts:	Possible disturbance to animals and humans
Cumulative impact prior to mitigation:	Possible impact on vegetation due to dust settling
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Medium
Degree to which the impact can be avoided:	High
Degree to which the impact can be managed:	High
Degree to which the impact can be mitigated:	High
Proposed mitigation:	• Dust caused by construction activities shall be controlled by means such as water spray vehicles and applied at sufficient frequency so as not to cause nuisance to adjacent habitation or affect farming activities or natural vegetation.

	• Vegetation cover should also be kept for as long as possible to reduce the area of exposed surfaces. Dust emissions from batching and screening plants shall be subject to the relevant legislation and shall be the subject of inspection by the relevant authorities. See EMPr
Residual impacts:	None
Cumulative impact post mitigation:	None
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Low
Potential impact and risk:	Possible impact on heritage and palaeontological resource
Nature of impact:	Possible uncovering of heritage or palaeontological resources and graves
Extent and duration of impact:	Site only and short term
Consequence of impact or risk:	Possible loss of heritage resource Possible loss of palaeontological resource Possible disturbance of grave Low risk
Probability of occurrence:	Low
Degree to which the impact may cause irreplaceable loss of resources:	Low
Degree to which the impact can be reversed:	High
Indirect impacts:	Possible impact on next of kin
Cumulative impact prior to mitigation:	None
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	High
Degree to which the impact can be avoided:	High
Degree to which the impact can be managed:	High
Degree to which the impact can be mitigated:	High
Proposed mitigation:	• If an artefact on site is uncovered, work in the immediate vicinity shall be stopped immediately. The contractor shall take reasonable precautions to prevent any person from removing or damaging any such article and shall immediately upon discovery thereof inform the engineer of such discovery. The South African Heritage Resource Agency (SAHRA) is to be contacted, and a SAHRA-registered archaeological consultant may undertake the necessary work involved in confirming the find and advising on how it should

	be preserved or removed. Work may only resume once clearance is given in writing by the archaeologist. • If a grave or midden is uncovered on site, or discovered before the commencement of work, then all work in the immediate vicinity of the graves/middens shall be stopped and the engineer informed of the discovery. The South African Heritage Resource Agency and the South African Police Services (SAPS) should be contacted and in the case of graves, arrangements made for an undertaker to carry out exhumation and reburial. The undertaker will, together with SAHRA, be responsible for attempts to contact family of the deceased and for the place where the exhumed remains can be re-interred. • Threats to the National Heritage are earth moving equipment/machinery (for example haul trucks, front end loaders, excavators, graders, dozers) during construction, the sealing-in, disturbance, damage or destruction of the fossils by development, vehicle traffic, clearing, and human disturbance. • Special care must be taken during the clearing, digging, drilling, blasting and excavating of foundations, trenches, channels and footings and removal of overburden not to intrude fossiliferous layers. • Mitigation may be needed if fossils are found during construction. Overburden and interburden must be surveyed for fossils. See EMPr
Residual impacts:	None
Cumulative impact post mitigation:	None
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Low
OPERATIONAL PHASE **The operational phase for the purpose of this BAR is viewed as the maintenance phase of the project. The maintenance of the roads and infrastructure is the responsibility of the District Engineer. They operate from Oudtshoorn and Klaarstroom where they have permanent construction yards and accommodation.**	
Potential impact and risk:	Possible impacts to the water courses
Nature of impact:	Operational activities on the structures
Extent and duration of impact:	Site only and short term
Consequence of impact or risk:	Pollution of rivers Low risk
Probability of occurrence:	Low

Degree to which the impact may cause irreplaceable loss of resources:	Low
Degree to which the impact can be reversed:	High
Indirect impacts:	Possible impact on water life
Cumulative impact prior to mitigation:	Possible impact on farmers downstream
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Medium
Degree to which the impact can be avoided:	High
Degree to which the impact can be managed:	High
Degree to which the impact can be mitigated:	High
Proposed mitigation:	• Movement of heavy vehicles and construction machinery within watercourses and associated riparian zones to be limited and strictly monitored. • No excess imported soils or stone for gabion baskets may be left behind. These materials to be removed immediately on completion of the project or activity. • The streams should be left undisturbed; • The construction footprint at the stream must be minimised as far as possible. • During the maintenance phase no vehicles should be allowed to indiscriminately drive through the stream. • No dumping of waste should take place in the vicinity of the stream. • No stockpiling of construction material should take place near the stream. • No water for drinking or construction purposes of any kind may be extracted directly out of existing streams, drainage lines, etc. without the necessary prior authorisations, permits etc. • No water to be taken out of the stream to be used for any purpose of the project during the construction phase of the project. No water from the river / streams to be used as drinking water. • See EMPr.
Residual impacts:	None
Cumulative impact post mitigation:	None
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Low
Potential impact and risk:	Possible impact on vegetation species in road reserve.

Nature of impact:	Possible destruction of vegetation
Extent and duration of impact:	Site only and short term
Consequence of impact or risk:	Destruction of vegetation Low risk
Probability of occurrence:	Low
Degree to which the impact may cause irreplaceable loss of resources:	Low
Degree to which the impact can be reversed:	High
Indirect impacts:	Possible exotic species invasion
Cumulative impact prior to mitigation:	None
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Low
Degree to which the impact can be avoided:	High
Degree to which the impact can be managed:	High
Degree to which the impact can be mitigated:	High
Proposed mitigation:	• All mitigating measures must be implemented, • Limiting the clearing of vegetation and topsoil, • Limiting the clearing into and the stockpiling of these materials onto areas that do NOT need to be disturbed. This can be done by proper planning of the site layout. The careful clearing of areas that need to be cleared. The careful removal and stockpiling of material. • Any temporary storage, lay-down areas or accommodation facilities to be setup in existing built-up areas or disturbed areas where possible. • Ensure small footprint during construction phase. • Proposed buffer areas (no-go zones) along the watercourse must be implemented and strictly controlled. • All excess materials brought onto site for construction to be removed after construction. • No open trenches or mounds of soils to be left. • Rehabilitation plan for disturbed areas to be compiled and implemented as part of the construction phase. • No concrete or mounds of building sand may be stored temporary during the construction phase within 100 m of the delineated watercourses. • If possible, only existing access roads may be used to and from construction site (study area). • Temporary access roads to be rehabilitated after the construction phase. • Any priority species encountered must be identified

	and rescue prior to any excavation or construction activities. • Care must be taken not to interact directly with any wild life encountered. • Any bird nests encountered in the vegetation or in the watercourses must not be interfered with. If encountered must first be discussed with specialist. • Care must be taken with heavy machinery used on the project. All access roads and farm roads used must be monitored and maintained. • Soils and stones excavated may be used in the immediate vicinity and farms as backfill, fixing of roads, filling of dongas, etc. • Excavated soils and rocks may not be simply dumped in any pristine bushveld, or within 100 m of the edge of watercourses or dams. • See EMPr
Residual impacts:	None
Cumulative impact post mitigation:	None
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Low
Potential impact and risk:	Possible impact on mammals and snakes in road reserve
Nature of impact:	Possible destruction of mammals and snakes
Extent and duration of impact:	Site only and short term
Consequence of impact or risk:	Destruction of mammals and snakes Low risk
Probability of occurrence:	Low
Degree to which the impact may cause irreplaceable loss of resources:	Low
Degree to which the impact can be reversed:	High
Indirect impacts:	Possible loss of species
Cumulative impact prior to mitigation:	None
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Low
Degree to which the impact can be avoided:	High
Degree to which the impact can be managed:	High
Degree to which the impact can be mitigated:	High
Proposed mitigation:	• There is a high likelihood that several mammal species may inhabit the road reserve. These are

