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FINAL

PRE-CONSTRUCTION, CONSTRUCTION AND POST-CONSTRUCTION PHASE

ENVIRONMENTAL MANAGEMENT PROGRAMME

FOR THE

PROPOSED REMOVAL AND REPLACEMENT OF THE EXISTING ROAD AND CULVERT INFRASTRUCTURE LOCATED ALONG DIVISION ROAD (DR) 1791 KM 1.59, STOFPAD ROAD, CROSSING FARM 501 AND FARM 306 ON PORTION 22 WITTEDRIFT, BITOU LOCAL MUNICIPALITY, GARDEN ROUTE DISTRICT

APPLICANT:	WESTERN CAPE GOVERNMENT: DEPARTMENT OF INFRASTRUCTURE
ENVIRONMENTAL ASSESSMENT PRACTITIONER:	SHARPLES ENVIRONMENTAL SERVICES CC AUTHOR: BETSY DITCHAM (EAPASA: 2020/1480) ASSISTED BY: JESSICA GOSSMAN (CANDIDATE EAPASA: 2022/6154)
DEA & DP PROJECT REFERENCE:	16/3/3/6/7/1/D1/14/0099/25
SES REFERENCE NUMBER:	CT6/FRAFT/EMPR/01/26
DATE:	01/2026

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CHANGES BETWEEN THE DRAFT ENVIRONMENTAL MANAGEMENT PROGRAMME AND THE FINAL EMPR

This section indicates the Sections within the EMPr which saw changes following the conclusion of the Public Participation Process of the project:

- Updates to the Site Camp and associated facilities.
- Outcome 3: Legislative compliance, including permits required to be obtained and available on site prior to construction (e.g. Water Use Licence).
- Outcome 2: Measures for the prevention of incidents.
- Outcome 4: Mitigation measures for disturbed and displaced fauna (general mitigation measures).
- Inclusion of the appointment of an aquatic specialist to undertake rehabilitation following construction activities.
- Requirement to comply with all conditions of the Water Use Licence during the pre-construction, construction, and post-construction/rehabilitation phases.
- Revised frequency of Environmental Control Officer (ECO) monitoring.
- Updated monitoring report distribution requirements. Please note that from this point onwards in the report, all changes to the contents of the Basic Assessment Report have been indicated in red text.

APPENDIX 4 OF THE EIA REGULATIONS 2014 (AS AMENDED 2017).

This Environmental Management Programme has been drafted in accordance with Appendix 4 of the Environmental Impact Assessment Regulations 2014 (as amended 2017). The table below shows how the requirements of Appendix 4 have been included within this Environmental Management Programme.

(1) An EMPr must comply with section 24N of the Act and include— (a)details of– (i)the EAP who prepared the EMPr; and (ii)the expertise of that EAP to prepare an EMPr, including a curriculum vitae;	Section 4 and Appendix A
(b)a detailed description of the aspects of the activity that are covered by the EMPr as identified by the project description;	Section 5
(c)a map at an appropriate scale which superimposes the proposed activity, its associated structures, and infrastructure on the environmental sensitivities of the preferred site, indicating any areas that should be avoided, including buffers;	Appendix B
(d)a description of the impact management outcomes, including management statements, identifying the impacts and risks that need to be avoided, managed and mitigated as identified through the environmental impact assessment process for all phases of the development including— (i)planning and design; (ii)pre-construction activities; (iii)construction activities; (iv)rehabilitation of the environment after construction and where applicable post closure; and	Section 8 to 11

(v)where relevant, operation activities;	
(f)a description of proposed impact management actions, identifying the manner in which the impact management outcomes contemplated in paragraph (d) will be achieved, and must, where applicable, include actions to — (i)avoid, modify, remedy, control or stop any action, activity or process which causes pollution or environmental degradation; (ii)comply with any prescribed environmental management standards or practices; (iii)comply with any applicable provisions of the Act regarding closure, where applicable; and (iv)comply with any provisions of the Act regarding financial provision for rehabilitation, where applicable;	
(g)the method of monitoring the implementation of the impact management actions contemplated in paragraph (f);	Section 12
(h)the frequency of monitoring the implementation of the impact management actions contemplated in paragraph (f);	Section 12 Appendix E
(i)an indication of the persons who will be responsible for the implementation of the impact management actions;	Section 0 - 13
(j)the time periods within which the impact management actions contemplated in paragraph (f) must be implemented;	Section 12 Section 0 - 13
(k)the mechanism for monitoring compliance with the impact management actions contemplated in paragraph (f);	Section 12 Appendix E
(l)a program for reporting on compliance, taking into account the requirements as prescribed by the Regulations;	
(m)an environmental awareness plan describing the manner in which— (i)the applicant intends to inform his or her employees of any environmental risk which may result from their work; and (ii)risks must be dealt with in order to avoid pollution or the degradation of the environment; and	Section 14 - 15 Appendix E and N
(n)any specific information that may be required by the competent authority.	N/A

COMPLIANCE WITH SECTION 24N OF THE NATIONAL ENVIRONMENTAL MANAGEMENT ACT, 1998, AS AMENDED (ACT 107 OF 1998)

(1) The Minister, the Minister of Minerals and Energy, an MEC or identified competent authority may require the submission of an environmental management programme before considering an application for an environmental authorisation.	This Environmental Management Programme (EMPr) has been circulated to the Decision-making authority and has been updated based on the comments received by the public during the Public Participation Process.
(1A) Where environmental impact assessment has been identified as the environmental instrument to be utilised in informing an application for environmental authorisation, or where such application relates to prospecting, mining, exploration, production and related activities on a prospecting, mining, exploration or production area, the Minister, the Minister of Minerals and Energy, an MEC or identified competent authority must require the submission of an environmental management programme before considering an application for an environmental authorisation.	
(2) The environmental management programme must contain-	
(a) information on any proposed management, mitigation, protection or remedial measures that will be undertaken to address the environmental impacts that have been identified in a report contemplated in subsection 24(1A), including environmental impacts or objectives in respect of- *(i) planning and design;* *(ii) pre-construction and construction activities;* *(iii) the operation or undertaking of the activity in question;* *(iv) the rehabilitation of the environment; and* *(v) closure, if applicable;*	Sections 7, 0, 0, 10 and 11
(b) details of- *(i) the person who prepared the environmental management programme; and* *(ii) the expertise of that person to prepare an environmental management programme;*	Section 4
(c) a detailed description of the aspects of the activity that are covered by the environmental management programme;	Section 5
(d) information identifying the persons who will be responsible for the implementation of the measures contemplated in paragraph (a);	Section 12 Appendix E
(e) information in respect of the mechanisms proposed for monitoring compliance with the environmental management programme and for reporting on the compliance;	
(f) as far as is reasonably practicable, measures to rehabilitate the environment affected by the undertaking of any listed activity or specified activity to its natural or predetermined state or to a land use which conforms to the generally accepted principle of sustainable development; and	Sections 7, 0, 0, 10 and 11
(g) a description of the manner in which it intends to- *(i) modify, remedy, control or stop any action, activity or process which causes pollution or environmental degradation;* *(ii) remedy the cause of pollution or degradation and migration of pollutants; and* *(iii) comply with any prescribed environmental management standards or practices*	Sections 7, 0, 0, 10 and 11
(3) The environmental management programme must, where appropriate-	

(a) set out time periods within which the measures contemplated in the environmental management programme must be implemented;	Section
(b) contain measures regulating responsibilities for any environmental damage, pollution, pumping and treatment of extraneous water or ecological degradation as a result of prospecting or mining operations or related mining activities which may occur inside and outside the boundaries of the prospecting area or mining area in question; and	Section 12 Appendix E
(c) develop an environmental awareness plan describing the manner in which- *(i) the applicant intends to inform his or her employees of any environmental risk which may result from their work; and* *(ii) risks must be dealt with in order to avoid pollution or the degradation of the environment.*	Sections 14 and 15
(4) The Minister of Minerals and Energy may not grant an environmental authorisation, unless he or she has considered any recommendation by the Regional Mining Development and Environmental Committee	Not applicable to the proposed development
(5) The Minister, the Minister of Minerals and Energy, an MEC or identified competent authority may call for additional information and may direct that the environmental management programme in question must be adjusted in such a way as the Minister, the Minister of Minerals and Energy or the MEC may require.	All comments obtained from the Department of Environmental Affairs & Development Planning has been incorporated into this EMPr.
(6) The Minister, the Minister of Minerals and Energy, an MEC or identified competent authority may at any time after he or she has approved an application for an environmental authorisation approve an amended environmental management programme.	Not applicable to the proposed development at this stage
(7) The holder and any person issued with an environmental authorisation-	
(a) must at all times give effect to the general objectives of integrated environmental management laid down in section 23 (Of the NEMA);	Section 12, 14 and 15 Appendix D
(b) must consider, investigate, assess and communicate the impact of his or her prospecting or mining on the environment;	
(c) must manage all environmental impacts- *(i) in accordance with his or her approved environmental management programme, where appropriate; and* *(ii) as an integral part of the reconnaissance, prospecting or mining, exploration or production operation, unless the Minister of Minerals and Energy directs otherwise;*	
(d) must monitor and audit compliance with the requirements of the environmental management programme;	
(e) must, as far as is reasonably practicable, rehabilitate the environment affected by the prospecting or mining operations to its natural or predetermined state or to a land use which conforms to the generally accepted principle of sustainable development; and	
(f) is responsible for any environmental damage, pollution, pumping and treatment of extraneous water or ecological degradation as a result of his or her prospecting or mining operations or related mining activities which may occur inside and outside the boundaries of the prospecting or mining area to which such right or permit relates.	

1. DOCUMENT DETAILS

Project Ref. No:	CT06
Conditions of Use:	This report is the property of the sponsor, *Sharples Environmental Services cc* (*SES*), who may make allowance to publish it, in whole provided that: a. Approval for copy is obtained from *SES*. b. *SES* is acknowledged in the publication. c. *SES* is indemnified against and claim for damages that may result from publication of specifications, recommendations or statements that is not administered or controlled by *SES*. d. That approval is obtained from *SES* if this report is to be used for the purposes of sale, publicity or advertisement. *SES* accepts no responsibility for failure to follow the recommended program.
Disclaimer	**This Environmental Management Programme has been compiled in line with Appendix 4 of the Environmental Impact Assessment (EIA) Regulations of 2014, as amended (GNR 326 of 2017). This EMPr has been submitted to the Competent Authority as part of the EIA process followed in terms of the EIA Regulations of 2014, as amended. Even though numerous renditions of this report exist, this report (in its final state) aims to replace any other version of this document, upon authorisation of the project by the Department of Environmental Affairs and Development Planning.* **All technical developmental information contained in this EMPr was provided by HATCH Consulting Engineers, and SES does not take any responsibility regarding the accuracy of this information.* **This EMPr and the preliminary impacts identified are based on the expected sensitivity of the receiving environment, based on the observations made by the appointed Environmental Assessment Practitioner (EAP) and the specialists qualified to make such interpretations.*

2. ABOUT THIS EMPR

This document is intended to serve as a guideline to be used by the *Proponent* during the pre-construction, construction, post-construction rehabilitation and operational (maintenance) phases of the proposed development. This document provides measures that must be implemented to ensure that any environmental degradation that may be associated with the development is avoided, or where such impacts cannot be avoided entirely, are minimised and mitigated appropriately.

This EMPr has been prepared in accordance with the requirements of an Environmental Management Programme (EMPr) as specified in the Environmental Impact Assessment (EIA) Regulations, 2014, as amended (Government Notice Regulation (GNR) 326 of 2017) and Section 24N of the National Environmental Management Act, 1998 (Act No. 107 of 1998), and with reference to the "Guidelines for Environmental Management Programmes" published by the Department of Environmental Affairs and Development Planning (DEA&DP, 2005).

In line with the mitigation hierarchy (see Figure 1), the overarching goal of this EMPr is to anticipate and provide measures that must be implemented to ensure that any environmental impact that may be associated with the development is avoided, or where such impacts cannot be avoided entirely, are minimised and mitigated appropriately. The mitigation hierarchy was considered during the Basic Assessment Report (BAR) planning process, to appropriately manage environmental impacts.

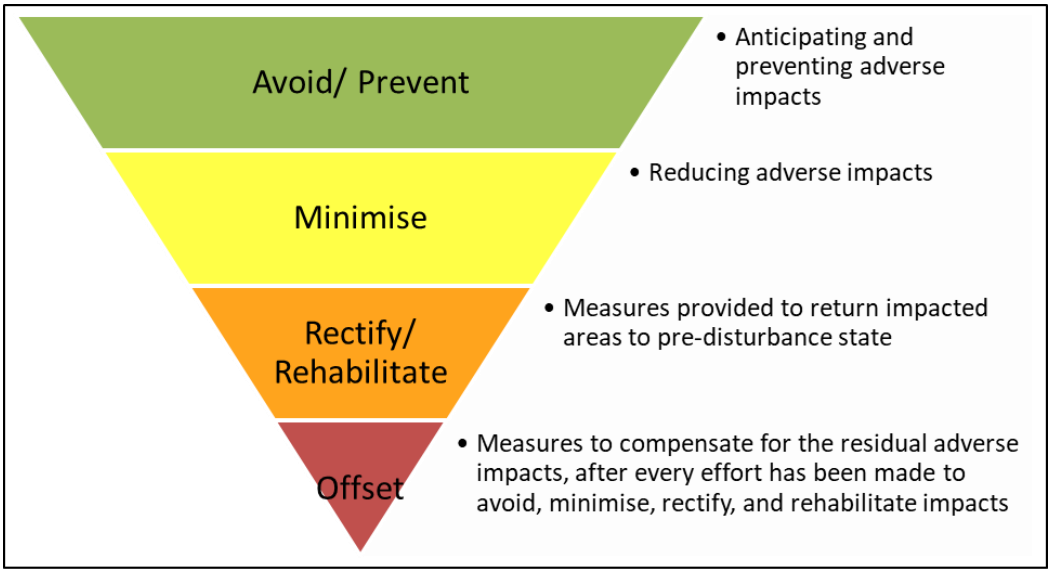


Figure 1. Mitigation hierarchy

It is important to note that not only is the EMPr designed to manage the physical establishment of the development *per se*, but also as a tool which can be used to manage the environmental impacts of the development.

The rehabilitation, mitigation, management and monitoring measures prescribed in this EMPr must be seen as binding to the *Proponent*, and any person acting on its behalf, including but not limited to agents, contractors, employees, associates, guests or any person rendering a service to the development site.

2.1 Environmental legislative requirements of the proposed project:

The EIA Regulations of 2014, as amended (GNR 326 of 2017; GNR 517 of 2021), as promulgated in terms of the National Environmental Management Act, 1998 (NEMA; Act No. 107 of 1998), as per gives effect to the Constitution of the Republic of South Africa by providing a framework for co-operative environmental governance and the environment. NEMA requires that an environmental authorisation (EA) be issued by a competent authority (CA) before the commencement of an activity listed in terms of the EIA Regulations of 2014, as amended.

Since this development proposal triggered listed activities in terms of the EIA Regulations of 2014, as amended, in terms of Listing Notice 1 and 3 of 2014, as amended, a Basic Assessment Process was undertaken. This EMPr acts as a standalone document submitted with the Basic Assessment Report submitted to the Department of Environmental Affairs and Development Planning (DEA&DP) for the purpose of obtaining Environmental Authorisation.

2.2 Important caveat to the report

In the past, some developments have significantly harmed the environment, despite having Environmental Management Programs (EMPrs) in place. Conversely, other developments have had a minimal impact even when no management plans were compiled.

The role of the Implementing Agent and the attitude of the construction team are critical in determining the environmental impact of a development. The independent Environmental Control Officer (ECO) must ensure that all stakeholders understand the constraints imposed by the EMPr on both the development and the construction team. It is essential that everyone is prepared to actively participate in upholding these constraints. Ultimately, the success of the project depends on cooperation, mutual respect, and understanding among all parties involved.

3. HOW TO USE THIS DOCUMENT

It is crucial that this Environmental Management Program (EMPr) be thoroughly studied, understood, implemented, and followed as closely as possible throughout all phases of the proposed development. The Proponent must keep a copy of this EMPr, and an additional copy must be available on-site at all times during the pre-construction, construction, and post-construction rehabilitation phases.

This EMPr should be included in all contracts prepared for contractors and subcontractors engaged by the Proponent, as it outlines the procedures that engineers and other contractors must follow to avoid or minimize adverse impacts from construction and maintenance activities. Contractors appointed for this project must allocate sufficient financial resources to implement the environmental management measures specified in this document.

This EMPr should be viewed as a living document that can be revised as necessary to adapt to changing circumstances on-site or in the surrounding environment. It may also be amended to address requests or conditions issued by the Competent Authority, specifically the Department of Environmental Affairs and Development Planning (DEADP). Any amendments to this EMPr must receive prior written approval from the Competent Authority before implementation.

4. DETAILS OF THE EAP & TECHNICAL/SPECIALIST INPUT

This EMPr and the associated environmental assessment was undertaken by Sharples Environmental Services cc. Sharples Environmental Services (SES) was established in 1998 and has been actively engaged in the fields of environmental planning, assessment and management. SES advises on private, corporate and public enterprises on a variety of differing land use applications ranging from large-scale residential estates and resorts to golf courses, municipal service infrastructure installations and the planning of major arterials. Our consultants have over 20+ years of combined experience, and we operate in the Southern, Eastern and Western Cape regions.

A brief description of the Environmental Assessment Practitioners (EAP) has been included below, as per Table 1, and a detailed Curriculum Vitae has been included in Appendix A.

Table 1: EAP Details.

Role:	Name:	E-Mail Address:	Qualifications:	Registration/ Memberships	YEARS OF EXPERIENCE
Author	B Ditcham	betsy@sescc.net	• B.Sc. Honours (Wildlife Management) (UP) • B.Sc (Zoology and Ecology (UCT)	• IAIA (SA) • EAPASA (2020/1480)	• 14+ yrs
Contributing Author	J Gossman	jessica@sescc.net	• B.Sc. Honours Degree in Geography • B. Degree Environmental Management	• IAIA (SA) • EAPASA (2022/6154)	• 2+ yrs

The table below provides a summary of the specialists appointed to verify the sensitivity of the proposed area of investigation.

Table 2: Environmental Specialist Input.

Environmental Theme	Specialist Company Name	Specialist Name	Registration No.
Aquatic Biodiversity	Upstream Consulting	Debbie Fordham	SACNASP: 119102
Avi-faunal Compliance Statement	MORA Ecological Services (Pty) Ltd	Mokgatla Molepo	SACNASP: 009509
Plant Species, Animal Species and Terrestrial Biodiversity Compliance Statement	Enviro Works	Megan Smith	SACNASP: 130295
Heritage Compliance Statement	Point of Human Origin	Dr. Peter Nilssen	Association of Southern African Professional Archaeologists (ASAPA) Membership/Registration Number: 097

5. DESCRIPTION OF THE ACTIVITY

The proposed project forms part of the strategy toward repairing and upgrading the affected sections of these roads. The proposed development forms part of the overarching project and is aimed toward preventing future damage to the ecological resources and services infrastructure, as well as mitigating the road safety implications of the existing infrastructure.

The existing causeway is located at kilometre marker 1.59 along DR1791 Stofpad Road, with approximate starting coordinates at 34°00'04.57"S 23°19'27.98"E. The structure is approximately 20 m long × 6.1 m wide and comprises three Ø600 mm precast concrete pipes that are permanently submerged, with significant damage to the unreinforced concrete deck slab from previous flood events.

To effectively re-establish and upgrade the existing causeway, it is proposed to demolish the existing structure and construct a new in situ reinforced concrete causeway with three cells, each measuring approximately 4 m wide × 1.5 m high, providing a 4 m road width between guide blocks. The road approaches on both sides will be raised by approximately 1.4 m over lengths of about 100 m to tie into the new causeway deck height. The new inlet and outlet work will include wing walls and an apron slab, with erosion protection as required.

In order to maintain traffic during construction, a temporary deviation road will be installed on the downstream or upstream side of the existing road, depending on the time of construction. This bypass will be approximately. 4 meters, with a working area of approx. 3 meters. The bypass alignment will require clearance of indigenous vegetation and work within the watercourse, with the total working

area outside of the road reserve downstream will be approximately 561.71 m^2, and the total construction area upstream will be approximately 514.49 m^2 outside of the road reserve. Although the re-establishment of the causeway constitutes the commencement of an original activity, the construction of the additional bypass road, specifically the portion located outside of the existing road reserve, will trigger one or more listed activities in terms of the Environmental Impact Assessment (EIA) Regulations of 2014, as amended (GNR 326 of 2017; GNR 517 of 2021).

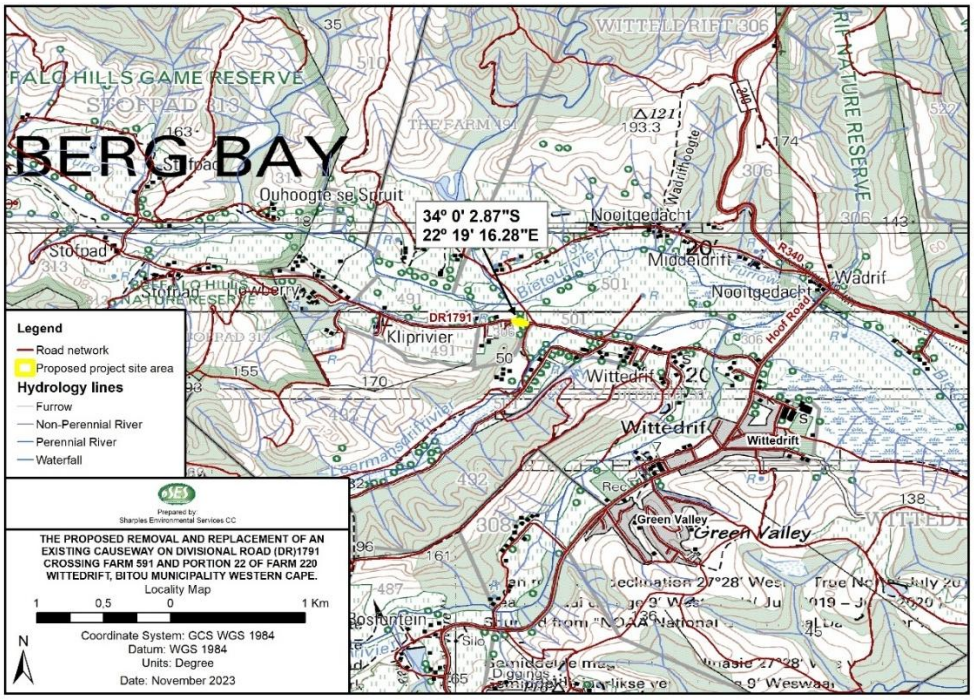


Figure 2. Locality map of the proposed infrastructure works along DR1791, Wittedrift.