	limited to opportunistic, widespread species that are well adapted to the disturbed conditions. No animal species may be harmed in any way and no hunting or capturing of animals may be permitted. These animals will move out of the road reserve of their own accord. • In the event of poisonous snakes or other dangerous animals encountered on the site an experienced and certified snake handler or zoologist must remove these animals from the site and re-locate them to a suitable area. • See EMPr
Residual impacts:	None
Cumulative impact post mitigation:	None
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Low
Potential impact and risk:	Possible erosion of soils
Nature of impact:	Possible soil erosion due to extreme flow of water
Extent and duration of impact:	Site only and long term
Consequence of impact or risk:	Gully formation and loss of topsoil
Probability of occurrence:	Low
Degree to which the impact may cause irreplaceable loss of resources:	High
Degree to which the impact can be reversed:	High
Indirect impacts:	Possible loss of topsoil Possible increase in alien vegetation
Cumulative impact prior to mitigation:	Possible loss of topsoil Possible increase in alien vegetation
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Medium
Degree to which the impact can be avoided:	High
Degree to which the impact can be managed:	High
Degree to which the impact can be mitigated:	High
Proposed mitigation:	• Bank vegetation should not be removed, if possible, and cover should be monitored to ensure that sufficient vegetation is present to bind the bankside soils and prevent bankside erosion. • Potential erosion areas to be inspected and corrected where necessary. • Water used for dust suppression must be used in quantities small enough not to generate run-off and

	result in soil erosion; • Other acceptable stabilising methods could also be incorporated as per the Engineer's instructions. • See EMPr
Residual impacts:	None
Cumulative impact post mitigation:	None
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Low
Potential impact and risk:	Possible pollution due to littering
Nature of impact:	Pollution due to littering and incorrect disposal of solid waste
Extent and duration of impact:	Site only and short term
Consequence of impact or risk:	Waste pollution Low risk
Probability of occurrence:	Low
Degree to which the impact may cause irreplaceable loss of resources:	Low
Degree to which the impact can be reversed:	High
Indirect impacts:	Visual impact
Cumulative impact prior to mitigation:	Possible health risks
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Medium
Degree to which the impact can be avoided:	High
Degree to which the impact can be managed:	High
Degree to which the impact can be mitigated:	High
Proposed mitigation:	• Keep the site neat, clean and organised (i.e. no littering) in order to portray a tidy appearance. • • In visually sensitive areas screen these areas by enclosing the entire area with a dark green or black shade cloth of no less than 2 m height. • Rehabilitate disturbed areas as soon as practically possible after construction. This should be done to restrict extended periods of exposed soil. See EMPr
Residual impacts:	None
Cumulative impact post mitigation:	None
Significance rating of impact after mitigation	Low

(e.g. Low, Medium, Medium-High, High, or Very-High)	
Potential impact and risk:	Possible sewage pollution
Nature of impact:	Sewage pollution on neighbouring farms
Extent and duration of impact:	Site only and short term
Consequence of impact or risk:	Possible soil pollution Possible water pollution Low risk
Probability of occurrence:	Low
Degree to which the impact may cause irreplaceable loss of resources:	Low
Degree to which the impact can be reversed:	High
Indirect impacts:	Possible water pollution
Cumulative impact prior to mitigation:	Possible health risks
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Medium
Degree to which the impact can be avoided:	High
Degree to which the impact can be managed:	High
Degree to which the impact can be mitigated:	High
Proposed mitigation:	• No construction worker shall be allowed to relieve themselves in the road reserve or on neigbouring farms. • Safe and effective sewage treatment will require temporary septic toilets during maintenance activities. • The temporary septic toilets should be serviced weekly by a reputable service provider. • Any sewage spillage should be immediately cleaned as per the ECO and Engineer's instructions. See EMPr
Residual impacts:	None
Cumulative impact post mitigation:	None
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Low
Potential impact and risk:	Possible noise pollution
Nature of impact:	Possible noise pollution due to heavy vehicles and construction activities
Extent and duration of impact:	Site only and short term
Consequence of impact or risk:	Possible noise pollution Low risk as it is not a high density area
Probability of occurrence:	High

Degree to which the impact may cause irreplaceable loss of resources:	Low
Degree to which the impact can be reversed:	High
Indirect impacts:	Possible disturbance to animals and humans
Cumulative impact prior to mitigation:	Possible impact on communication between individuals
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Medium
Degree to which the impact can be avoided:	High
Degree to which the impact can be managed:	High
Degree to which the impact can be mitigated:	High
Proposed mitigation:	• The contractor shall endeavour to keep noise generating activities to a minimum. Noises that could cause a major disturbance, for instance crushing activities, should only be carried out during the hours prescribed by the conditions of contract (i.e. normal hours). • Should such noise generating activities have to occur at any time outside normal hours the people in the vicinity of the noise-generating activity shall be warned about the noise well in advance and the activities kept to a minimum. • Relevant legislation shall also be taken into consideration, and any practical mitigation measures adopted. • No noise generating activity outside of normal hours, regardless of its proximity to residences, can take place without application to the engineer for approval. The application shall be accompanied by the noise containment measures proposed. See EMPr
Residual impacts:	None
Cumulative impact post mitigation:	None
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Low
Potential impact and risk:	Possible dust pollution
Nature of impact:	Possible dust pollution due to heavy vehicles and construction activities
Extent and duration of impact:	Site only and short term
Consequence of impact or risk:	Possible dust pollution Low risk as it is not a high density area

Probability of occurrence:	High
Degree to which the impact may cause irreplaceable loss of resources:	Low
Degree to which the impact can be reversed:	High
Indirect impacts:	Possible disturbance to animals and humans
Cumulative impact prior to mitigation:	Possible impact on vegetation due to dust settling
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Medium
Degree to which the impact can be avoided:	High
Degree to which the impact can be managed:	High
Degree to which the impact can be mitigated:	High
Proposed mitigation:	• Dust caused by construction activities shall be controlled by means such as water spray vehicles and applied at sufficient frequency so as not to cause nuisance to adjacent habitation or affect farming activities or natural vegetation. • Vegetation cover should also be kept for as long as possible to reduce the area of exposed surfaces. Dust emissions from batching and screening plants shall be subject to the relevant legislation and shall be the subject of inspection by the relevant authorities. See EMPr
Residual impacts:	None
Cumulative impact post mitigation:	None
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Low
Potential impact and risk:	Possible impact on heritage and palaeontological resources
Nature of impact:	Possible uncovering of heritage and palaeontological resources and graves
Extent and duration of impact:	Site only and short term
Consequence of impact or risk:	Possible loss of heritage resource Possible loss of palaeontological resource Possible disturbance of grave Low risk
Probability of occurrence:	Low
Degree to which the impact may cause irreplaceable loss of resources:	Low
Degree to which the impact can be reversed:	High

Indirect impacts:	Possible impact on next of kin
Cumulative impact prior to mitigation:	None
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	High
Degree to which the impact can be avoided:	High
Degree to which the impact can be managed:	High
Degree to which the impact can be mitigated:	High
Proposed mitigation:	• If an artefact on site is uncovered, work in the immediate vicinity shall be stopped immediately. The contractor shall take reasonable precautions to prevent any person from removing or damaging any such article and shall immediately upon discovery thereof inform the engineer of such discovery. The South African Heritage Resource Agency (SAHRA) is to be contacted, and a SAHRA-registered archaeological consultant may undertake the necessary work involved in confirming the find and advising on how it should be preserved or removed. Work may only resume once clearance is given in writing by the archaeologist. • If a grave or midden is uncovered on site, or discovered before the commencement of work, then all work in the immediate vicinity of the graves/middens shall be stopped and the engineer informed of the discovery. The South African Heritage Resource Agency and the South African Police Services (SAPS) should be contacted and in the case of graves, arrangements made for an undertaker to carry out exhumation and reburial. The undertaker will, together with SAHRA, be responsible for attempts to contact family of the deceased and for the place where the exhumed remains can be re-interred. • Threats to the National Heritage are earth moving equipment/machinery (for example haul trucks, front end loaders, excavators, graders, dozers) during construction, the sealing-in, disturbance, damage or destruction of the fossils by development, vehicle traffic, clearing, and human disturbance. • Special care must be taken during the clearing, digging, drilling, blasting and excavating of foundations, trenches, channels and footings and removal of overburden not to intrude fossiliferous layers.

	• Mitigation may be needed if fossils are found during construction. Overburden and interburden must be surveyed for fossils. See EMPr
Residual impacts:	None
Cumulative impact post mitigation:	None
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Low
DECOMMISSIONING AND CLOSURE PHASE (This phase only pertains to the decommissioning of the construction camp site. The road and its associated structures will not be decommissioned).	
Potential impact and risk:	Construction yard not decommissioned and removed
Nature of impact:	Construction yard not decommissioned and removed
Extent and duration of impact:	Site only and short term
Consequence of impact or risk:	Construction yard not decommissioned and removed Low risk
Probability of occurrence:	Low
Degree to which the impact may cause irreplaceable loss of resources:	Low
Degree to which the impact can be reversed:	High
Indirect impacts:	Visual impact
Cumulative impact prior to mitigation:	None
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Medium
Degree to which the impact can be avoided:	High
Degree to which the impact can be managed:	High
Degree to which the impact can be mitigated:	High
Proposed mitigation:	• The construction yard must be fully decommissioned after the construction phase. • Al temporary services must be decommissioned. • All temporary buildings (if any) must be removed. • All waste, fuel and gas storage areas must be removed. • Any cement slabs must be removed. • Areas that have become compacted due to construction activities should be ripped and hydroseeded. • After cessation of activities on the site the area should be rehabilitated to acceptable standards as per Engineer's instructions. • After construction has ceased all construction

	materials should be removed from the site. See EMPr.
Residual impacts:	None
Cumulative impact post mitigation:	None
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Low
Potential impact and risk:	Rehabilitation in road reserve
Nature of impact:	Road reserve after work in road reserve not properly rehabilitated
Extent and duration of impact:	Site only and short term
Consequence of impact or risk:	Road reserve after work in road reserve not properly rehabilitate Low risk
Probability of occurrence:	Low
Degree to which the impact may cause irreplaceable loss of resources:	Low
Degree to which the impact can be reversed:	High
Indirect impacts:	Possible invasion of alien species Visual impact
Cumulative impact prior to mitigation:	None
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Medium
Degree to which the impact can be avoided:	High
Degree to which the impact can be managed:	High
Degree to which the impact can be mitigated:	High
Proposed mitigation:	• It is preferred that natural vegetation be allowed to establish within the road reserve while weed eradication is constantly exercised. • After construction the areas cleared of vegetation will be susceptible to infestation by invader weed species. The road reserve should be monitored for the presence of invader weed species. • Areas that have become compacted due to construction activities should be ripped. • After cessation of activities on the site the area should be rehabilitated to acceptable standards. • After construction has ceased all construction materials should be removed from the road reserve. See EMPr
Residual impacts:	None

Cumulative impact post mitigation:	None
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Low

SECTION I: FINDINGS, IMPACT MANAGEMENT AND MITIGATION MEASURES

1.	Provide a summary of the findings and impact management measures identified by all specialist and an indication of how these findings and recommendations have influenced the proposed development.

a. Ecological and Aquatic Report

An Ecological and Aquatic Report was undertaken by Johannes Maree of Flori Scientific Services.

Potential Impacts

The potential additional negative impacts of the proposed repair or replacement of the 40 identified structures crossing watercourses are Low to Very Low. Most of the more significant potential impacts will occur during the repair/construction phase of the structure. Once the repair/construction phase has been completed, the existing (current) impacts of the crossings (overtopping during heavy rainfalls, erosion on and around the structures, and sedimentation, settling out of soil/sand against the structure) will be significantly reduced.

The conclusions of the study are as follows:

- Forty (40) structures (bridges, major culverts, and small culverts) as identified by engineers for repair, upgrade or replacement were visited.
- None of the watercourses were delineated. Delineation would not contribute to the determination of the potential impacts or the area that would be impacted on. Most of the watercourses are a couple meters wide.
- Except for the Kuils River (PES Category C) through Beaufort West, all watercourses were determined with a PES Category A.
- Except for the Kuils River (EIS Moderate classification) through Beaufort West all watercourses were determined with and EIS of High.
- The existing impact of the watercourses in the area include:
  - Grazing,
  - Residential development was not a significant direct impact at most of the 44 crossings except the Kuils River through Beaufort West,
  - Roads, which are impeding structures redirecting and concentrating natural run-off.
  - Fencing, especially game fencing with "mesh" wire at the bottom of the fence, trap vegetation, and then silt,
  - Small dams up or downstream of the crossing. These dams have an impact on the natural flow of the watercourse and potentially a significant impact on the crossing when they are "breached" during flooding, and
  - Sedimentation, high levels of deposition of silt upstream and against the crossing structure.
- Potential additional impacts with the repair, upgrade of replacement of the crossing include:
  - Destruction of terrestrial vegetation,
  - Changing of the beds and banks of the watercourse,
  - Rerouting of the road around and through the watercourse during work on the structure,

    - The movement of machinery, stock piling of materials, camp areas, etc. (the "foot-print" of construction/repair activities).
- However, once the repair/construction phase has been completed, the existing (current) impacts of the crossings (overtopping during heavy rainfalls, erosion on and around the structures, and sedimentation, settling out of soil/sand against the structure) will be significantly reduced.
- The impact during construction should have strict conditions with the contractor party to address impact for the rerouting of the road around the construction area, the movement of machinery, stock piling of materials, camp areas, etc. (the "foot-print" of construction/repair activities).
- The individual footprints of the various crossings are very small and the sites are all mostly transformed because they comprise of existing bridges and culverts within / along existing roads.
- There are no obvious fatal flaws in terms of the natural environment..
- It is the opinion of the specialist that the project should be allowed to proceed to the next phase.