The total footprint of the proposed bypass downstream is approximately 4996.57 m^2, including the area located within the road reserve. The total footprint of the proposed bypass upstream is approximately 3279.15m^2, which includes the area located within the road reserve.

The proposed temporary bypass infrastructure will be located either upstream or downstream of the existing causeway infrastructure, depending on the site conditions at the time of construction. Please see Figure 3 for the conceptual drawing of the downstream proposed bypass infrastructure and Figure 4 for the upstream proposed bypass infrastructure.

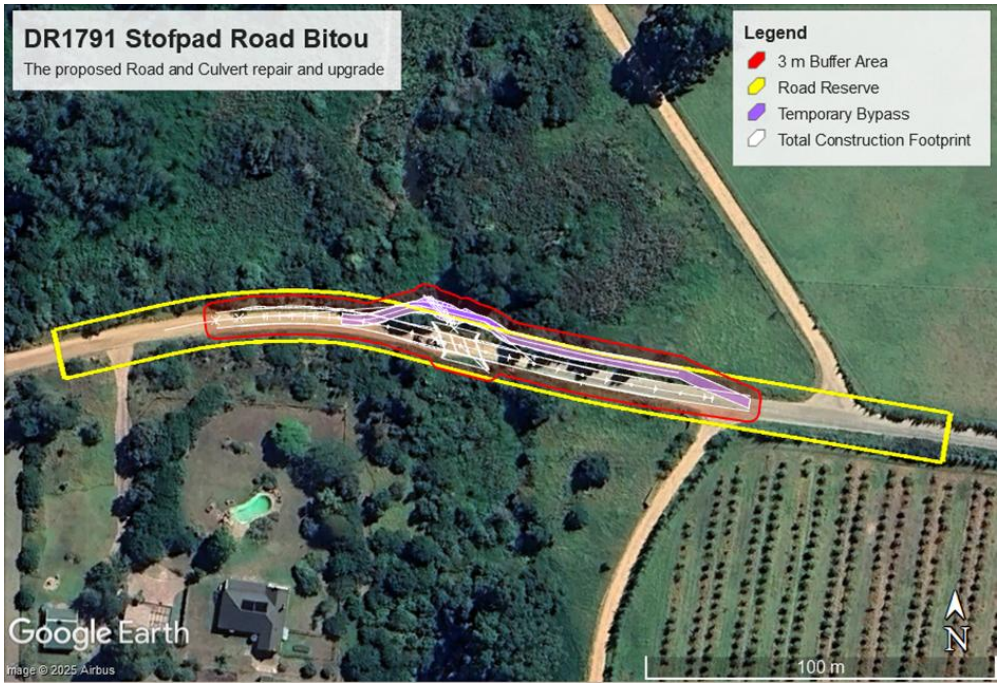


Figure 3. Proposed construction works of the temporary deviation road along DR1791, Wittedrift (downstream).

Figure 4. Proposed construction works of the temporary deviation road along DR1791, Wittedrift) (upstream).

Note: Although both options will be assessed as the preferred options, only one option, either downstream or upstream, will be implemented during the construction phase.

The exact plan footprint can be read off the GA drawing (the "General Arrangement)" -As Provided in Appendix L.

- **Transverse width (across the river)** = 13.4 m
  (dimension chain in plan: **400 + 4000 + 300 + 4000 + 300 + 4000 + 400 mm** = **13 400 mm**).

- **Longitudinal length (along flow)** = 12.7 m
  (river cross-section B–B shows **4000 + 4700 + 4000 mm** = **12 700 mm**).
- **Plan area of the cellular RC causeway/culvert box itself**
  = **13.4 m × 12.7 m = 170.18 m²** (≈ **170.2 m²**).

170 m² is the plan footprint of the cellular concrete causeway itself.

The proposed works will entail:

1. General
   a. The establishment on site of the Contractor's campsite and offices for the Engineer and his site staff.
   b. The supply of plant, labour, tools, equipment, and materials necessary to complete the works.
   c. Setting out the working areas taking cognisance of all the sensitivities as identified by the appointed specialist.
   d. Accommodation of traffic during the construction phase of the proposed project.

2. Road works & Structures
   a. Re-establishment of a causeway along Division Road (DR) 1791 (Stofpad Road):
      i. re-establish and upgrade the existing causeway,
      ii. A temporary bypass be installed north of the existing road. The bypass will be 4 m in width, however only approximately 2.5 m of the proposed bypass will be located outside of the existing road reserve.
   b. Rehabilitation of selected accesses to main or minor farm access standards as applicable.
   c. Extension of existing culverts.
   d. Maintenance of existing culvert inlet and outlet structures.
   e. Three Ø600mm concrete pipe culvert causeway, widening or raising head and wing walls of culverts if required and causeway.
   f. Repair and replacement of culverts .
   g. Maintenance and upgrade to the DR1791 Stofpad Road
   h. Temporary deviation road on downstream side 4.0m wide

3. Appurtenant works
   a. Installation of road signs
   b. Painting of road marking
   c. Installation of temporary deviation road and decommissioning after use.
   d. Installation of fencing, including clearing the fenceline.

The proposed development has the following coordinates:

No	Farm Name	Farm/ Erf No	Portion	Latitude	Longitude	Property Type
1	Helderwater	586	0	34°0'30.82S	23°18'44.13E	Farm
2		591	0	33°59'50.1S	23°19'37.99E	Farm
3	Wittedrift	306	0	34°0'10.33S	23°20'45.02E	Farm
4		501	0	34°0'1.5S	23°19'34.86E	Farm Portion
5		591	0	33°59'58.41S	23°19'38.13E	Farm Portion
6		501	0	34°0'6.21S	3°19'29.19E	Farm Portion
7	Wittedrift	306	22	34°0'5.63S	23°19'13.26E	Farm Portion

8		501	1	34°0'18.69S	23°19'9.13E	Farm Portion
9		501	2	33°59'56.61S	23°19'40.74E	Farm Portion
10	Helderwater	586	0	34°0'29.72S	23°18'50.75E	Farm Portion

6. RECEIVING ENVIRONMENT

The following specialist assessments were undertaken:

- Aquatic Biodiversity Impact Assessment;
- Avifaunal Compliance statement
- Plant Species, Animal Species and Terrestrial Biodiversity Compliance Statement
- Heritage Compliance Statement

Please see the summary of the abovementioned assessments below:

Table 3. Summary of the specialist assessments.

Specialist Company	Specialist Details	Sensitivity of receptors	Summary of findings
HERITAGE AND PALAEONTOLOGICAL OBSERVATIONS			
Point of Human Origin	Dr Peter Nillsen (Heritage Consultant)	Low	It was confirmed by the appointed Heritage Consultant that the proposed activities do not trigger Section 38 of the National Heritage Resources Act, 1999 (Act No. 25 of 1999). Therefore, the Heritage consultant confirmed that it was not required to submit a NID to the Heritage Western Cape.
AQUATIC BIODIVERSITY ASSESSMENT			
Upstream Consulting	Debbie Fordham (Aquatic Consultant)	Very High	The total footprint of the proposed temporary deviation road is approximately 534 m2, including the area located within the road reserve. The proposed temporary deviation road will be located either upstream or downstream of the existing causeway infrastructure, depending on the site conditions at the time of construction. It was determined that the channelled valley bottom wetland on the Leermansdrift River will be directly impacted, as the causeway is within the watercourse. There is potential for indirect downstream impacts upon the Bietou River. The watercourses where therefore assessed in detail to determine the impact of the project. Based on having the specialist assess the watercourse, after mitigation measures are in place. There should be a low impact on the watercourses within the project area. Furthermore, the project will benefit the watercourse in the future by the new causeway design will allow for diffuse flow and may result in positive impacts in the long-term. The reach of the Bietou River is located in the Lowland geozone and has perennial flow. In 1999 the PES of the Bietou River was classified as Class B (Largely Natural) however, the data from the latest National Biodiversity Assessment (NBA 2018) classifies the river as having a 'C' PES score, indicating a 'Moderately Modified' ecosystem. The broad floodplain wetland of the Bietou River is more than 600ha in size and is a valuable ecological resource. The Bietou wetland is essentially part of the greater Keurbooms Estuary and therefore impacts on the Bietou will in turn impact the Keurbooms system. The Keurbooms Estuary downstream is a Warm Temperate permanently open estuarine system classed as Vulnerable and Poorly Protected. Land transformation for agriculture and development, as well as alien tree infestation in this area, have modified the natural dynamic of the systems. The study area does not fall within any Strategic Water Source Areas for surface water or groundwater (Le Maitre et al. 2018).. A Strategic Water Source Areas (SWSA) is where the water that is supplied is of national importance for water security. Regardless of its location outside of any SWSAs, the causeway replacement will not impact any SWSAs, as there will be no reduction in water volume and no permanent changes to water quality. The proposed project has a Water Use License (WUL) in terms of Chapter 4 and Section 21 of the National Water Act No. 36 of 1998, prior to the commencement of activities. Due to the low risk the activities pose, after mitigation, the project falls within the Ambit of General Authorisation for Section 21 (c) and (i) water uses. The WUL was obtained on the 8th of December 2025. All GA conditions apply to the proposed project.
ANIMAL SPECIES, TERRESTRIAL BIODIVERSITY AND PLANT SPECIES ASSESSMENT			
Enviro Works	Megan Smith & Nicolene Cloete (Ecological Specialists)	Low	**Terrestrial Theme:** During the investigation the specialist has regarded the site to be of low terrestrial sensitivity as opposed to the screening tool regarding the area as being very high. The specialist concluded that based on the area already being degraded and the ecological state already been disturbed in the area, and that its unlikely to affect the Garden Route Biosphere Reserve (GRBR). The site is highly vegetated by alien invasive species and therefore will minimally impact on the GRBR and its ecological state.

Specialist Company	Specialist Details	Sensitivity of receptors	Summary of findings
			The specialist also concluded the compliance statement that the construction site footprint has a low value of Ecological Importance (SEI). **Plant Theme:** During the investigation the specialist has regarded the site to be of low plant sensitivity as opposed to the screening tool regarding the area as being a medium sensitivity. The site is highly degraded and disturbed. The specialist recorded (30) plant species on site, each of them are rated as 'least concern' or 'not evaluated' in accordance with the Red List Status. No Species of Conservation Concern was found on site. **Animal Species Theme:** During the site inspection, no species of conservation concern were found within the proposed development footprint. This is likely a result of the degraded nature of the site creating unsuitable habitat for these species. It is expected that the faunal species in these areas are limited to avifauna, as well as smaller reptiles, amphibians, and mammals all of which are common and non-threatened. Given that the project only entails upgrades, the species would have the ability to seek refuge in case of any disturbances in the area. No SCC was found on site.
AVI-FAUNAL COMPLIANCE STATEMENT			
MORA Ecological Services (Pty) Ltd	Mokgatla Molepo & reviewed by Megan Smith from Enviro Works	Low	Before the specialist went on site, the specialist confirmed highly sensitive species that can occur on site and the likelihood of the species occurring are Stephanoaetus coronatus, Neotis denhami and the Circus ranivorus. However, after conducting the site inspection, the specialist confirmed that the likelihood of the species being on the site is regarded as low to very low in likelihood. In addition, the site visit verified the specialist findings concluded that there are zero (0) mammals, zero (0) amphibian species and thirteen (13) Avian species. The specialist has further confirmed there was no presence of the Species of Conservation Concern (SCC).

7. GENERAL ENVIRONMENTAL MANAGEMENT

The following general management measures are intended to protect environmental resources from pollution and degradation during all phases of the project life cycle. These measures must be implemented as and where applicable, reasonable and practicable during the pre-construction, construction and post-construction rehabilitation and operational (maintenance) phases of the proposed project.

7.1 Code of Conduct

The purpose of the Code of Conduct (CoC) is to minimise the impact of the activities associated with the construction phase on the environment. The rules and regulations prescribed in this CoC are intended to ensure that the impacts on the environment are not prejudiced by the construction activities. Failure to adhere to or any breach of this CoC will result in a fine being levied against the offending or defaulting party / individual.

Labourers during the construction phase must conserve the natural environment, endorsing the principles of sustainable use and minimum impact. They must also be sensitive to the impact of their operation on the environment within which they work and minimise any adverse impacts.

This EMPr forms an integral part of the activities during the construction phase and as such, is legally enforceable. In addition to the restrictions and controls provided for in this EMPr, the environmental controls comprise of the following:

- **Engineers**

Unless otherwise stated by the Holder of the Environmental Authorisation (hereafter referred to as the Holder), only a registered engineer must be appointed for the construction phase of the project. The engineer must provide work or services of quality and scope, and to a level which are commensurate with accepted standards and practices. The engineer must be impartial in decision-making, provision of advice and judgment.

- **Contractors and sub-contractors**

Unless otherwise determined, only appropriately registered contractors must be appointed. It will be the responsibility of the Holder / engineer to ensure that the contractors abide by and comply with the rules and regulations of the Code of Conduct. Contractors shall be responsible for their sub-contractors and employees whilst they are on the development property at all times.

- **Rules and Regulations**

It is of vital importance that engineers, and contractors understand and acknowledge that they are working on a site that has undergone an environmental assessment, and if authorised will equire compliance with all relevant permits/licenses and this EMPr. The role players should agree to conform to all environmental controls specified in this EMPr, and any additional environmental permits/licenses, as well as any additional input by the ECO.

In addition to the EMPr, the environmental controls comprise of the following:

- **Plan Controls**

A copy of the approved and signed project plans must be available on site during the construction phase of the proposed cable infrastructure upgrade project. Variations of the building plans must be approved by the engineer / *Holder* prior to being implemented.

• Site Tidiness

The contractor must always keep the appearance of the site neat and tidy. Building rubble must be removed from site at regular intervals, and litter must be removed from the site daily (if not, stored in appropriate receptacles). Refuse bins must be available on site which waste can be placed in. The bins must be emptied on a regular basis, as required, and the waste taken to a licensed local waste disposal facility.

• Safety

The contractor must comply with the Health and Safety Act (Act No. 85 of 1993), as amended (OSHA), together with such regulations promulgated thereunder. Telephone numbers of emergency services, including the local firefighting service, shall be displayed conspicuously in the Contractor's office near a telephone. No weapons (firearms, airguns, daggers etc.) are permitted on site.

7.2 Site Access and Traffic Management

All construction vehicles need to adhere to traffic laws and regulations, drivers must be sensitised to the fact that they are working in an area with a potentially high volume of foot and vehicle traffic. The speed of construction vehicles and other heavy vehicles must be strictly controlled to avoid dangerous conditions for other road users. As far as possible, care must be taken to ensure that the local traffic flow pattern is not significantly disrupted, and vehicle operators therefore need to be educated in terms of "best-practice" operation in order to minimise unnecessary traffic congestion or dangers. These practices include, but are not limited to, not unnecessarily obstructing the access point or traffic lanes used to access the site; considering the load carrying capacity of road surfaces and adhering to all other prescriptive regulations regarding the use of public roads by construction vehicles.

Adequate signage that is both informative and cautionary to passing traffic must be erected to warn other road users (motorists and pedestrians) about the presence of construction vehicles, particularly at the point where construction vehicles enter/ exit the site warning them of the construction. Signage would need to be clearly visible and include, amongst others, the following:

- Identifying working area as a construction site;
- Cautioning against relevant construction activities;
- Prohibiting access to construction site;
- Clearly specifying possible detour routes and / or delay periods;
- Possible indications of time frames attached to the construction activities, and;
- Listings of which contractors are working on the site.

Other mitigation measures include:

- The ECO must do awareness training with the contractors and all labourers that will be working on site and must highlight the traffic related risks before construction commences.
- Where possible, construction traffic that may obstruct traffic flow on the surrounding roads must be scheduled outside of peak traffic times.
- Ensure appropriate behaviour of operators of construction vehicles.
- If needed, appropriate traffic management measures and/ or points men (traffic marshals) must be utilised to assist vehicles entering/ exiting the site.

7.3 Site Demarcation

The working areas should be clearly demarcated on site during the pre-construction or construction phases of the development, as appropriate.

7.4 Construction Working Area

Prior to the commencement of any land-clearing or construction activities, the ECO must be advised of the project programme providing an indication of when clearance and earthworks will commence.

Prior to the commencement of any land clearance or construction activities, the outer boundary of the working area must be surveyed and demarcated by means of an appropriate method. This demarcation boundary is to ensure that land clearing and construction activities are restricted to only the area strictly required for the proposed activities, and to prevent unnecessary disturbance of soil surfaces and vegetation outside of the approved footprint.

The demarcation should be retained and maintained for the duration of the construction period or up until the conclusion of the rehabilitation phase. If changes to the extent of the working areas are required, such changes may only be applied once the approval of the appointed ECO, Site Engineer or where applicable, the Competent Authority (DEA&DP) has been obtained.

7.5 No-Go Areas

All areas beyond the approved areas of clearance (Areas of Indigenous Vegetation within the Area of Investigation) must be considered "no-go" areas. This approach aims to avoid disturbance activities from expanding beyond the approved Area of Investigation.

It is recommended that the working areas be demarcated with a suitable material that can be easily identified and noticed. The method of demarcation is to be determined by the ECO and the appointed Contractor. Danger tape flagging (pieces of danger tape tied to twine or rope) may be utilised as a short-term solution. However, the use of only danger tape is not recommended for long-term demarcation as this will easily become untidy and blown away by the wind, resulting in pollution.

For the purpose of this project, all areas beyond the working areas stipulated above are considered no-go areas.

No-go areas must be considered as off-limits to all construction workers, vehicles and machinery during all phases of the development. No vegetation may be cleared beyond the working areas as stipulated above (unless in accordance with an approved alien invasive management plan and under the supervision of the ECO), and no dumping of any material (waste, topsoil, subsoil etc.) may occur in these areas. Construction workers must be informed of the no-go areas, and if necessary, appropriate signage can be used to enforce the demarcation. Any interaction with no-go Areas must be consulted with between the Contractor and ECO prior to any actions.

No vegetation clearing shall take place without approval of the method statement by the appointed engineering team. No vegetation clearing shall take place until the site boundaries and "No-Go" areas are clearly demarcated. Before clearing of vegetation, the Contractor shall ensure that all litter and nonorganic material is removed from the area to be cleared. Vegetation clearing of the site shall be limited as far as possible. Clearing may not extend beyond the approved Area of Investigation / footprint assessed as part of the Basic Assessment Process. If large areas are to be cleared, consideration should be given to a phased clearing approach to limit potential impacts resulting from

large areas standing cleared for extended period of time. Indigenous plant material can be removed from cleared areas and may be stockpiled for mulching.

Alien vegetation may be used for mulching if it is not in seed. All remaining alien invasive vegetation must be removed and disposed of at an approved landfill site.

In accordance with this proposal, the No-Go Area should be considered any area beyond the proposed development footprint.

7.6 Demarcation of the Site Camp

The area chosen for the site camp and associated facilities must be the minimum area reasonably required to accommodate the site camp facilities, and which will involve the least disturbance to the environment. It is recommended that easily accessible, transformed areas be used for the site camp. Site selection must be done in consultation with the ECO.

7.7 Site Camp and Associated Facilities

The set up and organisation of the site camp is paramount to ensuring compliance. An environmental file is to be created by the contractor and be situated within the site camp throughout the construction phase and with the applicant thereafter. The environmental file is to include the following;

- A copy of the Environmental Authorisation.
- A copy of the General Authorisation or any other relative permits.
- A copy of the approved EMPr.
- Updated waste slips.
- Disposal slips or cleaning slips (ablution cleaning).
- All EMR's (Environmental Monitoring Reports) and ECO instructions.
- Copies of Environmental induction register/s.
- The Protocol for Chance Palaeontological Findings.
- A Complaints Register.
- Updated method statements.
- Any and all emergency procedure/s applicable to site activities.
- An Incident Register.

Method Statements (MS) are written submissions by the Contractor to the engineer assigned to the project. (with input from the ECO) In response to the requirements of this EMPr or to a request by the engineer or ECO. A minimum requirement will consist of the listed MS's below. The ECO and/or Competent Authority have the authority to request method statements for activities, including but not limited to:

- Establishment of site camp and stockpile area.
- Environmental induction training
- Site clearing
- Cement/ concrete batching, disposal and emergency contingencies.
- Topsoil and sub-soil storage/ stockpiling.
- Storage of fuels and hazardous chemicals and emergency contingencies.
- Waste management system.
- Storm water management and control.
- Dust Mitigation
- Alien invasive plant species management.
- Fire Control & Fire Emergency Plan.
- Emergency preparedness plan / emergency response procedure.

- Post-construction rehabilitation.
- Working in the watercourse and managing diversions;
- Concrete works near water (mixing, washout and curing);
- Fuel, oil and hazardous substance storage and spill response;
- Topsoil stripping, storage and reuse;
- Alien vegetation clearing and disposal;

Further MS's may be requested by the Engineer or ECO. The Contractor shall be required to prepare method statements for several specific construction activities and/or environmental management aspects as specified.

It is the Contractors responsibility to ensure that the required method statements are drafted and submitted. The Contractor shall not commence with an activity for which a method statement is required until the RE and the ECO has approved the relevant method statement.

Method statements must be submitted at least seven (7) business days prior to the date on which approval is required (start of the activity).

Should an MS be rejected, this will be done so with comment. The seven-day submission period will commence once again on re-submission of the MS.

Failure to submit a MS (either required in terms of the EMPr, or as required before specific works highlighted by the ECO or Engineer), may result in suspension of the activity concerned until such time as a MS has been submitted and approved. An approved MS shall not absolve the Contractor from any of his obligations or responsibilities in terms of the contract. However, any damage caused to the environment through activities undertaken without an approved MS shall be rehabilitated at the contractor's cost and to the satisfaction of the ECO and Engineer. The method statements shall cover relevant details with regard to:

- Construction procedures (including vegetation clearance, earthworks, and installation of
- services) and location of the construction site.
- Start date and duration of the procedure.
- Materials, equipment and labour to be used.
- How materials, equipment and labour would be moved to and from the site as well as on site
- during construction.
- Storage, removal and subsequent handling of all materials, excess materials and waste
- materials of the procedure.
- Emergency procedures in case of any reasonably potential accident / incident which could
- occur during the procedure.
- Mitigation measure that will be employed.
- Compliance / non-compliance with the EMPr Specification and motivation if non-compliant.

The following general management measures pertaining to the set-up, operation and closure of a site camp must be applied where appropriate, reasonable and practicable:

7.7.1 Fencing & Security

The site camp area must be secured to prevent any unauthorised individuals from entering the site camp and possibly getting injured or posing a safety and/or security risk. Adequate signage must be displayed, designating the site office / camp as a restricted area to non-personnel. If required, the site

camp and associated areas may be fenced off along the demarcated boundaries of these areas, preferably with 2m high fence and shade netting or similar. A site register is recommended to record any daily visitors and activities, for record keeping purposes.

7.7.2 Fire Fighting Equipment

No less than 2 fire extinguishers must be present in the site camp. The extinguishers must be in a working condition and within their service period. A fire extinguisher must always be present wherever any "hot works" (e.g. welding, grinding etc.) are taking place. It is recommended that all construction workers receive basic training in fire prevention and basic fire-fighting techniques and are informed of the emergency procedure to follow in the event of accidental fires. Open fires and smoking should be prohibited on site. However, it is noted that despite this, incidents may arise where fires are created after hours by security, and labour may attempt to smoke on site. In these cases, measures should be taken to ensure that activities are managed appropriately. Therefore, should a fire be created on site after hours, the following procedure must be followed:

- Ensure that the security is aware that creating fires within the site is prohibited.
- Should they choose to create one beyond the demarcated area, they are solely responsible for the management.
- He/she should ensure that:
    - Utilise a metal barrel and contain the fire within, outside of the proposed site.
    - It may not be positioned close to any vegetation, no-go area, natural areas or flammable material.
    - Do not leave fire unattended.
    - Monitor and extinguish any embers that may escape.

Should the contractor choose to, he/she may designate a smoking area within the site camp, of which the contractor is solely responsible for the management of this activity on site, and any incidents that may occur. It must contain the following features:

- Appropriate signage.
- A barrel/bucket filled to 50% capacity with sand, for disposal of used cigarettes.
- An appropriately weighted lid, that cannot be easily displaced by volatile weather conditions.
- The bin and designated area must be positioned in such a manner that it is not directly affected by heavy winds.
- This bin must be emptied as is necessary and must not be allowed to reach 75% capacity.

In the case of accidental fires, the contractor must (if required/significant) alert the Local Authority's Fire Department as soon as a fire starts prior to the fire becoming uncontrollable.

7.7.3 Waste Storage Area

Sufficient bins for the temporary storage of construction related waste must be provided inside the site camp and/or at the working area and must be located in such a way that they will present as little visual impact to surrounding residents and road users as possible. Sufficient signage and awareness must be created to ensure that these bins are properly used.

7.7.4 Hazardous Substances Storage Area, spills and leaks

Fuels, chemicals, lubricants and other hazardous substances must be stored in a demarcated, secured, bunded and clearly sign-posted area within the site camp. Sufficient signage and awareness must be created to ensure that these bins are properly used. It must be ensured that all hazardous storage containers and storage areas comply with the relevant SABS standards to prevent leakage. Ensure that when substances are transferred, this is done on an impermeable and/or bunded surface, to contain any spillage. Spillage, should it occur, must be disposed of appropriately.

All hazardous materials or substances (e.g. petrochemicals, oils, etc.) must be stored on site only under controlled conditions. All hazardous material and substances shall be stored in a secured, designated area that has restricted entry. All storage must take place using suitable containers to the approval of the RE. Hazard signs and data sheets indicating the nature of the stored materials shall be displayed on the storage facility or containment structure. Symbolic safety signs depicting "No Smoking", "No Naked Lights" and "Danger" are to be provided and are to conform to the requirements of SABS 1186.

Where there may be suitable storage infrastructure (existing yards and fuel tanks etc.), such as those used for current/existing activities on site these may be used provided if this is approved by the engieer. All necessary safety requirements in terms of bunds, spill kits and signage must be in place. Fuel storage tanks are permitted to be temporarily established on site for construction purposes, provided that the contractor ensures full compliance with the following:

- All local by-laws relating to community and fire safety must be complied with. Most loca authorities require that a permit be obtained from the relevant Fire Department. This permit should be kept on file.
- The storage tank capacity may not exceed 9000 litres.
- The storage tank may not be on the premises for a period exceeding that stipulated by the
- The tanks must be removed on completion of construction or the once the contractor responsible for the tanks has completed their work on site.
- A tank must be erected at least 3.5 metres from boundaries, buildings and other flammable substances or combustible materials.
- A temporary tank must have a bund wall with 110% capacity of the tank's total storage capacity.
- The fuel tank shall be steel and maintained by the fuel suppliers and/or Contractor.
- The floor and wall of the bund area shall be impervious to prevent infiltration of any spilled / leaked fuel into the soil.
- The floor of the bund shall be sloped towards an oil trap or sump to enable any spilled fuel to be removed.
- The sump must have a lock-off valve that can only be opened in an emergency.
- Should a mini-mobile type trailer tank or bowser be used on site, the following specifications apply:
- The tank will be maintained by the fuel suppliers and/or Contractor and is to be kept clean and leak free.
- The trailer is to be kept on site with a drip tray at all times and is to be removed from site at the end of every day unless it is kept in a bund area of 110% of the tank volume.

A hydrocarbon bioremediation product approved by the engineer with input from the ECO must be stored on site and near the fuel stores for any emergencies. Once a purpose-manufactured hydrocarbon spill
remediation product has been used or has been used to treat contaminated materials (soil, rubble etc.) it must be disposed of, with the treated material, at a facility licensed to receive such waste.

Areas for storage of fuels and other flammable materials shall comply with standard fire safety regulations and may require the approval of a fire prevention officer. The contractor must ensure that there is adequate firefighting equipment at the fuel stores and that persons are adequately trained to use this equipment.

All empty drums and externally dirty drums shall be sealed and stored in the bunded area. If fuel is dispensed from 200 litre drums, the proper dispensing equipment shall be used, and the drum shall not be tipped in order to dispense fuel. The dispensing mechanism of the fuel storage tank shall be stored in a waterproof container or within the bund area when not in use.

The location of suitable areas for maintenance and refuelling must be identified by the engineer in collaboration with the ECO. The ECO must be involved in the decision and must provide guidance from an environmental perspective prior to commencement of the proposed action.

Any significant accidental release of a hazardous substance during the construction and postconstruction phase of the project must be reported to the relevant authorities, including the Western Cape Department of Environmental Affairs and Development Planning's Directorate: Pollution and Chemicals Management, in terms of Section 30(3) of the NEMA.

The contractor shall ensure that all employees are aware of the procedure to be followed for dealing with spills and leaks, which shall include notifying the, RE and ECO. The Contractor shall ensure that the necessary spill response hydrocarbon remediation materials (e.g. ChemCap, spill-sorb, drizzat pads, Enretech, Oil Cap or peat moss) and equipment for dealing with spills and leaks are available on site at all times. The source of the spillage shall be isolated. The Contractor shall contain the spillage using sand berms, sandbags, pre-made booms, sawdust or absorbent materials. Treatment and remediation of the spill areas shall be undertaken to the reasonable satisfaction of the engineer.

The Contractor shall submit his emergency procedure prior to bringing on site any such substances. All spills or accidents involving such materials are to be recorded by the Contractor. The Contractor is responsible for ensuring that these records are submitted to the ECO. The cleanup of spills and any damage caused by the spill shall be for the Contractor's account.

7.7.5 Potable Water

An adequate supply of potable water must be provided to construction workers at the site camp. It is the Contractors duty to ensure that the labour has adequate access to potable water throughout construction phase, and to monitor weather conditions, to ensure that labour has enough drinking water on hotter days, or construction activity must cease, until conditions are safe to continue. To conserve water, it is recommended that buckets of water are used to clean tools and machinery, rather than running water.

The Contractor shall make safe drinking water fit for human consumption available at the site offices and all other working areas. All drinking water must be from a legal source and comply with recognised standards for potable use. No water may be abstracted from streams, rivers, wetlands or boreholes unless the necessary water use authorisations are in place. If water is stored on site, drinking water and multi-purposed water storage facilities shall be clearly distinguished and demarcated. No water is to be wasted on site. Any leaks must be reported and repaired immediately. All pipes, taps and associated infrastructure, were made available to the Contracting team for use, are to be maintained in good working order.

7.7.6 Ablution Facilities

Chemical toilets must be kept at the site camp, on a level surface and secured from blowing over, and must be located in such a way so as to ensure that the toilets will not cause any form of pollution. The supply toilet facilities must comply with the requirements of the SABS and the OSHA.

The ablution facilities must not be linked to a river system/drainage lines/the ocean in any way. Toilets must be serviced regularly and kept in an orderly state. The contractor must ensure that no spillage occurs when the toilets are cleaned, serviced or moved. The toilet facilities must be emptied on a weekly basis by an appropriately registered service provider. Proof of this weekly servicing must be obtained and filed in the Environmental File on site. The contractor shall ensure that chemical toilets are emptied before the builders' holidays and that no spillage occurs when they are emptied. All contents must be removed from the site. Under no circumstances may waste be discharged into the environment or be buried on site.

Performing ablutions outside of the provided toilet facilities is strictly prohibited and the ECO would need to regularly inspect the state of the chemical toilets to ensure compliance.

The Contractor is responsible for the erection and maintenance of adequate ablution facilities and washing areas and for enforcing the use of these facilities. Under no circumstances may the natural environment be used as a toilet or cleaning area. The Contractor shall be responsible for ensuring that

all ablution facilities are maintained in a clean and sanitary condition to the satisfaction of the ER. All temporary portable toilets shall be secured in such a manner so as to prevent them toppling due to wind or any other cause. Plumbed toilets must have no leaks or malfunctioning valves. No chemicals, oils or similar construction related materials are to be disposed of via the toilets on site. Ablution facilities (chemical toilets, etc.) must be provided at all construction camp areas where there will be a concentration of labour. Toilet paper must be provided.

7.7.7 Eating Area & Rest Area

A dedicated area within which construction workers can rest and eat during breaks must be provided within the site camp. Seating, shaded areas and waste bins must be provided. No feeding of wild animals shall be permitted. Food and food products are to be stored in such a way as not to attract scavenging animals.

Housekeeping:
The site camp and related site camp facilities must be kept neat and orderly at all times in order to prevent potential safety risks and to reduce the visual impact of the site during construction.

7.7.8 Vehicle & Equipment Maintenance Yard

All vehicles must be regularly inspected for leaks. Re-fuelling must take place on a sealed surface area (impermeable surface or underlain by a drip tray) to prevent ingress of hydrocarbons into the soil. Where possible, construction vehicles and equipment that require repair must be removed from site and taken to a workshop for servicing. If emergency repairs and/or basic maintenance of construction vehicles or equipment are necessary on site, such repair work must be undertaken within the designated maintenance yard area away from any watercourses. Repairs must be conducted on an impermeable surface, and/or a tarpaulin and/or drip trays must be laid down prior to emergency repairs taking place, in order to prevent any fuel, oil, lubricant or other spillages from contaminating the surrounding environment. All spills that occur, should be immediately cleaned up and treated accordingly.

7.8 Protection of Fauna

Construction workers are to be sensitised to the fact that they may encounter fauna during the construction period. This must be included in the environmental awareness training completed with all site personnel before any construction commences. Environmental Awareness Training must educate labour on conduct in terms of faunal management throughout construction phase, including but not limited to:

- No person/s may harm, kill, capture or keep any fauna.
- Appropriate access control must be put in place to reduce the risk of animal species gaining access to the development area.
- Where possible, avoid interactions, particularly with fauna that can inflict harm, if such fauna is identified on site contact local SPCA other animal protection and removal services.
- No domestic animals are permitted on the sites.
- Maintain good housekeeping, so that fauna cannot hide amongst waste and material.

If any fauna is encountered by construction workers, the ECO is to be notified. If the ECO is not on site, the site manager is to be informed. Rescued fauna must be released into a nearby area of similar habitat away from any construction. Contact details for animal rescue services and/or snake wrangler, from the local area, should be available on site, in case of an emergency.

7.9 Indigenous Vegetation Clearing and Protection

The following measures must be implemented:

- It is important that clearing activities are kept to a minimum and take place in a phased manner. This allows animal species to move into safe areas and prevents alien invasive encroachment, and wind and water soil erosion of the cleared areas. Blanket clearing of vegetation must be limited to the approved development footprint.
- Any alien vegetation that is cleared must be disposed of in accordance with the Alien Invasive Management Programme and in consultation with the ECO. Chipping of alien invasives must occur immediately and must not be stored on site for more than 90-days.
- Workers are NOT allowed to collect any flora species. All flora remains the property of the landowner and must not be disturbed, upset or used without their expressed consent.
- A vegetation monitoring programme shall be in place, not only to ensure compliance with this EMPr throughout the construction phase, but also to monitor any post-construction environmental issues and impacts such as increased surface runoff.

Where indigenous vegetation must be cleared for the development, the following measures must be implemented:

- An Independent Environmental Control Officer must oversee compliance with all the prescribed environmental requirements and mitigation measures listed here and will be on site regularly.
- Only the areas required to fulfil the needs of the construction activities and access to the construction site must be cleared of vegetation.
- Vegetation outside of the approved footprint must not be cleared, unless permitted in accordance with the alien invasive management plan, and under the supervision of the ECO.
- Land clearing and earthmoving activities should not be undertaken during strong winds or heavy rainfall events, where possible.
- Trees and shrubs that are directly affected by the operations may be felled or cleared but only by the expressed written permission of the ECO, and under the applicable permit obtained in terms of the Nature Conservation Ordinance (19 of 1974, amended 2000), if applicable.
- Stripped vegetation should be temporarily stored during operations and to be used later to stabilise slopes/soils. This excludes alien invasive species.
- Ensure any open spaces/bare areas are kept clear of alien plant species through the adoption of an Alien Invasive Management plan.
- No unpermitted/uncontrolled fires are permitted on site.
- Rehabilitation of the vegetation of the site must be done as described in the approved Rehabilitation Plans.
- To limit adverse impacts to the surrounding environment, the contractor and labourers must take great care if cement is to be mixed on site. Cement is to be mixed on thick plastic sheets or in large buckets that are bunded. Any spillage must be cleaned up immediately. Cement water must also be contained in the above manner and allowed to dry out, and then removed from the site. Highly alkaline cement water poses a definite threat to the soil and seed banks, should the water disperse into surrounding areas.

7.10 Alien Invasive Species Control

Several exotic invasive and other weed species were noted on the site, ranging from a few scattered individuals to dense infestations. The existing infestations and any further spread of these tree species pose a significant negative risk to the environment by causing direct habitat destruction, increasing the risk and intensity of wildfires, and reducing surface and sub-surface water. Alien Invasive Plants require removal according to the Conservation of Agricultural Resources Act 43 of 1983 (CARA) and the National Environmental Management: Biodiversity Act (10 of 2004; NEMBA): Alien and Invasive Species Lists (GN R598 and GN R599 of 2014).

Removal of species should take place throughout the construction, operational, and maintenance phases.

7.11 Topsoil and Subsoil Management

In accordance with the Search and Rescue Programme and the Rehabilitation Programme, and under the guidance of the appointed appropriately registered specialist, topsoil must be removed from any area where physical disturbance of the surface will occur, including within the footprint of the development site (working area) and possibly within the site camp, ablution area, vehicle maintenance yard, refuelling area and temporary waste storage area. Topsoil removal and stockpiling must be undertaken only after consultation with the ECO. The following soil management measures must be implemented:

- Topsoil & subsoil that has been excavated must be stockpiled separately, along & adjacent to the excavation pits and must be covered with a suitable cover crop or tarpaulin.
- Excavated topsoil and subsoil must be stockpiled for the duration of the active construction period and utilised for the final landscaping and rehabilitation of disturbed areas on site.
- Excavated subsoil must be stockpiled separately from topsoil.
- The topsoil & subsoil storage area must be located on a level area outside of any surface drainage channels outside the riparian zone, and at a location where it can be protected from disturbance and river flow/floods during construction and where it will not interfere with construction activities.
- Topsoil and subsoil stockpiles must be adequately protected from being blown away or eroded by storm water. If necessary, shade cloth or other suitable measures must be used to stabilise and protect the stockpile from wind/water erosion. Topsoil stockpiles must not be covered with tarpaulin, as this may smother and decrease the virility of topsoil. Stockpiles may not exceed 2 m in height.
- Handling of topsoil must be minimised as much as possible, and the location of the topsoil berm must be chosen carefully to avoid needing to relocate the topsoil berm at a later date.
- Ideally, topsoil is to be handled twice only, once to strip and stockpile, and once to replace, level, shape and scarify.
- No stockpiling of topsoil is to take place within close proximity to any watercourse; in other words, stockpiles must be located outside the 1:50 year flood level of any watercourse.
- Topsoil shall be kept separate from overburden and shall not be used for building or maintenance of roads.
- Topsoil stockpiles must not exceed 1.5 m in height and must not be compacted.
- If soil stockpiles will be stored for an extended period of time, the stockpiles must be kept clear of weeds and alien vegetation growth by regular weeding, (or application of herbicides if agreed with the ECO).
- Soil material that will not be re-utilised on site may be removed from site and taken to an appropriate site for re-use or disposal.
- Note that the topsoil must be the final layer applied to a rehabilitated/ re-landscaped site, after subsoil/ spoil material has been placed and shaped on the site.

7.12 Integrated Waste Management Approach

It is recommended that an integrated waste management system is adopted on site. The system must be based on waste minimisation and must incorporate reduction, recycling, re-use and disposal where

appropriate. Separate waste bins/skips that are weather and animal proof must be provided for recyclable waste, general waste and hazardous waste. Recovered builder's rubble & green waste may be stockpiled on the ground within the site camp, or in separate skips until removal. These bins/skips must be emptied, and the waste taken to a registered recycling facility. The receipts from the facility must be kept on file and must be available on request.

The non-recyclable and non-reusable waste (e.g. builder's rubble, etc.) generated on site must be disposed of at a landfill site licensed in terms of the applicable legislation. The receipts from the facility must be kept on file and must be available on request.

Chemical toilets present a risk to the surrounding environment and must be managed accordingly. Chemical toilets must be kept within the site camp (not be linked to the storm water drainage system), on a level surface and secured from blowing over. Chemical toilets must be regularly emptied, by a registered cleaning company and the waste disposed of at an appropriate wastewater disposal/ treatment site. Care must be taken to prevent spillages when moving or servicing chemical toilets.

Hazardous substances such as diesel, oil and detergents will be present on site throughout the construction phase of the proposed development. Hazardous substances pose a greater risk to the surrounding environment than general substances and therefore need to be managed accordingly. A designated storage area within the site camp that is clearly demarcated must be set aside for the storage of hazardous substances and is to be treated as a no-go zone to unauthorised personnel. Appropriate signage, Material Safety Data Sheets (MSDSs), recently serviced fire extinguishers and spill kits should accompany the hazardous substances. Appropriate storage of hazardous substances is important while drip trays should always be utilised when decanting of hazardous substances and when refilling chemical/ fuel storage tanks. If any spills do occur, the solid must be excavated and disposed of as hazardous waste.

Cement and concrete batching will be permitted on site, but may only take place on designated impermeable, bunded surfaces, as agreed with the ECO. Used cement bags should be disposed of as hazardous waste on site.

7.13 Erosion Control and Stormwater Management

Stormwater must be managed in accordance with the Municipal Stormwater Management By-law and based on Sustainable Drainage Systems (SUDS). The SUDS systems attempt to maintain or mimic the natural flow systems as well as prevent the wash-off of urban pollutants to receiving waters. Further to this, the EA holder or appointed contractor must ensure that:

- Where necessary, Stormwater Management Plans must be developed for the site and should include the following:
    - The management of stormwater during construction.
    - The installation of stormwater and erosion control infrastructure.
    - The management of infrastructure after completion of construction.
- Temporary drainage works are implemented, where/when required, to prevent sediment-laden surface water from draining into river systems in proximity to the site. Stormwater must be prevented from entering or running off site.
- Sheet runoff from access roads and the walkways is slowed down by the strategic placement of berms.
- As far as possible, all construction activities in close proximity to watercourses should occur in the low flow season, during the drier months.

- Diversion channels should be constructed ahead of the open cuts, and above emplacement areas and stockpiles to intercept clean runoff and divert it around disturbed areas into the natural drainage system downstream of the site.
- As much indigenous vegetation should be maintained and encouraged to minimise erosion;
- All soil compacted because of construction activities as well as ongoing operational activities falling outside of project footprint areas should be ripped and profiled; and
- To ensure that site is not subjected to excessive erosion and capable of drainage runoff with minimum risk of scour, their slopes should be profiled at a maximum 1:3 gradient.
- Rehabilitation is necessary to control erosion and sedimentation of all eroded areas (where works took place).
- It is importation that the rehabilitation of site is planned and completed in such a way that the runoff water will not cause erosion.
- A monitoring plan for the development and the immediate zone of influence should be implemented to prevent erosion and incision.

The scale and nature of the erosion and stormwater control measures implemented on site must be appropriate to the conditions on site, and sufficient to achieve the desired outcomes (soil preservation, prevention of flooding, stormwater control) to the satisfaction of the ECO and consulting engineer.

The prevention of soil erosion can be initiated by designating specific areas for stockpiling of raw materials with consultation of the ECO. No stockpiling is to occur on or near slopes or water resources and all stockpiling areas must be approved by the ECO before stockpiling occurs.

Stockpiles need to be effectively managed and maintained as they have the potential to contribute to runoff and erosion. To prevent this, the following management measures must be implemented.

- Stockpiles of topsoil & spoil material must be protected from wind & water erosion.
- Stockpiles of earth material may not be located within any storm-water drainage pathways and must be outside of the reach of potential flood waters.
- Any erosion runnels/ gulleys/ channels that form on site must be infilled with appropriate material, compacted, rehabilitated as needed and appropriate erosion control measures put in place to prevent recurrent erosion at that site. Rehabilitation of erosion channels should be ongoing during the construction phase and not left until the end of the construction period.
- Stockpiles must not be located within 50 metres of the edge of any wetland habitat.

It may be necessary to implement small-scale erosion protection measures at the construction site, to prevent soil erosion. Such measures may include the use of shade netting, geo-fabric, brush-packing or similar barriers in areas susceptible to erosion and along exposed slopes. The storm water management plan should adhere to the principles of sound storm water management as well as the Municipal Stormwater Management By-law and based on Sustainable Drainage Systems (SUDS). The storm water management system must be implemented on site and must be properly maintained to ensure that contaminated run-off from the construction site is prevented from flowing into the watercourse.