Recommendations

The recommendations of the study are as follows:

- All mitigating measures must be implemented,
- Providing the contractor with a clear set of requirements, to be included in the contractor's works agreement, for the management of activities within the watercourse, protecting the watercourse, and rehabilitating the watercourse,
- No stockpiling of materials and the construction of temporary campsites, field offices, etc. in the watercourses, or within 50m of the edge of any watercourse, including seasonal drainage lines.
- Although no buffer zones have been delineated. A buffer zone (no-go zone) of 32m from the edge of all watercourses must be observed at all times outside of the actual site area / work area involved at the crossing. In other words, upstream and downstream, outside of the work footprint including access path, no activities may take place within 32 metres of the edge of that watercourse. These activities include, but are not limited to, parking of vehicles, stockpiling of materials and equipment, placement of portable toilets, lunchtime / break areas, etc.
- Limiting the use of detours through the watercourses. Only existing roads for access to be used. No new (even temporary) access roads may be constructed across any watercourses as this can trigger the need for a Water Use Licence Application (WULA) process.
- Limiting the clearing of vegetation and topsoil, and
- Limiting the clearing into and the stockpiling of these materials onto areas that do NOT need to be disturbed. This can be done by proper planning of the site layout. The careful clearing of areas that need to be cleared. The careful removal and stockpiling of material.
- An independent specialist must conduct aquatic monitoring of all watercourses during the construction phase of the project. The monitoring does not need to be a full-blown SASS5 (macro-invertebrate monitoring) protocol. The monitoring must include general observation of erosion, siltation, spillage and activities within watercourses and 32m buffer zones. If any serious or problematic direct project related impacts are observed on watercourses then water samples can be taken both upstream and downstream to determine the impacts.

b. PALAEONTOLOGICAL STUDY

A palaeontological study was undertaken by Dr Heidi Fourie.

Summary of findings

The Phase 1: Field Study was undertaken in April 2021 in autumn in dry and hot conditions during the official Level 1 Covid-19 lockdown, and the following is reported:

The Project includes one locality Option with a VERY HIGH, MODERATE and LOW sensitivities.
Option 1: An area that spans over several roads in the Beaufort West area ending in the south at Klaarstroom north. The approximate size of the site on the N12 National Road is from km 0.00 to km 110.00.

Other locality options will not be feasible as all of the options will be situated on the Beaufort Group sediments and are already present.

Field Observation - Fieldwork was done in April. The area is covered in plantation trees, lush grass and bushes. Outcrops are difficult to see because of the lush vegetation. As nothing could be seen on the site, it was necessary to check the surrounding area as Bulwer is known for fossil Therapsids. A dolerite outcrop opposite the road has a mudstone outcrop at the bottom, this was surveyed for fossils. No fossils were found.

The potential impact of the development on fossil heritage is very high and therefore a Phase 1: Field Survey was necessary for this development (according to SAHRA protocol), if a chance fossil is found during construction a Phase 2 Palaeontological Impact Assessment and Mitigation or conservation will be necessary.

Concerns/threats to be added to EMPr

1. Threats to the National Heritage are earth moving equipment/machinery (for example haul trucks, front end loaders, excavators, graders, dozers) during construction, the sealing-in, disturbance, damage or destruction of the fossils by development, vehicle traffic, clearing, and human disturbance.
2. Special care must be taken during the clearing, digging, drilling, blasting and excavating of foundations, trenches, channels and footings and removal of overburden not to intrude fossiliferous layers.

The recommendations are the following:

1. Mitigation may be needed if fossils are found during construction. Overburden and interburden must be surveyed for fossils.
2. No consultation with parties was necessary. The Environmental Control Officer must familiarise him- or herself with the formation present and its fossils.
3. The development may go ahead with caution. The ECO must survey for fossils before and or after clearing, blasting or excavating and keep a photographic record.
4. The EMPr already covers the conservation of heritage and palaeontological material that may be exposed during construction activities. For a chance find, the protocol is to immediately cease all construction activities, construct a 30 m no-go barrier, and contact SAHRA for further investigation. It is recommended that the EMPr be updated to include the involvement of a palaeontologist for pre-construction training of the ECO.

2.	List the impact management measures that were identified by all Specialist that will be

	included in the EMPr

a. ECOLOGICAL AND AQUATIC STUDY

- All mitigating measures must be implemented,
- Providing the contractor with a clear set of requirements, to be included in the contractor's works agreement, for the management of activities within the watercourse, protecting the watercourse, and rehabilitating the watercourse,
- No stockpiling of materials and the construction of temporary campsites, field offices, etc. in the watercourses, or within 50m of the edge of any watercourse, including seasonal drainage lines.
- Although no buffer zones have been delineated. A buffer zone (no-go zone) of 32m from the edge of all watercourses must be observed at all times outside of the actual site area / work area involved at the crossing. In other words, upstream and downstream, outside of the work footprint including access path, no activities may take place within 32 metres of the edge of that watercourse. These activities include, but are not limited to, parking of vehicles, stockpiling of materials and equipment, placement of portable toilets, lunchtime / break areas, etc.
- Limiting the use of detours through the watercourses. Only existing roads for access to be used. No new (even temporary) access roads may be constructed across any watercourses as this can trigger the need for a Water Use Licence Application (WULA) process.
- Limiting the clearing of vegetation and topsoil, and
- Limiting the clearing into and the stockpiling of these materials onto areas that do NOT need to be disturbed. This can be done by proper planning of the site layout. The careful clearing of areas that need to be cleared. The careful removal and stockpiling of material.
- An independent specialist must conduct aquatic monitoring of all watercourses during the construction phase of the project. The monitoring does not need to be a full-blown SASS5 (macro-invertebrate monitoring) protocol. The monitoring must include general observation of erosion, siltation, spillage and activities within watercourses and 32m buffer zones. If any serious or problematic direct project related impacts are observed on watercourses then water samples can be taken both upstream and downstream to determine the impacts.
- Any temporary storage, lay-down areas or accommodation facilities to be setup in existing built-up areas or disturbed areas where possible.
- Ensure small footprint during construction phase.
- Proposed buffer areas (no-go zones) along the watercourse must be implemented and strictly controlled.
- Regulated area to be strictly controlled in terms of development and movement of people and vehicles in and through it. Only low levels of development allowed.
- All hazardous materials must be stored appropriately to prevent these contaminants from entering the water environment;
- All excess materials brought onto site for construction to be removed after construction.
- No open trenches or mounds of soils to be left.
- Rehabilitation plan for disturbed areas to be compiled and implemented as part of the construction phase.
- No construction vehicles may drive through any watercourses. Existing roads to be used.
- No concrete or mounds of building sand may be stored temporary during the construction phase within 100 m of the delineated watercourses.
- If possible, only existing access roads may be used to and from construction site (study area).
- Temporary access roads to be rehabilitated after the construction phase.
- Any priority species encountered must be identified and rescue prior to any excavation or construction activities.
- Care must be taken not to interact directly with any wild life encountered.
- Any bird nests encountered in the vegetation or in the watercourses must not be interfered with. If encountered must first be discussed with specialist.

- Care must be taken with heavy machinery used on the project. All access roads and farm roads used must be monitored and maintained.
- Soils and stones excavated may be used in the immediate vicinity and farms as backfill, fixing of roads, filling of dongas, etc.
- Excavated soils and rocks may not be simply dumped in any pristine bushveld, or within 100 m of the edge of watercourses or dams.
  (Source: Flori Scientific Services, 2021)

b. HERITAGE STUDY

- If an artefact or grave on-site is uncovered, work in the immediate vicinity shall be stopped immediately and it should immediately be reported to a heritage practitioner so that an investigation and evaluation of the finds can be made. The Contractor shall take reasonable precautions to prevent any person from removing or damaging any such article.
- Heritage Western Cape shall be contacted such that an archaeological/heritage resources consultant can be appointed to record the site and excavate if necessary. Work may only resume once clearance is given in writing by the archaeologist/heritage resources consultant.

(Source: Dr J van Schalkwyk, 2021)

c. PALAEONTOLOGICAL STUDY

Concerns/threats to be added to EMPr

- Threats to the National Heritage are earth moving equipment/machinery (for example haul trucks, front end loaders, excavators, graders, dozers) during construction, the sealing-in, disturbance, damage or destruction of the fossils by development, vehicle traffic, clearing, and human disturbance.
- Special care must be taken during the clearing, digging, drilling, blasting and excavating of foundations, trenches, channels and footings and removal of overburden not to intrude fossiliferous layers.
  (Source: Dr H Fourie, 2021)

3.	List the specialist investigations and the impact management measures that will **not** be implemented and provide an explanation as to why these measures will not be implemented.

There is none of the impact management measures that will not be implemented.

4.	Explain how the proposed development will impact the surrounding communities.

Positive impacts:

a. Short term Employment Creation

New employment opportunities will be created during the construction phase. This includes much needed employment for existing industry, i.e. contractors (especially local Small, Medium and Micro Enterprises from the previously disadvantaged communities), consultants and suppliers. The benefits to the local community from employment could be dependent on the extent of local recruitment.

During the operational phase, the roads project could improve the well-being of populations in the area, and potentially improve the economy as a result of improved transport infrastructure.

b. Long Term Employment Creation

Sustainable employment opportunities will be created for industry (contractors, consultants) during operation and maintenance of the road. Periodic upgrading, maintenance and rehabilitation of

the road will be conducted over the next 20 years.

c. Enhance Tourism

The road could enhance tourism through by offering an improved, safer road for all road-users.

d. Improve Safety

It is anticipated that there will be less flooding of the roads which will be much safer for all road users, especially heavy vehicles.

e. Skills Development

With the construction of the road, skills development could occur with practical training in management and technical skills. This could also include unskilled labour training and the use of small and medium enterprises.

5.	Explain how the risk of climate change may influence the proposed activity or development and how has the potential impacts of climate change been considered and addressed.

It is not anticipated that the risk of climate change could influence the activity.

6.	Explain whether there are any conflicting recommendations between the specialists. If so, explain how these have been addressed and resolved.

There are no conflicting recommendations by the specialists.

7.	Explain how the findings and recommendations of the different specialist studies have been integrated to inform the most appropriate mitigation measures that should be implemented to manage the potential impacts of the proposed activity or development.

The recommendations and mitigation measures that were proposed by the specialists in the specialist studies were included in the EMPr for the project for implementation by the appointed Contractor.

8.	Explain how the mitigation hierarchy has been applied to arrive at the best practicable environmental option.

The hierarchy prioritises avoidance before moving to efforts to minimise impacts, restore damaged ecosystems and finally offset residual damage. Following this sequence is seen as necessary to improve outcomes for biodiversity, ecosystems and the services they provide.

SECTION J: GENERAL

1. Environmental Impact Statement

1.1.	Provide a summary of the key findings of the EIA.

The following presents a summary of the key findings of the environmental impact assessment.

a. Introduction

The essence of all EIA processes is aimed at ensuring informed decision-making and environmental accountability. Furthermore, it assists in achieving environmentally sound and sustainable development. In terms of NEMA (Act No 107 of 1998), the commitment to sustainable development

is evident in the provision that "development must be socially, environmentally and economically sustainable and requires the consideration of all relevant factors. In addition, the preventative principle is required to be applied, i.e. that the disturbance of ecosystems and loss of biological diversity are to be "avoided, or minimised and remedied" and "disturbance of the landscape and the nation's cultural heritage is avoided and where it cannot be altogether avoided is minimised and remedied".

Therefore, negative impacts on the environment and on people's environmental rights in terms of the Constitution (Act 108 of 1996)) should be anticipated and prevented, and where they cannot be altogether prevented, they must be minimised and remedied in terms of "reasonable measures". "Reasonable measures" implies that "every person who causes, has caused or may cause significant pollution or degradation of the environment must take reasonable measures to prevent such pollution or degradation from occurring, continuing or recurring, or, in so far as such harm to the environment is authorised by law and cannot reasonably be avoided or stopped, to minimise and rectify such pollution or degradation of the environment".

The stated objectives of this report are as follows:

- To provide sufficient information concerning the proposed development to the authorities and to other I&APs for decision making purposes. This is aimed at ensuring that the environmental effects of the development are taken into consideration before decisions regarding its approval are taken.
- By so doing, to ensure that the development does not have a substantial detrimental effect on the environment.
- To demonstrate that sufficient consideration has been given to alternatives and potential impacts associated with the development.
- To indicate the manner in which I&APs have been afforded the opportunity to contribute to this project throughout the process followed, and to provide a final opportunity for comment and/or objection to the proposed project.

b. Conclusion

The primary findings of the above processes were that the proposed construction of the preferred Alternative (Alternative 1) would probably result in:

- Negative environmental impacts of low significance with mitigation;
- Potential positive impacts due to increased economic activity, employment and training and capacity building.

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

Based on the specialist studies undertaken within this BA, both benefits and negative impacts are anticipated as a result of the proposed project. The findings of this BA report have highlighted these impacts and prioritised them in terms of high, medium or low significance. The negative environmental impacts that have been determined, need to be seen in balance with the assessed socio-economic benefits.

1.2.	Provide a map that that superimposes the preferred activity and its associated structures

	and infrastructure on the environmental sensitivities of the preferred site indicating any areas that should be avoided, including buffers. (Attach map to this BAR as Appendix B2)
	Map attached.
1.3.	Provide a summary of the positive and negative impacts and risks that the proposed activity or development and alternatives will have on the environment and community.

SUMMARY OF THE POSITIVE AND NEGATIVE IMPACTS AND RISKS OF THE PROPOSED ACTIVITY AND IDENTIFIED ALTERNATIVES

The environmental impacts associated with the project are deemed to be low. The most important environmental impacts pertain to the construction phase of the project. Mitigation measures are included in the EMPr to minimise the impact. No long-term environmental impact should arise. It is anticipated that the project will cater for future traffic demand and will support economic growth. This will benefit the communities in the area including local residents, motorists, the road freight industry and its customers. The project will, therefore, ensure safer driving conditions for the traveling public by enabling vehicles to travel more efficiently and smoothly with less congestion.