Cleared areas and any other area susceptible to erosion should be provided with a suitable cover and stabilised as soon as possible via the implementation of appropriate erosion control measures. This may include use of cut-off drains, temporary/permanent drainage channels, brush-packing, mulching, planting or sodding, use of environmentally benign soil binders, use of geo-textile or other coverings. The appropriate measures should be selected by the contractor in consultation with the Engineer & ECO.

7.14 Excavations and Earthworks

Any major earthworks with bulldozers and heavy machinery must be under constant supervision and operators are to be aware of all the environmental obligations, as there is always the potential to inflict damage to the sensitive areas. Any unnecessary or excessive heavy machinery movement must be kept to a minimum i.e. only what is absolutely necessary. Areas to be excavated must be clearly demarcated. Areas, which have already been excavated and entail fairly significant earthworks, must be similarly demarcated to avoid the spreading of construction activities into more sensitive areas.

All excavated material must be stored on a flat surface away from any drainage line, sloped areas or area susceptible to erosion. The location must be decided in consultation with the ECO. Stored material must be protected from wind and water erosion, and this may entail covering the material with suitable shade cloth material or similar (if and when necessary). The shade cloth may need to be weighed down in such a manner that any stream flow is directed away from the stockpile, reducing the risk of erosion.

Whenever any excavation is undertaken, the following procedures shall be adhered to:

- Topsoil shall be handled as described in this EMPr.
- Excavations shall take place only within the approved demarcated site.
- Excavations must follow the contour lines where possible.
- Excavations shall be temporarily fenced shade cloth or barrier fencing to obstruct visual impacts and to prevent the harm to animals or unauthorised persons that may fall into excavations.
- The construction site will not be left in any way to deteriorate into an unacceptable state.
- Once excavations have been filled with overburden and coarse natural materials and profiled with acceptable contours (including erosion control measures), the previous stored topsoil shall be returned to its original depth over the area.
- Rehabilitation of the site shall take place according to the Rehabilitation Programme.

7.15 Visual Impact.

The proposed development has the potential to cause a visual impact during the construction and operational periods. To minimise the potential visual impact, all working areas, storage facilities, stockpiles, waste bins, elevated tanks and the site camp should be located in such a way that they will present as little visual impact to surrounding residents and road users as possible. Waste must be managed according to this EMPr. Good housekeeping practices on site must be maintained to ensure the site is kept neat and tidy. The site camp may require visual screening via shade cloth or other suitable material. The use of reflective materials and excessive lighting should be avoided, and construction vehicles must enter and leave the site during working hours, where possible (07:30-17:30).

7.16 Noise Management.

Additional noise is expected during the construction period due to construction activities. It is important that noise complaints register should be opened and that all excavations and earth-moving activities must be restricted to normal construction working hours (7:30 – 17:30) as far as possible. Work on site must be well-planned and should proceed efficiently so as to limit the duration of the disturbance. This is to be done by ensuring that all equipment is in good working condition and fitted with mufflers/exhaust silencers in necessary. Noise levels must comply with the relevant health & safety regulations and SANS codes and should be monitored by the Health & Safety Officer as necessary and

appropriate, and all affected parties must be informed of the excessive noise factors. In addition to the beforementioned measures the following must be implemented:

- All construction vehicles must be equipped with muffled reverse sirens (which are to the standard of the Occupational Health & Safety Act (Act 85 of 1993).
- No constructions activities are permitted between 17:00 and 7:00 unless previously agreed upon between the Contacting team and the Municipality.
- Construction workers are to remain within the designated site boundary at all times.
- Eating areas are to be located away from any residential units/homesteads and tourists' attractions within proximity to the current working areas.

7.17 Dust Management.

Although the generation of dust is synonymous with construction sites, care needs to be taken to prevent excessive dust from impacting the surrounding environment and community. Majority of the dust causing activities will take place during the construction period. Exposed surfaces, such as stockpiles and cleared areas should be provided with a suitable cover as soon as possible or wetted down. Construction vehicles should maintain low speeds of 20-40km/h and must ensure that tarpaulins are used to cover any loads transported. Dust levels specified in the National Dust Control Regulations (GN 827 of November 2013) may not be exceeded. i.e. dust fall in residential areas may not exceed 600mg/m^2/day, and dust fall rates in non-residential areas may not exceed 1200 600mg/m^2/day, measured using reference method ASTM D1739.

A Complaints Register must be available at the site office for inspection by the ECO, in case of complaints, such as those related to dust. This should form a part of your Environmental File.

7.18 Heritage Resources

In the unlikely event that any heritage resources, including evidence of graves, human remains, archaeological material and paleontological material, are uncovered during construction activities, these must be immediately reported to Heritage Western Cape. Burials must not be disturbed or removed until inspected by a professional archaeologist. The following mitigation measures were proposed by the heritage and palaeontological specialists appointed for the proposed development:

- Fossils will be required to be extracted.
- A realistic monitoring programme for the paleontologically sensitive areas of the road works must be compiled by a professional palaeontologist.
- The beforementioned specialist will require an HWC-approved Workplan for the collection of palaeontological materials and must conform to international best practice for palaeontological fieldwork and the study (e.g., data collecting, collecting of fossil as well as report writing) should meet the minimum standards for Phase 2 palaeontological studies suggested by HWC.
- Feedback from Heritage Western Cape must be received regarding this aspect.
- A Chance of Find protocol must be implemented on site throughout the construction phase of the proposed project.
- A search and rescue of fossils is required prior to site establishment.
- A suitably qualified palaeontological specialist must be appointed to oversee the search and rescue activities.

7.19 Site Closure and Rehabilitation

Upon completion of the construction phase, and after each maintenance event, all disturbed areas, including the working area (disturbance corridor), temporary access road, and all areas utilised for the site camp and associated site camp facilities, if applicable, may require rehabilitation as follows:

- On completion of the construction operations, the site camp area must be cleared of all site camp facilities, ablution facilities, fencing, signage, waste and surplus material.
- All areas within the working area and site camp that have become devoid of vegetation or where soils have been compacted due to construction activities must be scarified or ripped to improve filtration and reduce run-off.
- All demarcation fencing, including all droppers, wires, netting and barrier tape must be removed from site and taken to an appropriate site for re-use or disposal.
- Surfaces are to be checked for waste products from activities such as concreting or asphalting and cleared in a manner approved by the ECO. Any soil contaminated with hydrocarbons (oil, fuel, etc) or other hazardous substance must be collected and disposed of as hazardous waste to a licenced disposal facility.
- All construction waste is to be removed from the site and disposed of at an appropriate facility. Burying or burning of waste or rubble on site is strictly prohibited.
- Topsoil that was removed and stockpiled before construction, must be replaced by spreading it evenly over the areas from which it was removed. This topsoil (and the seedbank it contains) will facilitate the re-vegetation of the site.
- If a reasonable assessment indicates that the re-establishment of vegetation is unacceptably slow, the Regional Manager may require that the soil be analysed and any deleterious effects on the soil arising from the activity, be corrected and the area be seeded with a vegetation seed mix to his or her satisfaction. This *must* be done in consultation with the ECO.
- Disturbed areas, especially areas where excavations have taken place, must be shaped as appropriate (original topography must be restored where possible), and covered with a layer of stockpiled topsoil as soon as possible.
- Any topsoil, subsoil or other excavated material that cannot be utilised during site rehabilitation must be removed from the site and disposed of at an appropriate disposal site.
- The disturbed, newly rehabilitated surfaces (particularly steeper slopes and areas recently covered with topsoil) must be protected from wind & water erosion using mulch, brush packing or other appropriate erosion protection measures. Brush-packing/ mulching is done by covering the exposed surface with organic plant material such as branches, plant cuttings and leafy material. Ideally the vegetation removed from site at the start of the construction must be utilised. Brush-packing/ mulching plays a valuable role in erosion control, while also promoting re-vegetation of the site by retaining moisture in the soil, introducing seeds and/or trapping wind-blown seeds and providing organic material (compost) to promote new plant growth.
- Final landscaping and rehabilitation of the site must be done to the satisfaction of the ECO and must adhere to all conditions/ requirements of the Environmental Authorisation.

8. ENVIRONMENTAL IMPACT MANAGEMENT: PLANNING AND DESIGN PHASE

No direct environmental impacts are associated with the planning and design phase. However, poor planning or inappropriate design decisions in this phase may result in environmental impacts arising during subsequent phases of the project.

Planning and design activities must therefore take into account the environmental constraints and opportunities identified during the Environmental Impact Assessment process, in order to avoid or minimise the potential future impacts of the development. Proper planning is also essential to ensure that adequate provision is made to implement the environmental requirements of this EMPr, and to ensure that the development is compliant with additional conditions which may be included in the Environmental Authorisation.

The impact management outcome (goals) during this phase is to:

- Appoint an Independent Environmental Control Officer.
- Complete the detailed design of the structures and the detailed site layout plan.
- Legislative Compliance.

These environmental management objectives, as well as the management actions that must be implemented in order to achieve the desired objective and avoid/minimise potential impacts are discussed in more detail below.

8.1 Outcome 1: Appointment of an Environmental Control Officer

Impact Management Objective: ***To appoint a suitably qualified and experienced environmental control officer, environmental auditor.***		
Potential impact to avoid	• Failure to appoint an ECO will result in non-compliance with the requirements of the EMPr.	
Impact Management Outcome	The requirements of the EMPr are implemented and monitored during all phases of the development, which will promote sound environmental management on site.	
IMPACT MANAGEMENT ACTIONS		
Mitigation measure	Responsible party	Time period
Environmental Auditor & Control Officer: • A suitably qualified and experienced Environmental Control Officer (ECO) must be appointed before any activities commence on site. • The appointed ECO must adhere to the requirements stated in Section 11 of this EMPr. • The appointed ECO must be advised of the construction start date, at least two weeks in advance, prior to the commencement of any construction activities on site, so that the ECO can perform a pre-commencement inspection, ensure any pre-construction conditions of the environmental authorisation are completed, and plan for environmental awareness training of construction workers (see Section 14 for Environmental Awareness Plan and Appendix N for Environmental Awareness Training Booklet). • Should it be required in terms of the Environmental Authorisation (EA), a suitable, qualified and experienced Environmental Auditor must be appointed before any activities commence on site.	Western Cape Government's Department of Infrastructure	During design phase
Performance Indicator	• A qualified ECO is appointed prior to the commencement of any construction activities (including pre-construction set-up activities) on site.	

8.2 Outcome 2: Detailed Design, Site Layout Plan

Impact Management Objective: ***To compile a detailed design and site layout plan that adheres to the recommendations of the BAR Report and any additional conditions which may be included in the Environmental Authorisation.***			
Potential impact to avoid	Substantial deviation from the conceptual layout plan may result in: • Non-compliance with the Environmental Authorisation during construction. • Triggering of additional listed activities not authorised in the Environmental Authorisation. • An increase in the severity of the impacts identified and assessed in the BAR or may result in new impacts not previously assessed and not provided for in the EMPr, resulting in environmental degradation. • Poor stormwater management as a result of poor planning, can exacerbate impacts and result in additional non-compliances.		
Impact Management Outcome	Development is compliant with recommendations of the BAR and the EMPr.		
IMPACT MANAGEMENT ACTIONS			
Mitigation measure		Responsible party	Time period
General: • The final detailed design & layout must adhere to the conceptual layout assessed in the BAR process. • The final detailed design & layout must adhere to any conditions of the Environmental Authorisation (EA). • If the final detailed design differs significantly from that assessed during the BAR, the revised layout must be assessed by an ECO, who should liaise with the CA regarding an amendment, prior to proceeding.		Western Cape Government's Department of Infrastructure	During design phase
Performance Indicator	Detailed designs and site layout plans are approved and adhere to the conditions of the EA and EMPr, prior to the commencement of construction, and that the project does not incur delays, excessive costs and penalties.		

8.3 Outcome 3: Legislative compliance

***Impact Management Objective:* Legislative compliance**			
Potential impact to avoid	Commencement of activities without all relevant permits/permissions/licences/approvals including registered servitudes, permits to remove specific vegetation, etc. as well as commencing without implementation of specialist recommendations, including a sweep of the proposed construction area, and compliance with EMPr pre-construction activities, can result in penalties, time delays and excessive costs. All stemming from poor planning.		
Impact Management Outcome	All permits, permissions, licences, approvals, and specialist input are acquired, and the proposed development is compliant with the respective conditions.		
IMPACT MANAGEMENT ACTIONS			
Mitigation measure		Responsible party	Time period
<u>General</u> • Ensure all relevant permits/licenses/approvals are in place and are valid prior to commencing with works. o These include:Environmental Authorisation; o Permits to be obtained from Cape Nature for the clearance of Indigenous vegetation, if applicable. The conditions in the WULA, including those related to the General Authorisation for Section 21(c) and (i) water uses. • Ensure that the Contractor has accepted the approved EMPr and Environmental Authorisation (and any other relevant permits/licenses, etc), as a part of their Tender Document, to ensure that they are fully aware of their responsibilities in terms of the implementation of these documents. • Ensure that the Contractor has provided method statements for activities intended to be undertaken, and these are checked and approved by the ECO as well as the Engineer. • Inform ECO of planned works ahead, so as to ensure inductions are undertaken timeously. • Involve ECO in selection of site camp location.		Western Cape Government's Department of Infrastructure	During design phase

• Ensure that a site layout plan is received, this plan must indicate the total clearance areas, site camp. <u>Programme of Works:</u> Ensure that the construction programme is pre-planned, and all affected landowners are notified of the estimated date, extent and conclusion of works on their property or affecting their access. <u>Unplanned/Planned Shutdown:</u> • Should site need to be closed, ensure the following is undertaken: - All waste is removed from site. - All stockpiled soils, etc. is removed from site or is bunded efficiently and covered with tarp, to minimise dispersion. - Ensure all excavations are backfilled, and recommended rehabilitation is commenced at the very least. - Ensure heavy machinery is stored safely. - Contact the ECO to undertake an inspection and advise on any appropriate measures that need to be undertaken. • It is important to note that the Environmental Authorisation and approved EMPr is a legal and binding document, therefore regardless of reason for shutdown compliance with these conditions must be met, or the Competent Authority must be informed of the reason and estimated duration of shutdown.		
Performance Indicator	The project does not incur delays, excessive costs and penalties due to unobtained permits and non-compliance with required permits, permissions, licences, and approvals.	

9. ENVIRONMENTAL IMPACT MANAGEMENT: PRE-CONSTRUCTION PHASE

Proper set-up during the pre-construction phase can set the foundation for good environmental management during the active construction phase to follow and can avoid potential impacts from arising at a later date.

The Impact Management Outcome for this phase of the project relate to:

- Identification and Demarcation of no-go areas and working areas.
- Establishment of site camp and associated site facilities.
- Pre-construction ECO visit.

9.1 Outcome 1: Identify & demarcate No-Go and working areas.

Impact Management Objective: ***Implement & demarcate No-Go and working areas for the proposed site.***		
Potential impact to avoid	• Implemented demarcation resulting in irrecoverable loss of biological material. • Insensitive location of working areas and site facilities may result in environmental impacts during the construction phase. • Failure to accurately demarcate working areas may result in works exceeding the approved assessed footprint, resulting in non-compliance and potential penalties and delays	
Impact Management Outcome	Future construction activities will be restricted to within the designated areas & all areas indicated as no-go areas, will be protected from disturbance, i.e., beyond the development footprint or areas not assessed in terms of search and rescue, as of yet.	
IMPACT MANAGEMENT ACTIONS		
Mitigation measure	Responsible party	Time period
<u>General</u> • Inform ECO of planned works ahead, so as to ensure inductions are undertaken timeously. • Involve ECO in selection of site camp location. • Ensure all labour and sub-contractors undergo environmental inductions. • Ensure flora permits are in place timeously (PNCO only) – allow at least 1 or 2 months before commencement. • Environmental Awareness and Training (EAT) – Ensure all labour are informed and plant operators are aware of risks, issues, dos and don'ts and no-go areas. <u>Working Corridor</u> • Ensure the relevant ECO is present and consulted for demarcation.	ECO and Contractor (General)	Pre-construction phase (prior to arrival of construction equipment, machinery, or workers on site)

• In working corridor of 3 meter must be maintained
• In order to make improvements to the existing causeway, it is necessary to construct a temporary deviation road, either upstream or downstream from the existing infrastructure (whichever is most feasible at the time of implementation). This temporary deviation road will be approximately 4m in width and will extend with an additional 3 m working corridor.
  o The engineer needs to confirm the route after the on-site specialist's input.
  o Specialist/ECO must undertake an application to Forestry Western Cape for the removal of identified tree species (if necessary).
• Where possible, and especially in sensitive areas (ie. forest areas and watercourses/riparian areas), utilise the smallest possible working corridor which is in all cases below the specified maximums provided above.
• Demarcate/fence off the working corridor with temporary fencing (e.g. poles and shade cloth) to:
  o contain potential overflow into the surrounding sites;
  o obstruct visual impacts;
• The temporary fencing must be retained and maintained on a daily basis for the duration of the construction period.
• Contain disturbance to the demarcated construction area.
• Areas outside the working corridor must be considered no-go areas.
 	
<u>Landowners;</u>
• Notify landowners of the construction programme to ensure that they are aware that construction activity may bring about delays/obstructions as well as ensuring that they are aware of any risks.
• Ensure clear signage is erected on the access road.		

Performance Indicator	No-go areas, working areas and areas for site camp facilities have been identified and appropriately demarcated to the satisfaction of the ECO, before construction activities commence on site. Landowners have been notified.	

9.2 Outcome 2: Establish Environmentally Sensitive Site Camp & Site Facilities

***Impact Management Outcome:* To set up and equip the site camp and associated site facilities in a manner that will promote good environmental management.**		
Potential impact to avoid	• Failure to properly demarcate and set up site facilities may result in disorganised construction activities and unnecessary disturbance to the site. • Failure to provide the necessary site facilities and/or failure to equip these facilities with the necessary equipment/materials may impede good environmental management & compromise ability to respond to emergencies.	
Impact Management Outcome	Site camp facilities do not impact significantly on environment. The equipment required to implement the provisions of the EMPr are provided on site.	
IMPACT MANAGEMENT ACTIONS		
Mitigation measure	Responsible party	Time period
<u>General</u> • The site camp and associated site facilities must be set-up and managed in accordance with the general environmental management measures specified in Section 6 of this EMPr. • The site camp must be strategically set up in a manner that will promote good environmental management during construction/ demolition, and to respond to potential emergencies (including fires, spillage of hazardous substances etc.) that may arise. • The site camp, storage facilities, stockpiles, waste bins, and any other temporary structures on site must be located in such a way that they will present as little visual impact to surrounding residents and road users as possible. • Frequent stormwater outlets must be maintained (if necessary), to prevent erosion at discharge points. • Measures shall be implemented during construction and demolition activities to prevent incidents and to respond effectively to potential emergencies, including fires, hazardous substance spills, and other unforeseen events, ensuring the safety of personnel, protection of the environment, and minimisation of property damage.A sweep of faunal species must be done by the Contractor, prior to the clearance of vegetation in any one area. <u>Site Camp Establishment</u> If in an area that contains vegetation, utilise disturbed areas only, and: • Ensure site selected is inspected and approved by ECO.	Contractor / Department of Infrastructure	Pre-construction phase (prior to start of construction activities)

- Utilise disturbed or transformed areas for site camp establishment.
- Site camp facilities must be the minimum area reasonably required to accommodate the site camp facilities and must not be allowed to impact areas not within the designated footprint.
- Ensure the site camp is positioned on a levelled area and is easily accessible.
- Ensure site camp is fenced off with appropriate fencing and shade cloth, to block out activities within.
- Ensure access to site is at one point, unless to existing points of entry/exit are identified.
- Ensure access onto site is controlled.
- Ensure there is 24hr security.
- Designate specific areas for specific purpose, including storage areas, machinery storage areas, parking areas, waste disposal areas, etc.
- Infographics must be available on site in public areas, including information on safety measures, potential harmful fauna (ie. snakes common to the areas, and emergency contact information, including, but not limited to: Snake catchers, Ambulance; Fire Department; the closest hospital, veterinarian (ie: for anti-venom, etc).
- Must contain a spill-kit.
- Clean portable water must be available to workers on site during construction.
- Potable chemical toilets:
    - Plan positioning of Portable Toilets for labour working along the route.
    - Consider designating a vehicle for the transportation of labourers to toilets. The vehicle can be equipped with a spill-kit.
    - Ensure chemical toilets are positioned on levelled areas and are protected from wind and rain that could result in them blowing over and spilling waste contents.
    - Ensure toilets are positioned at least 32m's from any watercourse.
    - Ensure toilets are rented from a registered company, with whom arrangements should be made for cleaning of these toilets on a weekly basis.
    - Disposal slips/cleaning slips from this company must be obtained following every cleaning and must be filed in the Environmental File.
    - Ensure an adequate quantity of toilets are provided at each working area.

<u>Hazardous substances including oil/fuel etc. should be:</u>

- Stored in bunded areas, on hardened/impermeable surfaces, where the barrels/drums/containers are protected from the natural elements.

○ Hazardous substances storage area must be treated as a no-go zone to unauthorised personnel. ○ Appropriate signage indicating what kind of hazardous/flammable materials are stored. ○ Material Safety Data Sheet (MSDSs) must be available. ○ A fire extinguisher and contact details for the fire department and other emergency numbers must be positioned in close proximity. ○ A spill kit must be positioned inside the hazardous substances storage area. ○ May only be decanted/filled on the aforementioned surface or with the use of drip trays. ○ If any spills do occur, the solid must be excavated and disposed of as hazardous waste at an appropriately registered facility. <u>Waste Management:</u> • Designate areas for temporary waste storage, this area should be: ○ Protected from wind/rain displacement. ○ Should be on a levelled surface. • An appropriate number of skips/bins must be made available on site, to accommodate for waste separation of the various types of waste generated. • Waste bins/skips must be weather and animal proof. Ensure weighted covers are positioned on skips/bins, to ensure that animals cannot get into the bins as well as to avoid waste dispersion. • Label bins appropriately. • No waste/excavated soil/ etc. intended to be removed from site may remain on site for more than 90-days. • Ensure that disposal is undertaken when waste has reached 75% capacity of the bin/skip. • The waste must be disposed of at a registered waste disposal facility. The disposal receipts from the facility must be kept in the Environmental File. • Ensure waste receptacles are available where works are being undertaken, this can take the form of black bin bags, etc. however it must: • Be sufficient hold the waste without tearing/spilling. • It must be removed from site on a daily basis and re-established at the start of every day, when works occurs in that area. • Request that the foreman responsible for the labour team in a specific area, is responsible for ensuring that this waste receptacle is utilised, removed and established daily.		

• Waste containers for general waste and hazardous waste must be disposed in appropriate and clearly marked containers and kept in a designated area/s. <u>Environmental File</u> • An environmental file is to be created by the contractor and be situated within the site camp throughout the construction phase and with the applicant thereafter.		
Performance Indicator	Appropriate, well organised, and properly equipped site facilities are available on site prior to commencement of construction activities. The location and set up of the facilities don't impact on the natural resources.	

10. ENVIRONMENTAL IMPACT MANAGEMENT: CONSTRUCTION PHASE

A number of potential environmental impacts may arise during the construction phase of the development. These impacts have been identified and assessed during the Environmental Impact Assessment process. Environmental Management objectives and actions that will prevent the identified potential impacts from arising – or where avoidance is not possible, that will minimise and mitigate the impacts – are provided in this section.

The environmental management actions and mitigation measures prescribed in this section must be implemented throughout the construction phase and must be implemented in conjunction with the general management measures specified in Section 6 of this EMPr, as well as any other conditions which may be stated in the Environmental Authorisation. The Environmental Control Officer must monitor and enforce the implementation of the relevant environmental management measures and may provide guidance on the implementation of these environmental management measures as and when required.

The impact management outcome (goals) for the Construction phase is:

- Erosion, Earthworks and Land clearance
- Impact on Agriculture Resources
- Loss of vegetation and disruption to ecological processes
- Disturbance and displacement of faunal and avi-faunal species
- Aquatic Impacts
- General Nuisances: Noise, Visual, Dust and light – General Housekeeping.
- Prevent pollution of surface water and the surrounding biodiversity
- Creation of multiple job opportunities & capital expenditure
- Maintain traffic access and safety.
- Combatting security concerns and vandalism.
- Climate change impacts.

The environmental management actions that must be implemented in order to achieve the desired objectives and avoid/minimise potential impacts are discussed in more detail in the sections below.

10.1 Outcome 1: Erosion, Earthworks and Land Clearance

***Impact Management Outcome:* To prevent soil loss on site and prevent increased sediment load exiting the site caused by earthworks.**			
Potential impact(s) to avoid	Susceptibility of some areas to erosion because of construction related disturbances due to the clearance of vegetation cover and soil disturbance may result in some areas being susceptible to soil erosion, during heavy rainfall events, after completion of the activity. Stockpiled soils and materials can be displaced in heavy rainfall and windy conditions, resulting in sediment dispersal.		
Impact Management Outcome	• Limited soil erosion and sediment dispersal. • No vegetation loss and soil disturbance from construction, and do not lead to degradation of surrounding land and waterways during and after heavy rainfall events.		
IMPACT MANAGEMENT ACTIONS			
Mitigation measure		Responsible party	Time period
Stockpiling: • Ensure stockpiles do not exceed 2m's in height. • Prohibit stockpiling of material close to slopes. • Ensure stockpiles are bunded, and if necessary, cover with shade cloth to avoid loss of material. • Separate topsoil and subsoils during excavations. • Remove alien invasives/weeds established on stockpiled soils prior to re-instatement. • Continue with weed management throughout construction, in line with the EMPr. **Exposed surfaces:** • Implement weed management measures as detailed in this EMPr. • After backfilling an area, immediately commence with rehabilitation, as detailed in the EMPr, and continue with weed management. • Ensure dust creation is controlled, as detailed in the EMPr. • No surface should be left exposed for extended periods of time.		Contractor/ ECO	Construction phase

Alien invasive management: • Ensure that alien invasive species are identified, and measures are taken to consistently remove alien invasive species from within the development footprint – implement weed management plan/alien invasive management plan as per EMPr. • Stockpiled alien invasive species cleared from site, should be contained and removed from site as soon as possible, so as to not allow dispersal. • Indigenous vegetation must be utilised where possible. • Implement rehabilitation plan. **Erosion Management:** • Suitable measures must be implemented in areas that are susceptible to erosion. Areas must be rehabilitated, and a suitable cover crop planted once construction is completed. • If natural vegetation re-establishment does not occur, a suitable grass must be applied. • Be mindful of weather conditions that may cause runoff. • Utilise silt fences, if necessary, at the demarcated working corridor fence line, to capture runoff. **Stormwater management :** • Stormwater Management Plans must be developed for the site and should include the following: • The management of stormwater during construction. • The installation of stormwater and erosion control infrastructure. The management of infrastructure after completion of construction. • Diversion channels should be constructed ahead of the open cuts, and above emplacement areas and stockpiles to intercept clean runoff and divert it around disturbed areas into the natural drainage system downstream of the site. Rehabilitation is necessary to control erosion and sedimentation of all eroded areas (where works will take place). • Visual inspections will be done on a regular basis with regard to the stability of water control structure erosion and siltation. **Excavations:** • Whenever any excavation is undertaken, the following procedures shall be adhered to:		

- Topsoil shall be handled as described in this EMP.
- Excavations shall take place only within the
- approved demarcated site.
- Excavations must follow the contour lines where possible.
- The construction site will not be left in any way to deteriorate into an unacceptable state.
- The excavated area must serve as a final depositing area for waste rock and overburden during the rehabilitation process.
- Once excavations have been filled with
- overburden, rocks and coarse natural materials and profiled with acceptable contours (including erosion control measures), the previous stored topsoil shall be returned to its original depth over the area.
- The area shall be fertilised, if necessary, to allow vegetation to establish rapidly. The site shall be seeded with a local or adapted indigenous seed mix in order to propagate the locally occurring flora.

Soil Aspects

- Sufficient topsoil must be stored for later use during decommissioning, particularly from outcrop areas.
- Topsoil shall be removed from all areas where physical disturbance of the surface will occur prior to commencement of any operations.
- The removed topsoil shall be stored on high ground.
- Topsoil shall be kept separate from overburden and shall not be used for building or maintenance of road.
- The stockpiled topsoil shall be protected from being blown away or being eroded. The application of a suitable grass seed/runner mix will facilitate this and reduce the minimise weeds.
- Rehabilitation of Processing and Excavation Areas
- On completion of construction, the surface of the processing areas especially if compacted due to hauling and dumping operations shall be scarified to a depth of at least 200 mm and graded to an even surface condition and the previously stored topsoil will be returned to its original depth over the area
- The area shall be fertilised, if necessary, to allow vegetation to establish rapidly. The site shall be seeded with suitable grasses and local indigenous seed mix.
- Waste (non-biodegradable refuse) will not be permitted to be deposited in the excavations.

- If a reasonable assessment indicates that the reestablishment of vegetation is unacceptably slow, the ECOmay require that the soil be analysed and any deleterious effects on the soil arising from the activity, be corrected and the area be seeded with a vegetation seed mix to his or her satisfaction.
- Final rehabilitation must comply with the requirements mention in the Rehabilitation Plan.

Soil Contamination:

- Ensure all machinery utilises drip trays.
- Ensure all machinery is maintained prior to allowing them to be utilized on site.
- Utilise spill-kit for contaminated soil and dispose of at a registered site If cement is to be mixed, ensure this is done on a bunded impermeable surface, and transferred so that there is no interaction with natural ground.
- No contaminated soil may be utilized during backfilling.

Monitoring:

- Bush clearing
- Ensure working plant has no oil or hydraulic leaks
- Check delineated footprints area not exceeded
- Regular checks on trenches for trapped animals and possible drowning risks.
- Regular demarcation tape.

Fauna and Flora Specialist Recommendation:

- Fires are strictly prohibited.
- Sufficient fire management must be on the site.
- Smoking must be restricted to designated smoking areas.
- No dumping of sewerage or hazardous waste into an adjacent ecosystem.
- All activities must remain within the designated footprint.
- All areas outside of the footprint must be considered no-go areas.
- Vehicles use must be restricted to designated roads.
- All staff must be trained to ensure that they are aware of any potential fauna may be on the footprint or surrounds.
- Vehicles should be restricted to a clearly demarcated area and drivers must be vigilant.

• Should any faunal species need to be translocated, a faunal or avifaunal (in the case of birds) specialist will need to be consulted. • All personnel working on site must undergo environmental inductions to ensure they are aware of the environmental sensitivities of the site. • No fauna may be caught, trapped, or harmed in any way. • No feeding of any fauna is allowed. • All recommendations in the aquatic and avifaunal assessments must be adhered to. • A soil erosion method statement is needed for the site. • Soil erosion monitoring needs to be done every two weeks during construction. <u>Aquatic specialist mitigation measures:</u> • Ensure working corridor is demarcated appropriately. • Ensure the working corridor is not excided. • Take into account sloped areas. • Be mindful of rainfall events, and plan construction works during dry season where possible. • Ensure the programme of works includes rehabilitation after. • Ensure ALL works on site, remain within the working corridor (this includes stockpiling, if necessary, on site).		
Performance Indicator	The terrestrial and aquatic environment is not significantly impacted as a result of soil erosion.	

10.2 Outcome 2: Impact on Agricultural Resources

***Impact Management Outcome:* Reduce the impacts caused on agriculture land disturbance and impacts on the surrounding agriculture resources.**			
Potential impact(s) to avoid	Based on the site located within agriculture, this impact has been considered.		
Impact Management Outcome	Minimised impact of the agriculture within the proposed development.		
IMPACT MANAGEMENT ACTIONS			
Mitigation measure		Responsible party	Time period
General: • A minimum footprint approach must be followed for the purpose of the works associated with the proposal. • Site camp to be in an already disturbed area, within the road reserve.		Contractor	Construction phase
Performance Indicator	Construction team limit disturbance to the surrounding agricultural land.		

10.3 Outcome 3: Loss of vegetation and disruption to ecological processes

***Impact Management Outcome:* Reduce the impacts caused by land disturbance and impacts on surrounding indigenous vegetation.**		
Potential impact(s) to avoid	• Permanent loss of indigenous vegetation covers due to construction activities. • Increased susceptibility to erosion caused by construction activities.	
Impact Management Outcome	The disturbance of indigenous vegetation and faunal species is minimised.	
IMPACT MANAGEMENT ACTIONS		
Mitigation measure	Responsible party	Time period
General: • The removal of trees should only be done in cooler months of the year, when there is less heat- and water stress on the trees. Clearance of vegetation: • Limit the footprint area of the construction activity to the immediate site. • Designate areas outside the Area of Investigation / Project footprint as highlighted in this EMPr. as No-Go areas. • Contractors must drive on existing access roads as far as possible to prevent formation of unnecessary tracks for access roads. • Prohibit temporary storage of building material or soil within areas of natural vegetation falling outside of the construction footprint. • Remove all alien and weed species encountered within areas disturbed by construction activities. Removal of species should take place throughout the construction and operational phases of the development. • Rehabilitate the development footprint and areas disturbed during construction with species indigenous to the vegetation type during the decommissioning phase of the development. • Blanket clearing of vegetation must be limited to the development footprint, and the area to be cleared must be demarcated before any clearing commences. • No clearing outside of footprint to take place.	Contractor/ECO	Construction phase

• Such measures include a sweep of the route before commencement in order to microsite the route to avoid large or important fynbos species and may require hand excavation in certain areas to reduce the footprint so as not to significantly disturbed. • Topsoil must be stripped and stockpiled separately during site preparation and replaced on completion, where revegetation will take place. • Any site camps and laydown areas requiring clearing must be located within already disturbed areas. <u>Alien Invasive Vegetation:</u> • Alien species must be removed from the site as per the National Environmental Management: Biodiversity Act (No. 10 of 2004) requirements. • A suitable weed management strategy must be implemented in the construction phase and carried through the operational phase. • Weeds and alien species must be cleared by hand before the rehabilitation phase of the areas. Removal of alien plants are to be done according to the Working for Water Guidelines. • Construction and rehabilitation of the watercourse banks must occur successively. • The Contractor is responsible for the removal of alien species within all areas disturbed during construction activities. Disturbed areas include (but are not limited to) access roads, construction camps, site areas and temporary storage areas. • In consultation with relevant authorities, the Engineer may order the removal of alien plants (when necessary). Areas within the confines of the site are to be included. • All alien plant material (including brushwood and seeds) should be removed from site and disposed of at a registered waste disposal site. Should brushwood be utilised for soil stabilisation or mulching, it must be seed free. • After clearing is completed, an appropriate cover crop may be required, should natural re-establishment of grasses not take place in a timely manner. <u>Fires</u> • The Contractor must ensure that an emergency preparedness plan is in place in order to fight accidental fires or veld fires, should they occur. The adjacent landowners/users/managers should also be informed or otherwise involved. • Enclosed areas for food preparation should be provided and the Contractor must strictly prohibit the use of open fires for cooking and heating purposes.		

• The use of branches of trees and shrubs for fire-making must be strictly prohibited. • The Contractor should take all reasonable and active steps to avoid increasing the risk of fire through their activities on-site. No fires may be lit except at places approved by the ECO. • The Contractor must ensure that the basic fire-fighting equipment is to the satisfaction of the Local Emergency Services. • The Contractor must supply all living quarters, site offices, kitchen areas, workshop areas, materials, stores and any other relevant areas with tested and approved fire-fighting equipment. • Fires and "hot work" must be restricted to demarcated areas. • The Contractor must take precautions when working with welding or grinding equipment near potential sources of combustion. Such precautions include having a suitable, tested and approved fire extinguisher immediately at hand and the use of welding curtains.		
Performance Indicator	Construction team limit disturbance to the surrounding vegetation.	

10.4 Outcome 4: Disturbance and displacement of faunal and avi-faunal species

***Impact Management Outcome:* Reduce the impacts caused by land disturbance and impacts on the faunal and avi-faunal habitat**		
Potential impact(s) to avoid	• Permanent loss of faunal habitat covers due to construction activities. • Increased susceptibility to erosion caused by construction activities. • Disturbance and displacement of faunal species, their processes. • Permanent loss of plant species of conservation concern.	
Impact Management Outcome	The disturbance of faunal habitat, faunal and floral species is minimised.	
IMPACT MANAGEMENT ACTIONS		
Mitigation measure	Responsible party	Time period
General: • Before construction can commence, a general sweep of the area is required to make sure no faunal and avi-faunal species are on site. • During the construction phase of the proposed project, a minimum working area is to be adopted, specifically working within the moderate and highly sensitive vegetation areas. Prior to the commencement of the construction phase, if layout designs change or if evidence of faunal or avifaunal Species of Conservation Concern (SCCs) is identified during pre-construction sweeps and these species may be impacted, the relevant permits must be obtained from CapeNature before any work may proceed in the affected areas, and appropriate mitigation measures must be implemented to protect the species and their habitats. Avi-Faunal Recommendation: • Construction activities should be restricted to the project area. • No fires should be made around the site. Plant Species, Animal Species and Terrestrial Biodiversity Recommendation: • Fires are strictly prohibited. • Sufficient fire management equipment must be on the site.	Contractor	Construction phase

• Smoking must be restricted to designated smoking areas. • No dumping of sewage or hazardous waste into an adjacent ecosystem. • All activities must remain within the designated footprint. • All areas outside of the footprint must be considered no-go areas. • Vehicles use must be restricted to designated roads. • All staff must be trained to ensure that they are aware of any potential fauna may be on the footprint or surrounds. • Vehicles should be restricted to a clearly demarcated area and drivers must be vigilant. • Should any faunal species need to be translocated, a faunal or avifaunal (in the case of birds) specialist will need to be consulted. • All personnel working on site must undergo environmental inductions to ensure they are aware of the environmental sensitivities of the site. • No fauna may be caught, trapped, or harmed in any way. • No feeding of any fauna is allowed. • All recommendations in the aquatic and avifaunal assessments must be adhered to. • A soil erosion method statement is needed for the site. • Soil erosion monitoring needs to be done every two weeks during construction.		
Performance Indicator	Construction team limit disturbance to the surrounding vegetation.	

10.5 Outcome 5: Aquatic Impacts

Impact Management Outcome: ***Disturbance of aquatic habitat biota from clearance of vegetation, earthworks, temporary deviation road, and further invasive alien plant infestation***	
Potential impact(s) to avoid	• Loss of watercourse vegetation, associated habitat and ecosystem services, associated with the trench footprint areas and associated construction area; • Transportation of construction materials can result in disturbances to soils, and increased risk of sedimentation/erosion; • Soil and stormwater contamination from oils and hydrocarbons originating from construction vehicles. • Earthworks could be potential sources of sediment, which may be transported as runoff into the downstream watercourse areas; • Proliferation of alien and/or invasive vegetation as a result of disturbances. • Increased sedimentation of the watercourses, leading to smothering of vegetation associated with the watercourses; • Exposure of soils, leading to increased runoff, and erosion, and thus increased sedimentation of the watercourses; • Altered watercourse habitat; • Altered runoff patterns, leading to increased erosion and sedimentation of the watercourses. • Excavation and infilling in the river and sediment laden surface stormwater runoff entering from road side drains. • Poorly designed or constructed causeway outlets can cause confined flow and erosion downstream. • Change in instream flow patterns on hydrological form and function. • Earthworks will expose and mobilise earth materials, and a number of materials as well as hydrocarbons/ cement/ chemicals may end up in the surface water.
Impact Management Outcome	The disturbance of surrounding aquatic features is minimised.

IMPACT MANAGEMENT ACTIONS		
Mitigation measure	Responsible party	Time period
<u>General mitigation</u> • All construction vehicles must be equipped with a drip tray. This drip tray must be placed beneath the vehicles once stationary.	Contractor	Construction phase

• Mixing of dangerous/hazardous substances may not take place on the bare soil surface. • Mixing of dangerous/hazardous substances must take place on a level area, on top of an impermeable surface and where possible inside of a bunded area (fixed or mobile). • Storage of dangerous/hazardous substances must take place within a designated area within the site camp. This storage area must be lined by an impermeable surface and must subsequently be bunded in order to prevent runoff from contaminating groundwater resources. • Spill kits must be available on site at all times. • Where fuelling does occur on site, a drip tray must be used to contain any spilled fuel. • All construction vehicles must be equipped with drip trays at all times. • No maintenance activities may occur on site for the duration of the construction phase. • Where emergency maintenance is required, such maintenance must be communicated with the independent Environmental Control Officer appointed to oversee the alignment of the construction works with the applicable environmental legislation. • All construction buffers, as requested by the aquatic specialist, must be adhered to. The construction site camp must also adhere to the construction limits (30m away from the edge of any identified watercourses). • Where possible, clearance and construction works must occur in the drier months in order to minimise the possibility of erosion and sedimentation. <u>Site preparation prior to construction activities:</u> • It is imperative that all construction works be undertaken during the dry summer months during low flows when flow diversion is not necessary; • Due to the accessibility of the sites, no unnecessary crossing of the watercourse may be permitted, and all existing roads must be utilised to limit edge effects, erosion and sedimentation of the watercourse during the construction phase; • Construction vehicles that are not in use must be parked outside of watercourse and be equipped with drip trays to avoid potential spillage; • The removed vegetation must be stockpiled outside of the delineated boundary of the watercourse. The footprint areas of these stockpiles should be kept to a minimum. Should the		

vegetation not be suitable for reinstatement after the construction phase or be alien/invasive vegetation species, all material must be disposed of at a registered garden refuse site and may not be burned or mulched on site. <u>Limiting impact on instream habitats (materials):</u> • Construction camps, equipment and material lay down areas must be located at least 30 m from any watercourse. • Concrete, cement and bitumen mixing may not be permitted at or in the vicinity of the watercourse. • Cement and bitumen mixing cannot take place on bare ground. An impermeable or bunded area must be established in a way that cement slurry will not run off into the surrounding environment. • Any soil or material stockpiles must be covered with a geotextile or plastic and bunded (e.g. with sand bags) to prevent erosion of the material down slopes into the watercourse. • Excess cement or other materials must be left to dry out before being removed and disposed of at an appropriate facility. • Construction should be planned to avoid seasonal rainfall peaks. <u>Limiting impact on instream habitats (vehicular movement):</u> • Vehicle access roads to construction areas must not cross watercourses. Vehicles must be diverted back to the existing road at these points (i.e. watercourses must not become traffic thoroughfares). • Access to the watercourse can only be for work specifically being conducted to enlarge the crossings and culvert areas. In these areas, access must be limited to essential equipment only. • Fuel storage and vehicle refuelling areas must be located at least 50 m from any watercourse. • Discontinue construction during periods of high rainfall. • Vehicles and machinery must be inspected for leaking fuel before accessing the site, and leaking vehicles must not be permitted to work at the site. <u>Increased persons (labourers) impact of instream habitats:</u> • Provide bins or waste bags for waste and place them in an area designated for break-time. Ensure bins are cleaned out on a regular basis.		

• Provide portable chemical toilets on-site (1 toilet per 10 workers). Waste from toilets is to be disposed of regularly, at least weekly, in a responsible manner by a registered waste contractor. Toilets must be located more than 30 m away from watercourses. • All workers must be briefed that no waste is to be disposed of in the environment. • All workers must be briefed that no access to watercourses is permitted for the duration of construction works unless this is related to maintenance or construction of road infrastructure. <u>Specialist recommendations:</u> • A construction method statement must be compiled and available on site. Use the smallest possible working corridor. Outside the working corridor, all watercourses are to be considered no go areas. • It is recommended that the upstream side be used for the temporary deviation road, if possible. • The construction boundary must be clearly demarcated, especially on the downstream side. • Vegetation removal must be avoided as far as possible. Prior to commencement, any indigenous instream vegetation in the construction corridor must be moved to a similar location instream, outside of the working area, permanently, or for use in rehabilitation. • Remove any alien plant species within the working corridor and as far as possible along the reach. • Stockpiles must not be located within 30 metres of the riparian zone. The furthest threshold must be adhered to. Erosion control measures including silt fences, low soil berms and/or shutter boards must be put in place. • A construction method statement must be compiled and available on site. Use the smallest possible working corridor. Outside the working corridor, all watercourses are to be considered no go areas. • It is recommended that the upstream side be used for the temporary deviation road, if possible. • The construction boundary must be clearly demarcated, especially on the downstream side. • Vegetation removal must be avoided as far as possible. Prior to commencement, any indigenous instream vegetation in the construction corridor must be moved to a similar location instream, outside of the working area, permanently, or for use in rehabilitation. • Remove any alien plant species within the working corridor and as far as possible along the reach. • Stockpiles must not be located within 30 metres of the riparian zone. The furthest threshold must be adhered to. Erosion control measures including silt fences, low soil berms and/or shutter boards must be put in place around the stockpiles to limit sediment runoff from stockpiles. • Where possible, construction activities should be conducted during the drier months of the year to minimise the possibility of erosion, sedimentation and transport of suspended solids associated with disturbed areas and rainfall events. Planning for such a situation must be undertaken.		