The positive impacts associated with the project are the following:

a. Positive Impacts

Short term Employment Creation

New employment opportunities will be created during the construction phase. This includes much needed employment for existing industry, i.e. contractors (especially local Small, Medium and Micro Enterprises from the previously disadvantaged communities), consultants and suppliers. The benefits to the local community from employment could be dependent on the extent of local recruitment.

During the operational phase, the roads project could improve the well-being of populations in the area, and potentially improve the economy as a result of improved transport infrastructure.

Long Term Employment Creation

Sustainable employment opportunities will be created for industry (contractors, consultants) during the maintenance of the road. Periodic upgrading, maintenance and rehabilitation of the structures will be conducted over the next 20 years.

Enhance Tourism

The road could enhance tourism through by offering an improved, safer road for all road-users.

Improve Safety

It is anticipated that there will be less flooding of the roads which will be much safer for all road users, especially heavy vehicles. The rehabilitation of the structures could also provide:

- Less traffic accidents;
- Improved drainage and other services;
- Less traffic congestion and driver frustration;

Skills Development

With the construction phase, skills development could occur with practical training in management and technical skills. This could also include unskilled labour training and the use of small and medium enterprises.

Sustainability

- Alien vegetation will be removed;
- Erosion will be curbed.

b. Possible Negative Impacts

The possible negative impacts relate mainly to the construction phase of the project and the construction yard:

- Possible impact on water courses;
- Possible impact on fauna and flora;
- Possible soil erosion;
- Possible pollution of solid waste;
- Possible sewage pollution;
- Possible pollution of fuels and gas as a result of inadequate storage;
- Possible pollution by cement or concrete;
- Possible noise pollution;
- Possible dust pollution;
- Possible impact on heritage sites and graves.

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

c. Alternatives

Two activity alternatives were assessed.

- The preferred activity alternative is to repair the culverts and replace only culvert C11348.
- The second activity alternative is the replace all the culverts.

The preferred activity alternative is favoured for the following reasons:

- It has a lower construction cost.
- The safety to the traveling public will be significantly improved with less overtopping of the road anticipated.
- Improved traffic flow.
- Reduced congestion is anticipated.
- The environmental impact is deemed to be low.

The conclusions of this EIA are the result of comprehensive studies and specialist assessments. These studies were based on issues identified within the Screening Exercise as well as the parallel process of public participation. The public participation process has been extensive, and every effort has been made to include representatives of all stakeholders in the study area.

2. Recommendation of the Environmental Assessment Practitioner ("EAP")

2.1.	Provide Impact management outcomes (based on the assessment and where applicable, specialist assessments) for the proposed activity or development for inclusion in the EMPr

REASONED OPINION AS TO WHETHER THE PROPOSED ACTIVITY SHOULD BE AUTHORISED

The activity should be authorised by the Department as the significance of the environmental

impacts identified is low while there are positive impacts that will benefit the travelling public of South Africa and tourists visiting the country as a whole.

i) Conditions that must be included in the authorisation

a. The study area has a very high sensitivity of fossil remains or any archaeological artefact heritage remains to be found. Should any archaeological artefact or fossil be exposed during construction activities, construction must be stopped. Under no circumstances shall any artefact be destroyed. The area must be fenced off and a heritage practitioner must be must be contacted as soon as possible.
b. Threats are earth moving equipment/machinery (for example haul trucks, front end loaders, excavators, graders, dozers) during construction, the sealing-in, disturbance, damage or destruction of the fossils by development, vehicle traffic, and human disturbance.
c. Special care must be taken during the digging, drilling, blasting and excavating of foundations, trenches, channels and footings and removal of overburden not to intrude fossiliferous layers.

The following impact management measures will be implemented by the Applicant to prevent or remedy any possible pollution or degradation of the environment:

a. Possible dust and air pollution

- Dust caused by construction activities shall be controlled by means such as water spray vehicles, especially in windy conditions and applied at sufficient frequency so as not to cause nuisance to adjacent habitation or affect farming activities or natural vegetation.
- Vegetation cover should also be kept for as long as possible to reduce the area of exposed surfaces. Dust emissions from batching and screening plants shall be subject to the relevant legislation and shall be the subject of inspection by the relevant authorities.
- Dust will be monitored monthly and records kept on site
- Internal roads will be watered
- All heavy vehicles, excavators and generators used during the construction will be in good working condition and will be serviced regularly.

b. Soil Erosion

- Bank vegetation should not be removed, if possible, and cover should be monitored to ensure that sufficient vegetation is present to bind the bankside soils and prevent bankside erosion.
- Potential erosion areas to be inspected and corrected where necessary.
- Water used for dust suppression must be used in quantities small enough not to generate run-off and result in soil erosion;
- Other acceptable stabilising methods could also be incorporated as per the Engineer's instructions.
- Access road conditions will be checked regularly for any erosion.

c. Possible Noise Pollution

- The contractor shall endeavour to keep noise generating activities to a minimum. Noises that could cause a major disturbance, for instance crushing activities, should only be carried out during the hours prescribed by the conditions of contract (i.e. normal hours).
- Should such noise generating activities have to occur at any time outside normal hours the people in the vicinity of the noise-generating activity shall be warned about the noise well in advance and the activities kept to a minimum.

- Relevant legislation shall also be taken into consideration, and any practical mitigation measures adopted.
- No noise generating activity outside of normal hours, regardless of its proximity to residences, can take place without application to the engineer for approval. The application shall be accompanied by the noise containment measures proposed.
- Vehicles must be driven at a moderate speed (40 kph) on private roads and (25 kph) on site.
- Noise generated from the heavy vehicles on the project shall only be carried out during normal working hours.
- Extended working hours will be in accordance with emergency projects only.
- The Applicant shall be obligated to maintain vehicles used at the project in a good condition;
- The Applicant will be obliged to ensure that all personnel on site apply occupational health and safety requirements with respect to hearing protection.

d. Possible Visual impact

- Keep the site neat, clean and organised (i.e. no littering) in order to portray a tidy appearance.
- In visually sensitive areas screen these areas by enclosing the entire area with a dark green or black shade cloth of no less than 2 m height.
- Rehabilitate disturbed areas as soon as practically possible after construction. This should be done to restrict extended periods of exposed soil.