• Coarse bedding material or geotextile wrapped dump rock must be considered for temporary deviation road. Or a similar design which can be easily removed without causing sediment to remain in the watercourse. Consider narrower temporary deviation road. • Diversions must be temporary in nature and no permanent walls, berms or dams may be installed within a watercourse. Sandbags used in any diversion or for any other activity within a watercourse must be in a good condition, so that they do not burst and empty sediment into the watercourse. Upon completion of the construction at the site, the diversions shall be removed to restore natural flow patterns. Under no circumstance shall a new channel or drainage canals be excavated to divert water away from construction activities. • Monitoring should be conducted before commencement to confirm demarcations are in place and indigenous vegetation is relocated where possible nearby, once a week during construction within the river, and bi-monthly post-construction and rehabilitation for a period of three months or until fully rehabilitated according to ECO. • The longitudinal gradient must not be altered in a way that results in erosion downstream or impoundment of flows upstream. The cross sectional profile of the bed and banks must also be restored as far as possible to pre-construction state. • Flow across the width of the wetland must not be confined. The design must allow for unhindered longitudinal flow through the structure and erosion protection downslope with energy dissipaters such as dense baffles. • The stormwater road side drains and outlets should be formalised and stabilised to manage the increase of surface water flows directly into the watercourse. • Sedimentation must be minimised with appropriate measures. • All stockpiles must be protected and located in flat areas where run-off will be minimised and sediment recoverable. • Construction must have contingency plans for high rainfall events during construction. • The longitudinal gradient must not be altered in a way that results in erosion downstream or impoundment of flows upstream. The cross-sectional profile of the bed and banks must also to a more natural state. • Any temporary deviation roads or working areas must be fully rehabilitated to the preconstruction condition at a minimum. Consider an upstream temporary deviation if practical. • The design must allow for unhindered longitudinal flow through the structure and erosion protection downslope with energy dissipaters such as dense baffles. • Diversions must be temporary in nature and no permanent walls, berms or dams may be installed within a watercourse. • The stormwater management infrastructure, such as road side drains, must be designed to ensure the runoff is not highly concentrated before entering the riparian area.		

• Effective stormwater management must include effective stabilisation (gabions and Reno mattresses) of exposed soil and side drain outlets. Contingency plans must be in place for high rainfall events which may occur during construction. • The temporary deviation road must allow for longitudinal flow with no scour at any diversion outlets. The temporary deviation material must be removed, and the channel morphology and substrate be reinstated. • The project will need to comply with all regulations of the National Water Act (Act 36 of 1998), including the protection of downstream users, and minimise any potential ecological impacts upon water resources. Appendix 3 shows the conditions of General Authorisation which must be adhered to for Low impact projects. • Spills or leaks from vehicles or machinery must be entirely avoided. Cement/concrete batching is to be located in an area of low environmental sensitivity away from the river channel and pre-approved by the ECO. No batching activities shall occur on unprotected ground. Adequate surface protection will be required. Concrete batching should be restricted to a level and bunded/sealed surface above the riverbanks. • Contaminated water containing fuel, oil or other hazardous substances must never be released into the environment. It must be disposed of at a registered site. • Sedimentation must be minimised with appropriate measures. • Where possible, construction activities should be conducted during the drier months of the year. • All post-construction building material and waste must be cleared in accordance with the EMPr. The solid domestic waste must be removed and disposed of offsite. • Any use of herbicides in removing alien plant species is required to be investigated by the ECO before use, for the necessity, type proposed to be used, effectiveness and impacts of the product on aquatic biota. • Construction must be immediately followed by rehabilitation. • Compliance with General Authorisation in terms of Section 39 of the National Water Act The proposed activities trigger water uses as defined in Section 21(c) (impeding or diverting the flow of water in a watercourse) and Section 21(i) (altering the bed, banks, course or characteristics of a watercourse) of the National Water Act, 1998 (Act No. 36 of 1998). These water uses fall within the ambit of the General Authorisation (GA) published under Government Notice No. 4167 of 8 December 2023 These measures are binding conditions of the GA and must be implemented throughout the construction and decommissioning phases of the project. GA requirements and mitigation measures applicable to the proposed activities include, but are not limited to, the following:		

• Limitation of disturbance: Activities within the watercourse must be restricted to the smallest practicable footprint and shortest feasible duration, with no unnecessary widening or extension of disturbance beyond the approved footprint. • Protection of aquatic habitat and flow: Natural flow regimes must be maintained as far as practicable during construction, and measures must be implemented to prevent excessive sedimentation, erosion, or scouring of the riverbed and banks. • Pollution prevention: No hydrocarbons, cement, concrete, chemicals, fuels, or other hazardous substances may enter the watercourse. All construction materials and plant must be managed in accordance with the GA conditions and method statements. • Vegetation management and rehabilitation: Clearing of indigenous riparian vegetation must be minimised. All disturbed areas within the watercourse and riparian zone must be rehabilitated post-construction using appropriate indigenous species. • Alien invasive species control: Disturbed areas must be monitored and managed to prevent the establishment and spread of alien invasive plant species, in line with the Aquatic Biodiversity Specialist Assessment and the EMPr (Appendix G). Monitoring and compliance: An Environmental Control Officer (ECO) must oversee compliance with the GA conditions, specialist recommendations, and the EMPr during construction.		
Performance Indicator	Construction team limit disturbance to the surrounding aquatic features.	

10.6 Outcome 6: General nuisances: Noise, visual, dust, light, and general housekeeping

<u>Impact Management Outcome:</u> To prevent the site from presenting general nuisance, an unnecessary visual impact, noise , dust, light and general housekeeping to the site and surrounding public.			
Potential impact(s) to avoid	Temporary loss of the visual aesthetics (sense of place) due to construction disturbance, poor housekeeping practices, negligent stockpiling, as well as failure to pursue rehabilitation timeously, noise nuisance due to machinery and dust.		
Impact Management Outcome	The impact on the sense of place, noise and dust caused by the construction of the proposed development is significantly reduced and no notable impacts occur.		
IMPACT MANAGEMENT ACTIONS			
Mitigation measure		Responsible party	Time period
<u>General:</u> • The site camp, toilets, storage facilities, stockpiles, waste bins, and any other temporary structures on site, should be located in such a way that they will present as little visual impact to surrounding residents and road users as possible. • Utilise shade cloth, or other suitable material, along the fence perimeter of the site camp and construction working corridor. • Waste must be managed according to this EMPr and the mitigation measures listed above in terms of waste management. Good housekeeping practices on site must be maintained to ensure the site is kept neat and tidy and free of litter at all times. • Work on site must be well-planned and well-managed so that work proceeds quickly and efficiently, thus minimising the disturbance time. • The site camp, storage facilities, stockpiles, waste bins, elevated tanks and any other temporary structures on site must be located in such a way that they will present as little visual impact to surrounding residents and road users as possible. • Special attention must be given to the screening of highly reflective material. • Use of lighting (if required) must take into account surrounding residents and land users and must present little or no nuisance. Downward facing, spill-off type lighting is recommended. • A clean site policy must be adopted at all times during the construction phase.		Contractor	Construction phase

• Where possible, storage and disposal of waste must take place in a sustainable manner, where clearly marked recycle bins must be provided to workers at the site camp. <u>Vegetation Clearance</u> • Ensure working corridor fence is established before proceeding. • Rehabilitate immediately after backfilling, and monitor the area as recommended the Rehabilitation Programme (Appendix M). <u>Heavy Machinery</u> • Heavy machinery must remain within fenced areas. • Do not undertake maintenance of heavy machinery on site or on permeable surfaces. <u>Stockpiling</u> • Separate subsoils and topsoils. • The topsoil must be stored separately and should not be contaminated. • The soil layers should be replaced in the same order and the topsoil returned last. • Topsoil stockpiles must be less than 1.5 m in height and have adequate signage to illustrate which are topsoil and subsoil for rehabilitation purpose. • Clear litter/waste/weeds from topsoil prior to backfilling. • Import topsoil if topsoil is found to be inadequate to support rehabilitation. • Do not allow stockpiled materials to exceed 2 m in height, and do not position stockpiles along slopes or outside of the working corridor/site camp. <u>Stormwater measures</u> • Utilise temporary stormwater structures, e.g. silt fences, to capture runoff before it creates erosion down slopes. <u>Light</u> • Lights must be positioned in such a way so as to not shine directly ahead onto the road during nighttime hours (i.e. must be positioned facing downward. • Where practically possible, low intensity lighting must be used for areas which requires to be illuminated. <u>Rockslides:</u>		

- The maintenance system put in place to contain rockfall along the road must be maintained throughout the construction phase of the project.
- The system must be cleared often as needed in order to prevent failure of the netting system.
- Prior to removal of the nets for maintenance purposes, signage notifying the public of potential rock falls must be erected on site.
- The netting system must be checked at regular intervals in order to determine whether there are any weaknesses in the netting structures.

<u>Noise:</u>

- All construction vehicles must be fitted with silencers to avoid excessive noise.
- All construction vehicles must be equipped with muffled reverse sirens (which are to the standard of the
- Occupational Health & Safety Act (Act 85 of 1993).
- No constructions activities are permitted between 17:00 and 7:00 unless previously agreed upon between the Contacting team and the Municipality.
- Construction workers are to remain within the designated site boundary at all time.
- Eating areas are to be located away from any residential units/homesteads and tourists' attractions within proximity to the current working areas.
- All equipment to be adequately maintained and kept in good working order to reduce noise.
- All employees must be given the necessary ear protection gear.
- Noise levels must comply with the SANS 100103 – 0994 (recommended noise levels), as well as the Western Cape Noise Control Regulations (Provincial Notice 200/2013) of 20 June 2013.
- All mitigation measures relating to noise control as described in the EMPr must be adhered to.

<u>Visual:</u>

- A clean site policy must be adopted at all time during the construction phase.
- Where possible, storage and disposal of waste must take place in a sustainable manner, where clearly marked recycle bins must be provided to workers at the site camp.
- The visual impact experienced during the construction phase would be relatively short term and be mitigated by good housekeeping and regular removal of rubble on the site.
- An approved EMPr must be adhered to in order to minimize the visual impacts of construction phase activities.
- The site must be kept clean and tidy at all times.
- No stockpiles may exceed 2m in height.

Dust: • Majority of the dust causing activities will take place during the construction period, Exposed surfaces, such as stockpiles and cleared areas should be provided with a suitable cover as soon as possible or wetted down. • Construction vehicles should maintain low speeds of 20-40km/h and must ensure that tarpaulins are used to cover any loads transported. • Dust levels specified in the National Dust Control Regulations (GN 827 of November 2013) may not be exceeded. i.e. dust fall rates in non-residential areas may not exceed 1200 600mg/m2/day, measured using reference method ASTM D1739. • To manage complaints relation to impacts on the nearby communities, a dust register will be developed. • Dust suppression methods, such as non-potable water spraying must be used during the construction phase of the proposed refurbishment project. • Vehicular speed must be controlled at all time with no indiscriminatory driving permitted by any construction vehicles, or the general public. • No over-watering of the site or road surfaces. • Wind screens should be used to reduce wind and dust in open areas.		
Performance Indicator	• Good "housekeeping" is evident on site. • The site does not pose a visual impact to surrounding community. • Noise is kept to a minimum and within the project designated times. • Good visibility as limited dust particles are present.	

10.7 Outcome 7: To prevent pollution of surface water and the surrounding biodiversity.

***Impact Management Outcome:* To prevent hydrocarbon pollution on site**			
Potential impact(s) to avoid	During construction there are a number of potential pollution inputs into the aquatic systems, as well as the surrounding environment. (such as hydrocarbons and raw cement)		
Impact Management Outcome	Land and surface water is not polluted as a result of construction activities		
IMPACT MANAGEMENT ACTIONS:			
Mitigation measure		Responsible party	Time period
General: • Spill kits must be available on site at all times. • Where fuelling does occur on site, a drip tray must be used to contain any spilled fuel. • All construction vehicles must be equipped with drip trays at all times. • No maintenance activities may occur on site for the duration of the construction phase. • Where emergency maintenance is required, such maintenance must be communicated with the independent Environmental Control Officer appointed to oversee the alignment of the construction works with the applicable environmental legislation. • All construction buffers, as requested by the aquatic specialist, must be adhered to. Thee construction site camp must also adhere to the construction limits (30m away from the edge of any identified watercourse). • Mixing and/or decanting of all chemicals and hazardous substances must take place on a tray, shutter boards or on an impermeable surface and must be protected from stormwater. • Cement/concrete batching is to be located in an area of low environmental sensitivity away from the river channel and pre-approved by the ECO. No batching activities shall occur on unprotected ground. Adequate surface protection will be required. Concrete batching should be restricted to a level and bunded/sealed surface above the riverbanks. • Contaminated water containing fuel, oil or other hazardous substances must never be released into the environment. It must be disposed of at a registered hazardous landfill site.		Contractor	Construction phase
Performance Indicator	• Surface water is not polluted as a result of construction activities.		

	• The surrounding environment is not polluted as a result of construction activities.

10.8 Outcome 8: Creation of Multiple Job opportunities and Capital Expenditure

Impact Management Outcome: ***To create employment opportunities with potential for skills transfer, for members of the local community.***		
Potential impact(s) to be promoted.	• A number of temporary job opportunities for skilled and unskilled labour will be created during the construction phase of the development. • Potential transfer of skills from more experienced workers to less experienced workers. • Increase in business for local businesses within the construction industry.	
Impact Management Outcome	Social benefits from the employment opportunities created during the construction phase.	
IMPACT MANAGEMENT ACTIONS		
Promotion measure	Responsible party	Time period
• Positive, therefore no mitigation necessary. • It should be noted that this impact will benefit the local community and address the issue of unemployment within the Western Cape, and South Africa, particularly for unskilled labourers, although temporary. • The applicant is recommended to source local labour, contractors and sub-contractors, as well as utilise local materials and suppliers.	Department of Infrastructure / Contractor	Construction phase
Performance Indicator	A substantial proportion of the construction team is from the local community, with preference given to historically disadvantaged individuals and, where appropriate, unskilled labourers. Skills transfer from experienced to less experienced workers is actively encouraged on site.	

10.9 Outcome 9: Road Safety: Traffic Impacts and Road safety.

Impact Management Outcome: ***To ensure continued functioning of road network and road safety during construction.***		
Potential impact(s) to avoid	• Some congestion along DR1791 • Accidents may occur due to impatient or negligent drivers. • Congestion and delays may be caused.	
Impact Management Outcome	The functioning of the surrounding road network remains efficient and the state of the infrastructure is not hampered, the use of the temporary causeway to assist and direct traffic efficiently.	
IMPACT MANAGEMENT ACTIONS		
Mitigation measure	Responsible party	Time period
General: • Proper signage must be used and signage must align with the National Road Traffic Act (Act No. 93 of 1996). • Adequate signage, that is both informative and cautionary to passing traffic (motorists and pedestrians), warning them of the construction activities must be suitably located in the area where the construction is occurring and must be easily visible by all road users. Signage needs to be clearly visible and needs to include, among others, the following: o Identifying working area as a construction site; o Cautioning against relevant construction activities; o Prohibiting access to construction site; o Clearly specifying possible detour routes and/or delay periods; o Possible indications of time frames attached to the construction activities, and; o Details of responsible contractors and engineers are working on the site. • Construction activities will not be planned over the December/January high-season (i.e. between 15 December and 6 January) as well as the Easter holidays.	Contractor	Construction phase

• The procedures outlined in the Communication Plan of the Department of Infrastructure (the Applicant) must be implemented for the proposed project. <u>Landowners;</u> • Notify landowners of the construction programme to ensure that they are aware that construction activity may bring about delays/obstructions as well as ensuring that they are aware of any risks. • Ensure clear signage is erected on the access road. • Where access roads to private property is obstructed, notice must be given to affected landowners and/or occupiers, and such obstruction must endure for the minimum duration possible. • Where possible, road crossings of private access roads must be undertaken in piecemeal fashion, only excavating half the access road at a time and allowing for private vehicles to pass safely on the remaining half. • Excavations across private access roads, must not be left unattended or left open overnight under any circumstances.		
Performance Indicator	• The surrounding road networks infrastructure remains in its current state. • Limited congestion and traffic.	

10.10 Outcome 10: Combating Security concerns and Vandalism.

Impact Management Outcome: ***To prevent the site from presenting an unnecessary visual impact to the surrounding public.***			
Potential impact(s) to avoid	• Materials positioned on site overnight may attract people with nefarious intentions. • Opportunities for criminal activities. • Damage to or loss of resources.		
Impact Management Outcome	The development remains unvandalized and safe.		
IMPACT MANAGEMENT ACTIONS			
Mitigation measure		Responsible party	Time period
General • Ensure access to site is controlled and restricted. • A register must be kept of all vehicles and personnel entering the site. • At night, ensure that materials are covered/obstructed from view. Fire safety: • Ensure that gas or any flammable substances are stored according to industry standards, the National Veld and Forest Fire Act (Act 101 of 1998), and as advised by the Municipal Fire Department. • Maintain fire hoses and extinguishers in working order. • Erect fire safety signage, and warning signage to alert people that flammable items are stored in a certain area, etc. and to indicate where fire safety equipment (e.g. fire extinguishers) are located.		Contractor	Construction phase
Performance Indicator	• Good "housekeeping" is evident on site. • The site does not pose a safety impact to surrounding community.		

10.11 Outcome 11: Climate change impacts

***Impact Management Outcome:* Ensure all adaption and mitigation measures are integrated and are in good order.**			
Potential impact(s) to be avoided.	• Strain on services, as temperatures increase. • Strain on water resources. • The need to capture and store rainwater during periods of rainfall, will become a priority. • Will impact negatively on groundwater capacity and availability. • Fires can be started by negligent labour activity. Which in turn can affect private properties, homes, and livelihoods (farms), etc. • Potential for the storm event to damage infrastructure, at water crossings. • Potential for storm events to impact on electricity supply, which will strain the functioning of pumps and other electrical devices, designed to ensure that the treatment and supply of water is undertaken correctly.		
Impact Management Outcome	Low climate impact as a result of the construction activities		
IMPACT MANAGEMENT ACTIONS			
Mitigation measure		Responsible party	Time period
General: • Implement all adaption and mitigation measures found to be feasible and reasonable. • Monitor efficiency of all adaption and mitigation measures, during operational phase.		Contractor	Operational phase
Performance Indicator	Local climate remains unchanged as a result of development – no occurrence of field fires, no additional strain on water resources.		

11. ENVIRONMENTAL IMPACT MANAGEMENT: POST CONSTRUCTION REHABILITATION PHASE & OPERATIONAL PHASE

After all construction activities have ceased, the sites must be cleared of all construction related equipment, materials, facilities and waste. In addition, all disturbed surfaces – including disturbed areas around the structures and all areas utilised for site facilities – must be stabilised, rehabilitated and provided with a suitable cover. All temporary access roads constructed must be rehabilitated and access must be restricted from the public.

The impact management outcomes (goals) for this phase are:

- Aquatic impact: Erosion and change in stream flow.
- Alien invasive species clearance and rehabilitation.
- Road safety: Provision of safer roadway.

11.1 Outcome 1: Aquatic Impact: Erosion and change in instream flow patterns.

***Impact Management Outcome:* To rehabilitate all areas disturbed by construction activities, if not already transformed, in an environmentally compliant manner.**		
Potential impact(s) to avoid	• Decreased stability of the watercourse beds and banks causing deterioration of aquatic ecosystem integrity and a reduction/loss of habitat for flora & fauna, and instream flow pattern changes. • Reduction in the supply of ecosystem services.	
Impact Management Outcome	• Limited occurrences of erosion of the banks and beds of the watercourses. • Positive impacts if designed to mimic more natural flow pattern and channel morphology.	
IMPACT MANAGEMENT ACTIONS		
Mitigation measure	Responsible party	Time period
Aquatic Specialist Recommendation: • The longitudinal gradient must not be altered in a way that results in erosion downstream or impoundment of flows upstream. The cross sectional profile of the bed and banks must also be restored as far as possible to pre-construction state. • Flow across the width of the wetland must not be confined. The design must allow for unhindered longitudinal flow through the structure and erosion protection downslope with energy dissipaters such as dense baffles. • The stormwater road side drains and outlets should be formalised and stabilised to manage the increase of surface water flows directly into the watercourse. • Sedimentation must be minimised with appropriate measures. • Any temporary deviation roads or working areas must be fully rehabilitated to the preconstruction condition at a minimum. Consider an upstream temporary deviation if practical.	Contractor / Department of Infrastructure	Construction phase – post-construction

• The stormwater management infrastructure, such as road side drains, must be designed to ensure the runoff is not highly concentrated before entering the riparian area. • Effective stormwater management must include effective stabilisation (gabions and Reno mattresses) of exposed soil and side drain outlets. Contingency plans must be in place for high rainfall events which may occur during construction. • The project will need to comply with all regulations of the National Water Act (Act 36 of 1998), including the protection of downstream users, and minimise any potential ecological impacts upon water resources. Conditions for impeding or diverting the flow of water or altering the bed, banks, course or characteristics of a watercourse (Government Notice R509 of 2016) need to be adhered to for Low impact of the projects. • Prior to the commencement of rehabilitation, a suitable qualified aquatic specialist (SACNASP) must be appointed to guide and oversee the rehabilitation of the affected watercourse and riparian area. WULA Requirements: • Vegetation management and rehabilitation: Clearing of indigenous riparian vegetation must be minimised. All disturbed areas within the watercourse and riparian zone must be rehabilitated post-construction using appropriate indigenous species. • Alien invasive species control: Disturbed areas must be monitored and managed to prevent the establishment and spread of alien invasive plant species. Monitoring and compliance: An Environmental Control Officer (ECO) must oversee compliance with the GA conditions.		
Performance Indicator	• All construction-related materials, equipment, facilities, waste and contaminated soils have been removed from the site. • All planned works have been implemented and any areas not planned that were impacted upon, have been rehabilitated.	

11.2 Outcome 2: Alien invasive species clearance and rehabilitation

***Impact Management Outcome:* Alien invasive species clearance and rehabilitation**		
Potential impact(s) to be promoted.	• Infestation by alien invasive species during the operational phase of the proposed development.	
Impact Management Outcome	• Limited infestation and establishment of alien invasive species population. • Increased fire risk • Potential loss to biodiversity	
IMPACT MANAGEMENT ACTIONS		
Mitigation measure	Responsible party	Time period
<u>Alien invasive vegetation management</u> • Spread of alien invasive vegetation associated with the soil disturbance caused by construction must be managed appropriately. • Removal of species should take place throughout the construction, operational, and maintenance phases. • APPENDIX G provides the Alien Invasive Management Programme which must form part of the construction contract and includes an after-care period which will be required. • The alien invasive species on site must be managed throughout the life of all phases of the proposed development.	Developer / Department of Infrastructure	Operational phase
Performance Indicator	• No alien invasive species present within the road reserve.	

11.3 Outcome 3: Provision of safer roadway

***Impact Management Outcome:* Provision of upgraded services and infrastructure**			
Potential impact(s) to be avoid.	• Road accidents as a result of narrow roads and poor road quality conditions.		
Impact Management Outcome	• Supporting existing communities and proposed future development in the area. • Utilizing existing infrastructure. • Provision of safer roadway.		
IMPACT MANAGEMENT ACTIONS			
Mitigation measure		Responsible party	Time period
Positive: No mitigation proposed,. - The proposed development represents an enhancement measure on its own. - As the causeway repair and upgrade is to promote safer road use, but also addresses the ecology of the area as the damaged causeway and culverts that resulted in the uprooting of the ecology in the area and disturbance to the watercourse. The project further promotes sustainability and user friendly roads.		Developer / Department of Infrastructure	Operational phase
Performance Indicator	• Development compliments the sense of place as it aligns with other land uses and does not pose nuisances.		

12 MONITORING COMPLIANCE

This EMPr, once approved by the competent authority (DEA&DP), must be seen as binding to the Holder, and any person acting on the Holder's behalf, including but not limited to agents, employees, associates, contractors and service providers.

The Holder and all other persons who may be directly involved in the development are also bound by their general Duty of Care, as stated in Section 28 of the National Environmental Management Act, 1998:

> ***Duty of Care:***
> *"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 cannot reasonably be avoided or stopped, to minimize and rectify such pollution or degradation of the environment"*

12.1 Construction Phase Record Keeping

A copy of the approved EMPr, the Environmental Authorisation and any relevant construction method statements must be kept on site at all times during pre-construction, construction and rehabilitation activities. The ECO Reports must be retained by the Holder for a period of at least 10 years and must be provided to the Competent Authority upon request.

The set up and organisation of the site camp is paramount to ensuring compliance. An environmental file is to be created by the contractor and be situated within the site camp throughout the construction phase and with the applicant thereafter. The environmental file is to include the following;

- A copy of the Environmental Authorisation
- A copy of General Authorisation or any other relative permits
- A copy of the approved EMPr
- Updated Waste slips
- Disposal slips or cleaning slips (ablution cleaning)
- All EMR's (Environmental Monitoring Reports) and ECO instructions
- Copies of Environmental induction register/s
- The Protocol for chance Palaeontological Findings
- A complaints register
- Updated method statements
- Any and all emergency procedure/s applicable to site activities
- An Incident Register

12.2 Method Statements

The Competent Authority and/or the ECO may require the Holder or Construction Contractor to submit Method Statements for one or more construction-related activity, or any aspect of the management of the site, before the activity is undertaken or during the performance of the activity, if the activity is causing or may cause significant environmental damage, or pose a health and safety risk.

Method Statements need not be complex and lengthy, but must clearly state **how**, **when** and **where** the activity concerned will be undertaken, and must specify **who** will be responsible for undertaking each component of that activity. Method Statements must be prepared by the Construction Contractor and submitted to the ECO for approval before undertaking the activity concerned.

The ECO and / or Competent Authority have the authority to request method statements for activities, including but not limited to:

- Establishment of site camp and stockpile area.
- Cement/ concrete batching, disposal and emergency contingencies.
- Topsoil and sub-soil storage/ stockpiling.
- Storage of fuels and hazardous chemicals and emergency contingencies.
- Waste management system.
- Storm water management and control.
- Alien invasive plant species management.
- Fire Control & Fire Emergency Plan.
- Emergency preparedness plan / emergency response procedure.
- Post-construction rehabilitation.

The ECO has the authority to prevent activities from being undertaken until such time as a satisfactory Method Statement has been submitted to the ECO and approved by the ECO.

12.3 ECO Monitoring

The appointed ECO is responsible for undertaking regular site visits to monitor and report on the implementation of the EMPr and adherence to the conditions of the Environmental Authorisation during the pre-construction, construction and post-construction rehabilitation phases. The ECO is not required to monitor the site during the operational (maintenance) phase of the development.

- Frequency of ECO visits
- The ECO must conduct **weekly** site visits during the construction phase of instream works, in addition to the start-up and closure inspections. Frequency can be reduced to monthly site visits once works have moved to less sensitive areas, as the discretion of the ECO.
- Further monitoring must continue on a **monthly basis** following the practical completion of the proposed works, so as to ensure the success of all rehabilitation measures implemented.
- The ECO has the discretion to undertake additional visits if he / she feels this is justified due to the actions of the contractors, and to make *ad hoc* visits in order to ensure compliance.

- Monitoring Reports:
  - Must be produced **monthly** and submitted to the Competent Authority, (DEADP, Bitou Municipality and BOCMA, Engineer, Proponent and Contractor.

12.4 ECO Inspections–- Photographic Records

The condition of the surrounding natural environment must be monitored regularly in order to ensure that construction and management activities are not impacting negatively on the condition of the landscape and any sensitive ecosystems. The most effective way to achieve this is by means of a detailed photographic record. In this way, a record of any shift in ecosystem condition can be maintained and potential impacts be detected at an early stage. It is thus recommended that fixed-point photo-monitoring sites could be set up, and photographs must be taken at these sites during each ECO inspection. Where necessary, the entire working area must be well documented and photographed.

12.5 ECO Inspections–- Written Records

The following record-keeping during the pre-construction, construction and rehabilitation phases of the development is recommended:

- The ECO must complete an ECO Checklist after each ECO site visit.

- The ECO must compile an ECO monitoring report and submit this to the Holder, the Contractor and the Competent Authority (the latter only if required by the Competent Authority). The monthly reports must be a summary of the ECO inspections from the preceding month, and must highlight the key concerns/ issues on site, instances of non-compliance with the EA and EMPr, all instructions issued to the contractor, actions taken and aspects that still require attention.
- All ECO reports and ECO instructions must be retained on file at least for the duration of the construction period (retaining reports for a period of at least 5 years is recommended, in the event that the Competent Authority must request information).
- A record (minutes) of construction site meetings, liaison site meetings between the ECO and resident engineer or contractor, monitoring reports, ECO instructions and ECO observations must be clearly documented and filed on a master file off-site for safe keeping.
- It is recommended that a site register (incident register) be kept on site at the site office for the recording of any environmental incidents (e.g. fires, spills etc.), observations which are contrary to the stipulations within the EMPr and any other contravention deemed necessary for the attention of the resident engineer. Actions taken to remedy the incidents must also be recorded.
- A complaints register must be kept on site in which complaints by any member of the public must be logged.
- The ECO must compile a final post-construction audit report, within 6 months of completion of each construction phase. The audit report must detail the rehabilitation measures undertaken, describe all major incidents or issues of non-compliance and any issues or aspects that require attention or follow-up.

12.6 ESO Monitoring

Due to the nature of this development, an Environmental Site Officer (ESO) must be appointed. The site officer will be responsible for implementing and monitoring the site activities daily. This individual must be appointed by the Main Contractor. The ESO will be responsible for actively managing activities on-site. The ESO must:

- Have a site diary wherein they report all environmental incidents daily;
- Ensure that all environmental filing relevant to the project is up to date;
- Keep proper Incident reports on record of all incidents, including all remediation action-documents. These reports and documents must be made available to the ECO, Site Contractor, Site Engineer and the DEA&DP when required;
- Be present and give report on all incidents at all site meetings for the project.

12.7 Auditing by Environmental Auditor

An environmental auditor is to be appointed by the applicant. As per Section 34 of the EIA Regulations (GN R326 of 2017), the duty of an Environmental Auditor is to be in dependent and is responsible for:

- Ensuring compliance with the conditions of the environmental authorisation and the EMPr; and
- Submit an environmental audit report to the relevant competent authority, which provides verifiable findings, in a structured and systematic manner, as per Appendix 7 of GN R326.
- Any amendments to the EMPr, which must be recorded in Appendix J.

The Environmental auditor must undertake an audit as per Appendix 7 of GN R326 at the following stages;

- Every 6 months following the commencement date of the construction works.
- At practical completion of the construction period.

- Quarterly, for a period of 12 months following the practical completion of the construction period.
- Once a year, for the following the initial 12 months after practical completion of the construction period.
- Or according to the frequency specified in the Environmental Authorisation.

13 PENALTIES, CLAIMS AND DAMAGES

The contractor will be responsible for all costs incurred in the rehabilitation of the site and for ensuring that all procedures required to rehabilitate the site are implemented. If third parties are called to the site to perform clean up and rehabilitation procedures, the contractor will be responsible for all costs. The competent authority may impose penalties on the Holder or any of the contractors if conditions contained in this EMPr are contravened. This would be based on an agreement or contract between the Holder and the contractor.

Penalties could be imposed in terms of Chapter 11 of the Western Cape Bill on Planning and Development as published in the Extraordinary Provincial Gazette No 5183, 3 October 1997, and would be applicable for any action which leads to damage to the natural environment. Please note that the payment of any fines in terms of the contract shall not absolve the offender from being liable from prosecution in terms of any law.

In cases where severe environmental damage occurs, the competent authority law enforcement division may take legal action against the responsible parties. The reasons for this could include, among others:

- Not implementing the conditions of the EMPr;
- Spillage that result in environmental damage;
- Incorrect handling and storage of construction materials and chemicals;
- Sensitive areas that are not clearly demarcated;
- Performing ablutions in areas other than facilities provided for such actions; and
- Occurrence of unattended and out of control fire.

The Contractor shall comply with the environmental specifications and requirements on an ongoing basis and any failure on his part to do so will entitle the ECO to issue the contractor with penalty / fine as described in the following section.

The following offences, level of severity and value of the financial fines have been drafted according to the sensitivities on the proposed site, the mitigation measures proposed, and the construction methods proposed. It must be noted that the level of severity is at the discretion of the ECO and any offences or fines will be recorded in the ECO's monitoring report. The fineable offences are not limited to the table below, additional offences may be applied by the ECO with prior agreement with the EA holder.

The following fine structure shall apply:

Table 4: Fines and offences

Finable Transgression	**Min Fine**	**Max Fine**
Failure to notify the ECO of the commencement of construction or pre-construction activities, prior to the commencement of such activities.	R1 000	R2 000
Failure to comply with the provisions relating to the demarcation of the working area, site camp and associated facilities, and the maintenance of the demarcated boundaries.	R1 000	R5 000
Failure to comply with the provisions relating to the demarcation of all "no-go" areas, and the maintenance of the demarcated boundaries.	R2 000	R5 000
Failure to provide secured ablution facilities (1:30 ratio) on site.	R500	R15 000
Failure to comply with the provisions relating to the clearance of vegetation on site.	R2 000	R5 000
Clearance of indigenous vegetation (regardless of the density of alien vegetation present) outside of the demarcated boundaries of the working area and site camp.	R2 500	R15 000
Failure to apply herbicide to alien vegetation when required to do so.	R500	R2 000
Failure to adhere to designated access routes and/or the driving of vehicles through undeveloped vegetation outside of the demarcated working area or site camp.	R1 000	R5 000
Movement of vehicles and/or construction workers in no-go areas;	R1 000	R10 000
Parking or storage of vehicles, machinery, tools and other materials or equipment related to the Contractors operations, within designated "no-go" areas.	R1 000	R10 000
Parking or storage of vehicles, machinery, tools and other materials or equipment related to the Contractors operations, outside of the areas demarcated for such parking/storage.	R500	R5 000
Failure to comply with the provisions relating to the management of topsoil and subsoil.	R1 000	R5 000
Excessive excavation of material in areas not depicted for such purpose / activity on the approved design plans.	R2 500	R10 000
Failure to comply with the provisions relating to waste management on site i.e. recycling of wastes.	R500	R5 000
Failure to comply with the provisions relating to the storage, use and management of hazardous substances and fuels on site and/or the spillage of hydrocarbons or hazardous substances on site leading to environmental damage.	R1 000	R10 000
Mixing cement or concrete on bare ground and/or failure to comply with any other provision regarding cement/ concrete batching.	R1 000	R5 000
Failure to provide adequate fire-fighting equipment (in working order) on site at all times and/or failure to comply with the provisions relating to fire prevention and/or the occurrence of unattended or out of control fires.	R500	R5 000
Refueling of vehicles, machinery or equipment outside of the designated refueling area.	R500	R2 000
Maintenance of vehicles, machinery or equipment outside of the designated maintenance yard, except in emergencies.	R500	R2 000
Failure to undertake refueling or repairs over a drip tray or other impermeable bunded surface to collect spilled hydrocarbons (fuels, lubricants, oils etc.) and other hazardous substances; failure to provide drip trays under fuel burning equipment (including pumps and generators) where there is a risk of hydrocarbon leakage.	R500	R2 000
Failure to produce a required method statement/s to the engineer's and ECO's satisfaction prior to undertaking the activity concerned and/or failure to adhere to an approved method statement.	R1 000	R5 000

The above does not absolve the transgressor from being prosecuted in terms of the ***National Environmental Management Act (Act 107 of 1998)*** which may result in further penalties and other actions by State Departments.

14 EMERGENCY PREPAREDNESS

14.1 Emergency response procedures

The potential environmental risks that may arise as a result of construction activities, or during the maintenance of the structures must be identified, and appropriate emergency response procedures must be compiled for each emergency scenario. Potential environmental emergencies that require an emergency response include, but are not limited to, unplanned fires, sewage spills, spills of hazardous chemicals, snake bites etc.

- The construction contractor is responsible for identifying potential significant environmental risks that may arise as a result of pre-construction, construction and rehabilitation activities, and the contractor must formulate emergency response procedures for these potential incidents.
- The ECO, the contractor and the EA Holder are responsible for ensuring that all construction workers are aware of the emergency procedures and are properly trained on how to identify and respond to an emergency incident during construction.
- An emergency procedure must clearly indicate who will take charge during an emergency, and the roles and responsibilities of workers and authorities during an emergency.
- The construction contractor is responsible for ensuring that the requirements of the Occupational Health & Safety Act (Act 85 of 1993) (OHS Act) are adhered to during the construction phase. The Holder is responsible for ensuring compliance with the OHS Act during the undertaking of operational and maintenance activities.
- All workers on site during the construction and operational phase must be properly educated about possible emergency incidents that may arise, how to avoid such incidents and how to respond in the event of an incident. "Refresher" training sessions on emergency procedures must be held if needed.
- All workers must ideally be given basic fire-awareness training, as well as be advised on basic firefighting and safety techniques. Fire-fighting equipment must be available on-site during construction and operational activities.
- All workers must be trained on how to respond in the event of a spill of a hazardous substance (fuel, chemicals etc.), if hazardous substances are to be used on site.
- A spill kit for containing and/or neutralising spills of hazardous substances (e.g. hydrocarbons) must be available on site at all times, when hazardous substances are present.
- Any incidents of pollution or spillage of hazardous materials during construction must be reported to the ECO as soon as possible. The ECO must then (depending on the nature of the spill) notify the relevant authorities, if needed. During the operational phase of the development, the EA Holder is responsible for notifying the relevant authorities of any pollution incidents that arise.
- A first aid kit must be available on site at all times.
- Emergency contact numbers (including the fire department, police and ambulance) must be prominently displayed on site at all times and regularly updated.
- All emergency incidents must be recorded in a site incident log. The cause of the incident, the measures taken in response to the incident and the efficacy of those measures must also be recorded. This information must be used to inform future emergency preparedness planning, and to avoid prevent similar incidents from arising again.

14.2 Emergency preparedness

The following measures must be implemented, as appropriate, to ensure effective responses to emergencies:

- All workers on site during the construction and operational phase must be properly educated about possible emergency incidents that may arise, how to avoid such incidents and how to respond in the event of an incident. "Refresher" training sessions on emergency procedures must be held if needed.
- All workers must ideally be given basic fire-awareness training, as well as be advised on basic firefighting and safety techniques. Fire-fighting equipment must be available on-site during construction and maintenance activities.
- All workers must be trained on how to respond in the event of a spill of a hazardous substance (fuel, chemicals etc.), if hazardous substances are to be used on site.
- A spill kit for containing and/or neutralising spills of hazardous substances (e.g. hydrocarbons) must be available on site at all times, when hazardous substances are present.
- Any incidents of pollution or spillage of hazardous materials during construction must be reported to the ECO as soon as possible. The ECO must then (depending on the nature of the spill) notify the relevant authorities, if needed. During the operational phase of the development, the Holder is responsible for notifying the relevant authorities of any pollution incidents that arise as a result of maintenance activities.
- A first aid kit must be available on site at all times.
- Emergency contact numbers (including the fire department, police and ambulance) must be prominently displayed on site at all times and regularly updated.
- All emergency incidents must be recorded in a site incident log. The cause of the incident, the measures taken in response to the incident and the efficacy of those measures must also be recorded. This information must be used to inform future emergency preparedness planning, and to avoid prevent similar incidents from arising again.

15 ENVIRONMENTAL AWARENESS PLAN

Environmental Awareness Training must be conducted prior to the commencement of construction activities. It is the Holder's responsibility to familiarise himself/herself with the content and requirements of this EMPr. The Holder is also responsible to ensure that the contractor and all labourers working on site during the construction phase are familiar with the content of this EMPr.

The following actions must be taken to ensure that all relevant parties are aware of their environmental role and duties:

1. This EMPr must be kept on site at all times.
2. The provisions of this EMPr and the conditions of the Environmental Authorisation must be explained in detail to all staff during Awareness Training.
3. Training booklets will be handed out to all labourers and must be explained to them.
4. Daily checks to be done by the Holder's environmental representative who must be on site at all times.
5. The ECO to conduct frequent site visits.
6. Monthly monitoring reports to be compiled by the ECO. These reports will be circulated to all parties involved (including the Holder, contractor and the competent authority where required).

The Construction Contractor must make allowance for all construction site staff, including all subcontractors that will be working at the site, to attend environmental awareness training sessions

(undertaken by the ECO) before commencing any work on site. During this training, the ECO will explain the EMPr and the conditions contained therein. Attention will be given to the construction process and how the EMPr fits into this process. Other items relating to sound environmental management which must be discussed and explained during the environmental awareness training sessions include:

- The demarcated "No-Go" areas;
- General do's and don'ts of the site;
- Making of fires;
- Waste management, use of waste receptacles and littering;
- Use of the toilets provided;
- Use and control of construction materials and equipment etc.;
- Control, maintenance and refuelling of vehicles;
- Methods for cleaning up any spillage;
- Access and road safety;
- Emergency procedures (e.g. in case of fire, spillage etc.)
- General "best practice" principles, with regards to the protection of environmental resources.

Environmental awareness training and education must be ongoing throughout the construction phase and must be undertaken regularly if deemed necessary (especially if it becomes apparent that there are repeat contraventions of the conditions of the EMPr), or as new workers come to site. Translators must be utilised where needed.

CURRICULUM VITAE

BETSY-JANE DITCHAM

PERSONAL

Profession: Director & Environmental Assessment Practitioner

Nationality: South African

Languages: English (read, write and speak) & Afrikaans (read, write and speak)

Drivers License: Code B

EAPASA Registration: No. 1480

Betsy has a Bachelor of Science Honours Degree in Wildlife Management from the University of Pretoria and a Bachelor of Science Degree (Zoology and Ecology) obtained from the University of Cape Town in 2005. She has 11 years' experience in the environmental field, including environmental assessments, legal compliance, on-site compliance monitoring, cleaner production and business greening and sustainability (carbon and environmental footprinting). In her time as a consultant, she has compiled a number of environment assessments and management plans for both private and governmental clients. Betsy is a co-owner of SES and is Registered with EAPASA (**Reg No. 1480**).

WORK EXPERIENCE

March 2020 – Present: Sharples Environmental Services cc, Cape Town, WC

Co-Owner and Cape Town Office Manager: Principal Environmental Assessment Practitioner

- Project Management / Client Liaison
- Environmental Authorisation
- Environmental Management Programmes
- Public Participation
- Legal Compliance
- On-site compliance auditing

2018 – Feb 2020: Sharples Environmental Services cc, Cape Town, WC

Cape Town Office Manager: Principal Environmental Assessment Practitioner

- Environmental Authorisation
- Environmental Management Programmes
- Public Participation
- Legal Compliance
- On-site compliance auditing

August 2017 – December 2017: WSP, Cape Town, WC

Assistant Consultant

- Environmental Authorisation
- Legal compliance

- Air quality monitoring
- Public participation

October 2009 to October 2015: Jeffares & Green Engineering & Environmental Consultants, Pinelands, WC

Environmental Scientist

- On-site compliance auditing
- Environmental footprinting (carbon, water, waste)
- Business greening & sustainability
- Environmental authorisations
- In-house newsletter

July 2009 to September 2009: Freelance, Cape Town, WC

Environmental Control Officer

- Environmental auditing of construction related projects.

TERTIARY EDUCATION

2005 University of Cape Town

- Bachelor of Science Degree specialising in Zoology and Ecology

2006 University of Pretoria

- Bachelor of Science Honours Degree in Wildlife Management

KEY PROJECTS

- BAR: Upgrade of Trunk Road 11/1 (N7) from Potsdam to the Melkbos Interchange.
- EIA: Proposed University Precinct Development at the Garden Route Dam and Associated Infrastructure on a Portion of Remainder Farm 464, George, Western Cape.
- EA Amendment: Bulk Water Pipeline along Baden Powell Drive, Khayelitsha, WC.

CURRICULUM VITAE

JESSICA GOSSMAN

PERSONAL

Profession: Candidate Environmental Assessment Practitioner, Sharples Environmental Services cc, Cape Town.