e. Aquatic and Terrestrial Ecology

- All mitigating measures must be implemented,
- Providing the contractor with a clear set of requirements, to be included in the contractor's works agreement, for the management of activities within the watercourse, protecting the watercourse, and rehabilitating the watercourse,
- No stockpiling of materials and the construction of temporary campsites, field offices, etc. in the watercourses, or within 50m of the edge of any watercourse, including seasonal drainage lines.
- Although no buffer zones have been delineated. A buffer zone (no-go zone) of 32m from the edge of all watercourses must be observed at all times outside of the actual site area / work area involved at the crossing. In other words, upstream and downstream, outside of the work footprint including access path, no activities may take place within 32 metres of the edge of that watercourse. These activities include, but are not limited to, parking of vehicles, stockpiling of materials and equipment, placement of portable toilets, lunchtime / break areas, etc.
- Limiting the use of detours through the watercourses. Only existing roads for access to be used. No new (even temporary) access roads may be constructed across any watercourses as this can trigger the need for a Water Use Licence Application (WULA) process.
- Limiting the clearing of vegetation and topsoil, and
- Limiting the clearing into and the stockpiling of these materials onto areas that do NOT need to be disturbed. This can be done by proper planning of the site layout. The careful clearing of areas that need to be cleared. The careful removal and stockpiling of material.
- An independent specialist must conduct aquatic monitoring of all watercourses during the construction phase of the project. The monitoring does not need to be a full-blown SASS5 (macro-invertebrate monitoring) protocol. The monitoring must include general observation of erosion, siltation, spillage and activities within watercourses and 32m buffer zones. If any serious or problematic direct project related impacts are observed on watercourses then water samples can be taken both upstream and downstream to determine the impacts.
- Any temporary storage, lay-down areas or accommodation facilities to be setup in existing

built-up areas or disturbed areas where possible.

- Ensure small footprint during construction phase.
- Proposed buffer areas (no-go zones) along the watercourse must be implemented and strictly controlled.
- Regulated area to be strictly controlled in terms of development and movement of people and vehicles in and through it. Only low levels of development allowed.
- All hazardous materials must be stored appropriately to prevent these contaminants from entering the water environment;
- All excess materials brought onto site for construction to be removed after construction.
- No open trenches or mounds of soils to be left.
- Rehabilitation plan for disturbed areas to be compiled and implemented as part of the construction phase.
- No construction vehicles may drive through any watercourses. Existing roads to be used.
- No concrete or mounds of building sand may be stored temporary during the construction phase within 100 m of the delineated watercourses.
- If possible, only existing access roads may be used to and from construction site (study area).
- Temporary access roads to be rehabilitated after the construction phase.
- Any priority species encountered must be identified and rescue prior to any excavation or construction activities.
- Care must be taken not to interact directly with any wild life encountered.
- Any bird nests encountered in the vegetation or in the watercourses must not be interfered with. If encountered must first be discussed with specialist.
- Care must be taken with heavy machinery used on the project. All access roads and farm roads used must be monitored and maintained.
- Soils and stones excavated may be used in the immediate vicinity and farms as backfill, fixing of roads, filling of dongas, etc.
- Excavated soils and rocks may not be simply dumped in any pristine bushveld, or within 100 m of the edge of watercourses or dams.

f. Possible Impact on Uncovered Cultural or Archaeological site

- If an artefact or grave on-site is uncovered, work in the immediate vicinity shall be stopped immediately and it should immediately be reported to a heritage practitioner so that an investigation and evaluation of the finds can be made. The Contractor shall take reasonable precautions to prevent any person from removing or damaging any such article.
- Heritage Western Cape shall be contacted such that an archaeological/heritage resources consultant can be appointed to record the site and excavate if necessary. Work may only resume once clearance is given in writing by the archaeologist/heritage resources consultant.

g. Possible contamination of site due to improper waste management controls

- All waste generated on site will be contained and disposed of at a certified waste disposal site.
- Ample bins and skips will be provided for waste containment.
- Recycling of waste on site should be enforced. Separate bins/skips for general and hazardous wastes.
- Waste containment facilities should be properly marked for hazardous and general waste.
- Suspicious effluent should be treated as hazardous and contained and disposed of as such.
- Containment of sewage will be facilitated by a specialised plastic sewage tank and regularly serviced by a certified contractor.

h. Possible establishment and spread of alien vegetation

- Every 3 months casual labour will be employed to circumnavigate the site to hand pull out known alien vegetation that may have established in the disturbed area.
- Casual labour will be provided with photographs of the alien vegetation that could establish.

i. Unsafe working conditions for employees

- Appropriate safety clothing will be worn at all times i.e. head gear, shoes, ear plugs.

2.2.	Provide a description of any aspects that were conditional to the findings of the assessment either by the EAP or specialist that must be included as conditions of the authorisation.
None	
2.3.	Provide a reasoned opinion as to whether the proposed activity or development should or should not be authorised, and if the opinion is that it should be authorised, any conditions that should be included in the authorisation.
The activity should be authorised by the Department as the significance of the environmental impacts identified is low while there are positive impacts that will benefit the travelling public of South Africa and tourists visiting the country as a whole.	
2.4.	Provide a description of any assumptions, uncertainties and gaps in knowledge that relate to the assessment and mitigation measures proposed.
	The assumptions and limitations for the assessment are as follows: • All information regarding the proposed project and related activities as provided by the design engineers are taken to be accurate. • The DEADP will be the decision-making authority with regard to this report. Uncertainties: None Gaps in Knowledge: None
2.5.	The period for which the EA is required, the date the activity will be concluded and when the post construction monitoring requirements should be finalised.
The period for which the environmental authorisation is required is 5 years. The date on which the activity will be concluded is unclear at this stage as the project needs to be put out to tender first.	

3. Water

Since the Western Cape is a water scarce area explain what measures will be implemented to avoid the use of potable water during the development and operational phase and what measures will be implemented to reduce your water demand, save water and measures to reuse or recycle water.
It will be attempted that where new toilets will be installed dual flush device toilets will be installed at the construction yard.

4. Waste

Explain what measures have been taken to reduce, reuse or recycle waste.

It will be attempted that all solid waste will be separated in different containers to make recycling possible at the construction yard.

5. Energy Efficiency

8.1.	Explain what design measures have been taken to ensure that the development proposal will be energy efficient.
It will be attempted that compact fluorescent lights will be installed in the site offices at the construction yard.	

SECTION K: DECLARATIONS

DECLARATION OF THE APPLICANT

(Note: Duplicate this section where there is more than one Applicant.)

I, Dirk Immelman, ID Number 9203225010082 in my ~~personal capacity or~~ duly authorised thereto hereby declare/affirm that all the information submitted or to be submitted as part of this application form is true and correct, and that:

- ~~I am~~ fully aware of my responsibilities in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998) ("NEMA"), the Environmental Impact Assessment ("EIA") Regulations, and any relevant Specific Environmental Management Act and that failure to comply with these requirements may constitute an offence in terms of relevant environmental legislation;
- ~~I am~~ aware of my general duty of care in terms of Section 28 of the NEMA;
- ~~I am~~ aware that it is an offence in terms of Section 24F of the NEMA should I commence with a listed activity prior to obtaining an Environmental Authorisation;
- ~~I~~ appointed the Environmental Assessment Practitioner ("EAP") (if not exempted from this requirement) which:
  - meets all the requirements in terms of Regulation 13 of the NEMA EIA Regulations; or
  - meets all the requirements other than the requirement to be independent in terms of Regulation 13 of the NEMA EIA Regulations, but a review EAP has been appointed who does meet all the requirements of Regulation 13 of the NEMA EIA Regulations;
- ~~I~~ will provide the EAP and any specialist, where applicable, and the Competent Authority with access to all information at my disposal that is relevant to the application;
- ~~I~~ will be responsible for the costs incurred in complying with the NEMA EIA Regulations and other environmental legislation including but not limited to –
  - costs incurred for the appointment of the EAP or any legitimately person contracted by the EAP;
  - costs in respect of any fee prescribed by the Minister or MEC in respect of the NEMA EIA Regulations;
  - Legitimate costs in respect of specialist(s) reviews; and
  - the provision of security to ensure compliance with applicable management and mitigation measures;
- ~~I am~~ responsible for complying with conditions that may be attached to any decision(s) issued by the Competent Authority, hereby indemnify, the government of the Republic, the Competent Authority and all its officers, agents and employees, from any liability arising out of the content of any report, any procedure or any action for which I or the EAP is responsible in terms of the NEMA EIA Regulations and any Specific Environmental Management Act.

~~**Note:** If acting in a representative capacity, a certified copy of the resolution or power of attorney must be attached~~.

DImmelman 1 June 2021

Signature of the Applicant: Date:

Western Cape Government, Department of Transport and Public Works

Name of company (if applicable):

* note all references made to the personal capacity of the signee in the bullet points should read the Western Cape Government Department of Transport and Public Works and its representatives where applicable.

DECLARATION OF THE ENVIRONMENTAL ASSESSMENT PRACTITIONER ("EAP")

I Josephine Bothma, EAPASA Registration number 246/2019 as the appointed EAP hereby declare/affirm the correctness of the:

- Information provided in this BAR and any other documents/reports submitted in support of this BAR;
- The inclusion of comments and inputs from stakeholders and I&APs;
- The inclusion of inputs and recommendations from the specialist reports where relevant; and
- Any information provided by the EAP to interested and affected parties and any responses by the EAP to comments or inputs made by interested and affected parties, and that:
- In terms of the general requirement to be independent:
    - other than fair remuneration for work performed in terms of this application, have no business, financial, personal or other interest in the activity or application and that there are no circumstances that may compromise my objectivity; or
    - am not independent, but another EAP that meets the general requirements set out in Regulation 13 of NEMA EIA Regulations has been appointed to review my work (Note: a declaration by the review EAP must be submitted);
- In terms of the remainder of the general requirements for an EAP, am fully aware of and meet all of the requirements and that failure to comply with any the requirements may result in disqualification;
- I have disclosed, to the Applicant, the specialist (if any), the Competent Authority and registered interested and affected parties, all material information that have or may have the potential to influence the decision of the Competent Authority or the objectivity of any report, plan or document prepared or to be prepared as part of this application;
- I have ensured that information containing all relevant facts in respect of the application was distributed or was made available to registered interested and affected parties and that participation will be facilitated in such a manner that all interested and affected parties were provided with a reasonable opportunity to participate and to provide comments;
- I have ensured that the comments of all interested and affected parties were considered, recorded, responded to and submitted to the Competent Authority in respect of this application;
- I have ensured the inclusion of inputs and recommendations from the specialist reports in respect of the application, where relevant;
- I have kept a register of all interested and affected parties that participated in the public participation process; and
- I am aware that a false declaration is an offence in terms of Regulation 48 of the NEMA EIA Regulations;

2021-05-14

Signature of the EAP: Date:

Chameleon Environmental

Name of company (if applicable):

DECLARATION OF THE REVIEW EAP

THERE WAS NO REVIEW OF THE REPORT UNDERTAKEN

DECLARATION OF THE SPECIALIST

Note: Duplicate this section where there is more than one specialist.

I, J O Maree, as the appointed Specialist hereby declare/affirm the correctness of the information provided or to be provided as part of the application, and that:

- In terms of the general requirement to be independent:
  - other than fair remuneration for work performed in terms of this application, have no business, financial, personal or other interest in the development proposal or application and that there are no circumstances that may compromise my objectivity; or

  - ~~am not independent, but another specialist (the "Review Specialist") that meets the general requirements set out in Regulation 13 of the NEMA EIA Regulations has been appointed to review my work (Note: a declaration by the review specialist must be submitted);~~

- In terms of the remainder of the general requirements for a specialist, have throughout this EIA process met all of the requirements;

- I have disclosed to the applicant, the EAP, the Review EAP (if applicable), the Department and I&APs all material information that has or may have the potential to influence the decision of the Department or the objectivity of any Report, plan or document prepared or to be prepared as part of the application; and

- I am aware that a false declaration is an offence in terms of Regulation 48 of the EIA Regulations.

Signature of the Specialist: Date: 19 May 2021

Flori Scientific Services cc

Name of company (if applicable):

DECLARATION OF THE SPECIALIST

Note: Duplicate this section where there is more than one specialist.

I, Dr H Fourie, as the appointed Specialist hereby declare/affirm the correctness of the information provided or to be provided as part of the application, and that:

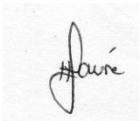
- In terms of the general requirement to be independent:
  - other than fair remuneration for work performed in terms of this application, have no business, financial, personal or other interest in the development proposal or application and that there are no circumstances that may compromise my objectivity; or

  - ~~am not independent, but another specialist (the "Review Specialist") that meets the general requirements set out in Regulation 13 of the NEMA EIA Regulations has been appointed to review my work (Note: a declaration by the review specialist must be submitted);~~

- In terms of the remainder of the general requirements for a specialist, have throughout this EIA process met all of the requirements;

- I have disclosed to the applicant, the EAP, the Review EAP (if applicable), the Department and I&APs all material information that has or may have the potential to influence the decision of the Department or the objectivity of any Report, plan or document prepared or to be prepared as part of the application; and

- I am aware that a false declaration is an offence in terms of Regulation 48 of the EIA Regulations.



2021/5/19

Signature of the Specialist: Date:

None

Name of company (if applicable):

DECLARATION OF THE SPECIALIST

Note: Duplicate this section where there is more than one specialist.

I, J A van Schalkwyk, as the appointed Specialist hereby declare/affirm the correctness of the information provided or to be provided as part of the application, and that:

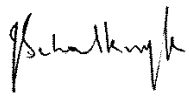
- In terms of the general requirement to be independent:
  - other than fair remuneration for work performed in terms of this application, have no business, financial, personal or other interest in the development proposal or application and that there are no circumstances that may compromise my objectivity; or

  - ~~am not independent, but another specialist (the "Review Specialist") that meets the general requirements set out in Regulation 13 of the NEMA EIA Regulations has been appointed to review my work (Note: a declaration by the review specialist must be submitted);~~

- In terms of the remainder of the general requirements for a specialist, have throughout this EIA process met all of the requirements;

- I have disclosed to the applicant, the EAP, the Review EAP (if applicable), the Department and I&APs all material information that has or may have the potential to influence the decision of the Department or the objectivity of any Report, plan or document prepared or to be prepared as part of the application; and

- I am aware that a false declaration is an offence in terms of Regulation 48 of the EIA Regulations.



21 May 2021

Signature of the Specialist: Date:

n/a

Name of company (if applicable):

DECLARATION OF THE REVIEW SPECIALIST

NO REVIEW OF SPECIALIST REPORTS