Nationality: South African

Date of Birth: 16 April 1992

Languages: English and Afrikaans

Drivers License: Code B

EAPASA Registration: 6154

WORK EXPERIENCE

September 2023 – Present: Sharples Environmental Services cc, Cape Town, WC
Candidate Environmental Assessment Practitioner
Basic Assessments Reports;
Environmental Impact Assessments;
Environmental Management Programmes;
Legislative documentation;
Administration.
Environmental Control Officer
Stakeholder Engagement
Reporting
Environmental Management Plans
Project Management
Rehabilitation and Monitoring Plans
Administration

TERTIARY EDUCATION

2020 University of South Africa
Bachelors Degree in Environmental Management
2022 University of South Africa
Bachelor of Science Honours Degree in Geography

- Professionally registered EAPASA registration number: 2022/6154 & Registered IAIAsa

KEY PROJECTS

- Western Cape Government: N7 Weighbridge: Basic Assessment process
- Checklist & EMPr: Membrane Bioreactor Reactor Plan (Bonnievale).
- Checklist: Sunset Beach Subdivision

- Environmental Control Officer: N7 Van Schoorsdrift Road and culvert development, and N7 Diamond interchange
- Environmental Control Officer: Ankerlig Transmission Second Supply Project (Atlantis)
- Mossel Bay Municipality: Solar Exclusion Norm (BESS & Solar Project)

Assisted Projects: EMPr: Green Valley Housing Project (Bitou) and Koeberg Nuclear Power Station

APPENDIX B – MAPBOOK OF ENVIRONMENTAL SENSITIVITIES AND LAYOUT PLAN

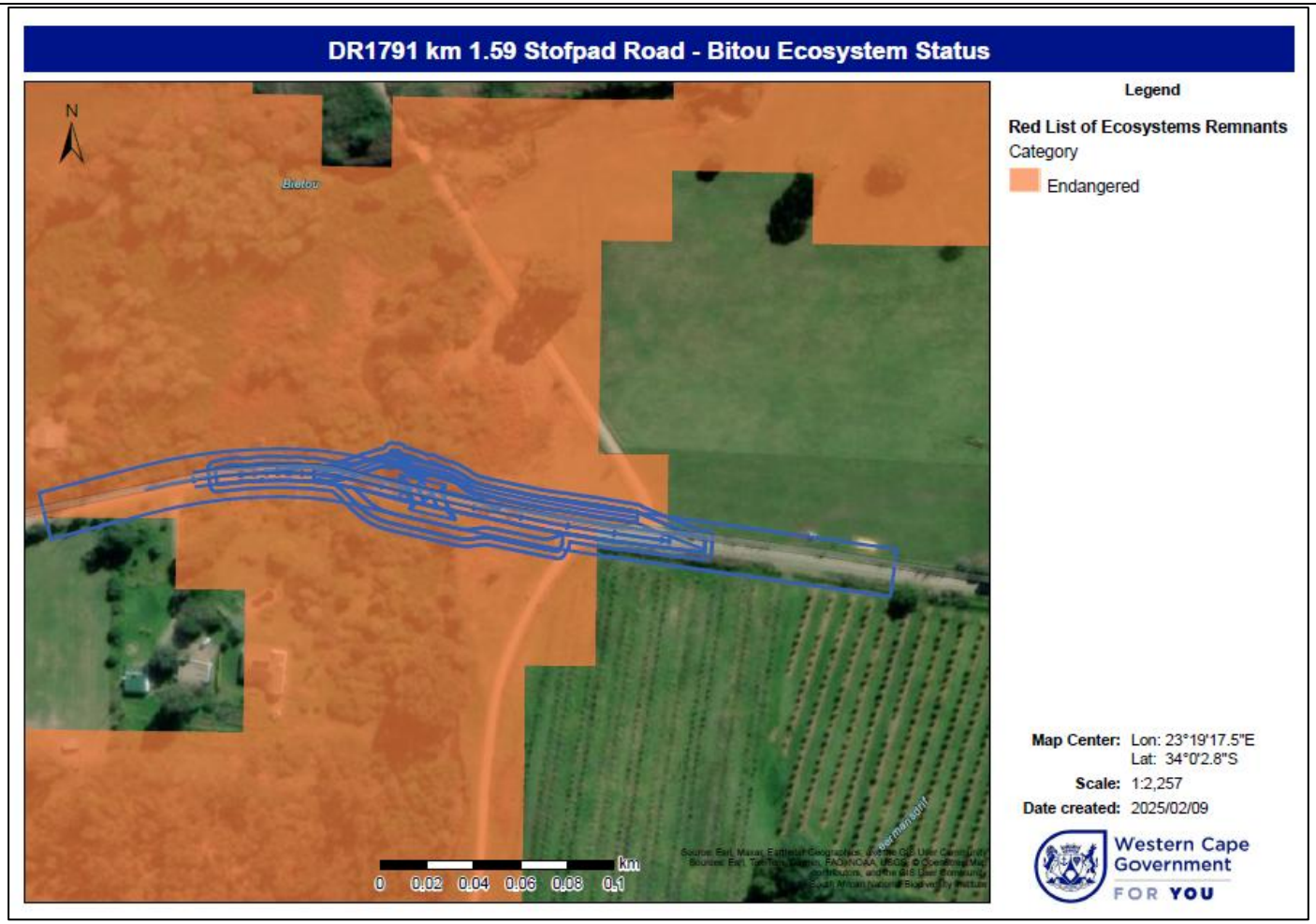


Figure 1. Red List of Ecosystem Remnants for both Upstream & Downstream that have been assessed and considered. (CapeFarmMapper, 2025).

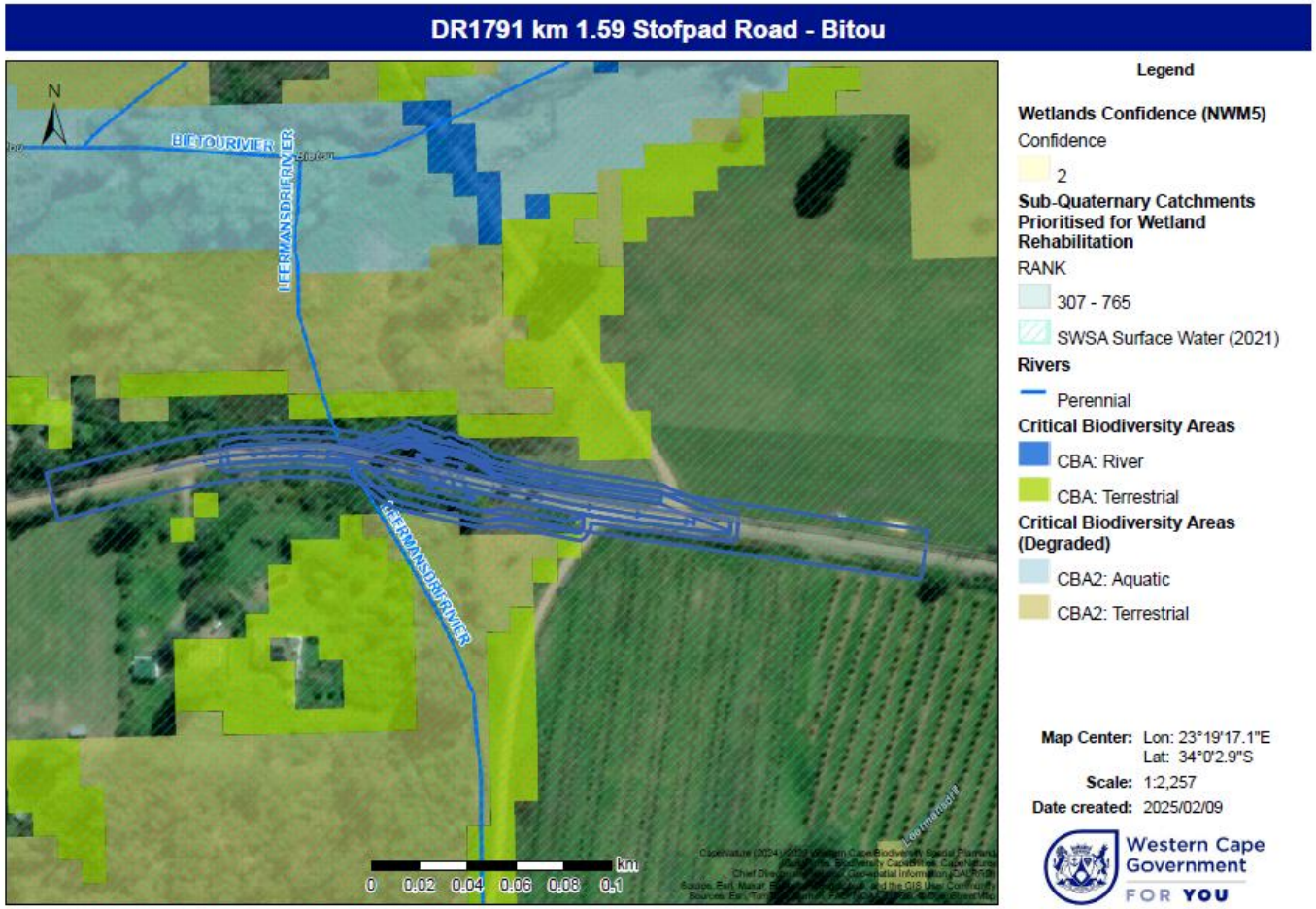


Figure 2. Environmental Sensitivity Map for both Upstream & Downstream that have been assessed and considered. (CapeFarmMapper, 2025).

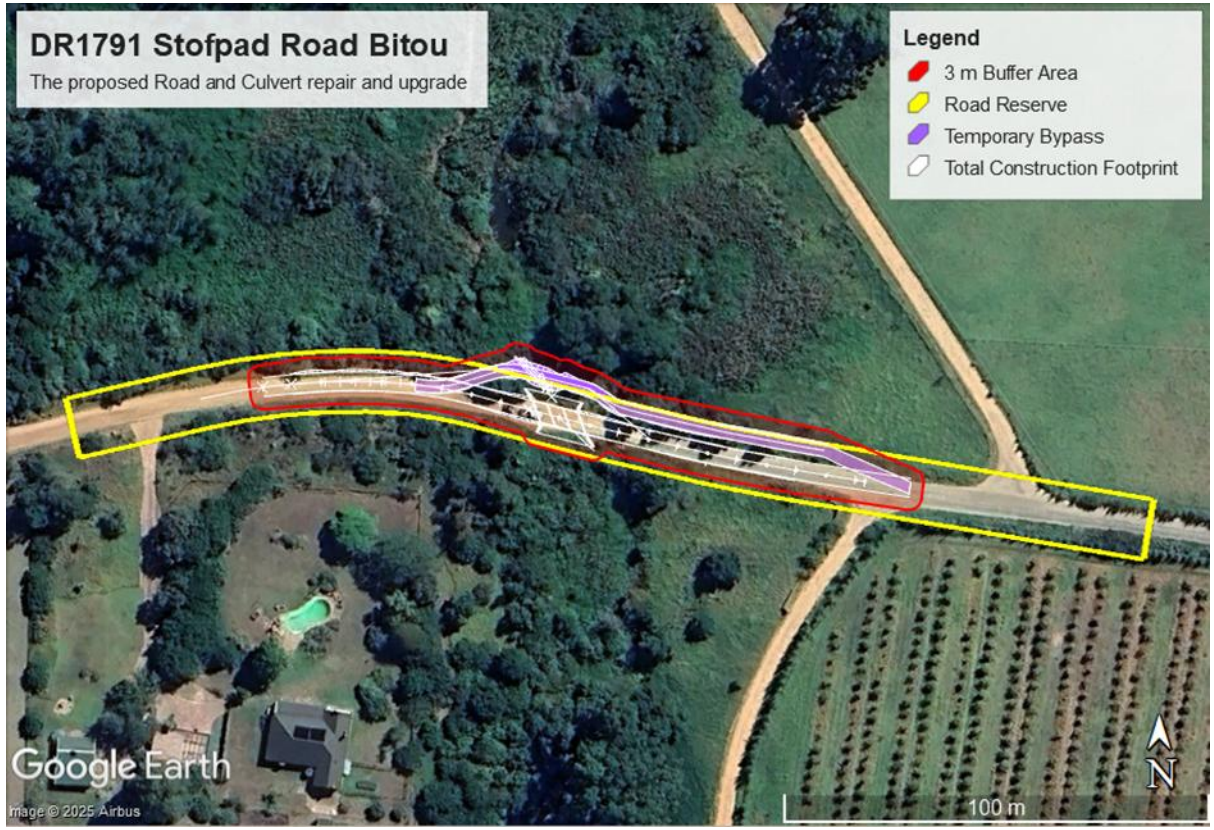


Figure 3. Proposed construction works of the temporary deviation infrastructure along DR1791, Wittedrift (downstream).

Figure 4. Proposed construction works of the temporary deviation road along DR1791, Wittedrift) (upstream).

Note: Although both options will be assessed as the preferred options, only one option, either downstream or upstream, will be implemented during the construction phase.

APPENDIX C - LEGISLATIVE COMPLIANCE

LEGAL FRAMEWORK

The NEMA, Act No 107 of 1998, as Amended, and the EIA Regulations (2014) (as amended 2017)

The National Environmental Management Act, 1998 (Act No. 107 of 1998) as per EIA Regulations, 2014 (as amended 2017), gives effect to the Constitution of the Republic of South Africa by providing a framework for co-operative environmental governance and environmental principles that enable and facilitate decision-making on matters affecting the environment. NEMA requires that an environmental authorisation be issued by a competent authority (CA) before the commencement of an activity listed in the Environmental Impact Assessment Regulations, 2014 (as amended 2017), in terms of the Listing Notices G.N. 324, 325, 326 & 327 published on the 7th April 2017.

Due to the fact that this development proposal consists of activities listed in the EIA Regulations, Listing Notice 1 and 3, a Basic Assessment Process was required, and the respective reports (Basic Assessment Report and Appendices) were submitted to the Department of Environmental Affairs and Development Planning (DEA&DP) for Environmental Authorisation.

The following table indicates the relevant triggered activities as per the development proposal:

Table 1: Listed Activities in terms of the NEMA Environmental Impact Assessment Regulations (2014), as amended, that are proposed to be triggered and therefore require an Environmental Authorisation.

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.
12	The development of (ii) infrastructure or structures with a physical footprint of 100 square metres or more (a) within a watercourse.	The footprint of the proposed temporary deviation infrastructure outside of the road reserve, within the watercourse will be approximately downstream will be 561.71 m^2, and 514.49 m^2 if the proposed alternative upstream is used for construction **The exclusions to this listed activity are not applicable to this aspect of the proposed project. Therefore, this activity will be triggered.**
19	The infilling or depositing of any material of more than 10 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10 cubic metres from a (i) watercourse.	The removal and replacement of the causeway will not trigger this activity as it will stay within the existing road reserve. The temporary deviation road will extend by approximately 4 m outside of the existing road reserve. Further to this, a 3 m working corridor is required beyond the beforementioned temporary deviation road. According to the engineer, approximately 180 - 200 m^3 of earth will be moved in and around the watercourse. **The exclusions to this listed activity are not applicable to this aspect of the proposed project. Therefore, this activity will be triggered.**
48	The expansion of infrastructure where the physical footprint is expanded by ≥100 m^2 within a	The old low-level crossing is being demolished and replaced with a higher-capacity reinforced-

	watercourse (or within 32 m where no setback exists).	concrete causeway at the same river crossing. The upgraded structure (plus inlet/outlet works and apron) increases the in-channel footprint over 170 m², i.e., a physical enlargement of road infrastructure in a watercourse. **The exclusions to this listed activity are not applicable to this aspect of the proposed project. Therefore, this activity <u>will be</u> triggered.**
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.
4	The development of a road wider than 4 metres with a reserve less than 13.5 metres. i. <u>Western Cape:</u> ii. Areas outside urban areas: (aa) Areas containing indigenous vegetation	The proposed temporary diviation road will see to the construction of a road with a width of 4 m and will see to the clearance of indigenous vegetation. Although only 4 m of the proposed temporary road will be located outside of the road reserve, the road will require a 3 m working area as well. **Therefore, this activity <u>will be</u> triggered.**
12	The clearance of an area of 300 square metres or more of indigenous vegetation i. Western Cape i. Within any critically endangered or endangered ecosystem listed in terms of section 52 of the NEMBA or prior to the publication of such a list, within an area that has been identified as critically endangered in the National Spatial Biodiversity Assessment 2004; ii. Within critical biodiversity areas identified in bioregional plans;	The removal and replacement of the causeway will trigger this activity, as the proposed works will construct within the existing road reserve, and outside of the road reserve. The temporary deviation road 4 m outside of the existing road reserve will trigger this activity if more than 300 m² of indigenous vegetation will be cleared. According to the engineer, 300 m² of vegetation will not be cleared outside of the road reserve. **This activity <u>will be</u> triggered.**
14	The development of (ii) infrastructure or structures with a physical footprint of 10 square metres or more where such development occurs (a) within a watercourse. i. Western Cape: i. Outside urban areas: (ff) Critical biodiversity areas or ecosystem service areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans.	The footprint of the proposed temporary deviation road infrastructure outside of the road reserve, within the watercourse will be approximately (either upstream 514.49 m² or downstream 561.71 m²). **The exclusions to this listed activity are not applicable to this aspect of the proposed project. Therefore, this activity <u>will be</u> triggered.**
Activity No(s):	Provide the relevant **Basic Assessment Activity(ies)** as set out in **Listing Notice 2**	Describe the portion of the proposed development to which the applicable listed activity relates.
None	None	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.

Therefore, in summary, the following activities will be applied for:

- Listing Notice 1: Activity No: 12 and 19, and 48.
- Listing Notice 2: None; and
- Listing Notice 3: Activity No: 4, 12 and 14.

Other Applicable Legislation

The *Proponent* is responsible for ensuring that all contractors, labourers and any other appointed person/entity acting on their behalf, remain compliant with the conditions of the received authorisations, as well as the provisions of all other applicable legislation, including *inter alia*:

- National Environmental Management Act (NEMA) (Act No 107 of 1998, as amended);
- National Environmental Management Biodiversity Act (Act 10 of 2004);
- National Environmental Management: Waste Act (Act 59 of 2008);
- National Water Act (Act 36 of 1998)
    - The National Water Act (Act 36 of 1998) provides the framework for the sustainable management of South Africa's water resources. It aims to protect, use, develop, conserve, manage and control water resources as a whole, promoting integrated water resource management that involves participation of all stakeholders. The Act declares the national government to be the public trustee of the nation's water. The Act is administered by the national Department of Water Affairs (DWA) via regional offices.
    - The proposed development activities **will trigger a General Authorisation** (in terms of Section 21(c) and (i) water uses).
- National Heritage Resources Act (Act No 25 of 1999);
- Occupational Health and Safety Act (Act 85 of 1993);
- National Veld and Forest Fire Act (Act No. 101 of 1998).

The above-listed legislation has general applicability to most development applications, and it is the responsibility of the *Proponent* to ensure that all contractors and employees are aware of their obligations in terms of these Acts. This EMPr does not detract from any other legal requirements.

APPENDIX D - ROLES & RESPONSIBILITIES

Duties and Responsibilities of the Holder

The Holder is ultimately responsible for ensuring that the environmental management measures specified in this EMPr, as well as any other conditions specified by the competent authority, are implemented and adhered to during the construction and operational phase (maintenance activities) of the proposed development.

The Holder or delegated party is responsible for monitoring and maintenance during the operational phase. The Holder must ensure that all appointed service providers, contractors and maintenance workers are capable of complying with all statutory requirements of this EMPr and the conditions of the Environmental Authorisation. The Holder is responsible for ensuring that this EMPr and the conditions of the Environmental Authorisation are implemented and adhered to during construction.

The Holder or appointed consultant is responsible for identifying emergency situations that may arise during operational and maintenance activities and must formulate appropriate emergency response procedures for these emergency scenarios.

Duties and Responsibilities of the Contractor

The "Construction Contractor" is the entity responsible for undertaking the physical construction of the residential development. The construction contractor is responsible for ensuring that all environmental management measures specified in this EMPr and in the EA are implemented during the pre-construction, construction and post-construction rehabilitation phases, unless agreed otherwise with the Holder. The contractor will be responsible for all costs incurred, in relation to any non-compliances which may occur during implementation of construction activities/rehabilitation activities. The contractor must therefore make adequate financial provision for the implementation of all prescribed measures, in accordance with the Bill of Quantities and the EMPr.

It is strongly recommended that the Construction Contractor appoint an Environmental Site Officer (ESO), who will act as the Contractor's representative to enforce compliance with the conditions of this EMPr, throughout all phases of construction.

In addition to the above, the Construction Contractor is responsible for the following:

- Identify emergency situations that may arise as a result of construction activities and formulate appropriate emergency response procedures.
- Ensure that all construction workers, including sub-consultants and service providers, undergo environmental awareness training prior to commencing work on site, or as soon as possible thereafter.
- Compile the required method statements, which must be to the satisfaction of the ECO, before commencing with the activity to be governed by the method statement.
- Respond to concerns or issues identified by the ECO, as relates to environmental management, and implement the appropriate management or remediation measures, at the Contractor's own expense (unless agreed otherwise).
- Any damage to the surrounding environment (site camp location and outskirts of working corridor) must be noted by the contractor with photo evidence. Any damage identified throughout the operational phase of the proposed extension will be the contractor's responsibility to repair.
- Should third parties be called to the site to perform clean up and rehabilitation procedures, the Construction Contractor will be responsible for all associated costs.

Note that failure to comply with the requirements and conditions of this EMPr and the Environmental Authorisation may result in fines or other penalties being levied against the Construction Contractor by the Competent Authority.

Duties And Responsibilities of the ECO

The appointed ECO is responsible for undertaking regular site visits to monitor and report on the implementation of the EMPr and adherence to the conditions of the Environmental Authorisation during the pre-construction, construction and post-construction rehabilitation phases. The ECO is not required to monitor the site during the operational (maintenance) phase of the development.

- Competency of the ECO

The ECO must be independent of the Environmental Auditor, Holder, Engineer, Construction Contractor and their service providers. The appointed ECO must be suitably qualified and experienced and must be able to demonstrate that he / she is of sufficient competency to undertake the required task. The ECO must preferably be a resident in close proximity to the development area to ensure quick response if required. The ECO must work in close co-operation with the Construction Contractor, resident engineer or EO (where applicable) and all contractors in order to identify potential problems before they occur, and provide suitable guidance as to how the identified problems (environmental impacts) can be avoided.

- Duties of the ECO

The duties of the ECO include, but are not limited to:

- Conduct a pre-construction site inspection to ascertain the pre-commencement condition of the site (i.e. the status quo);
- Conduct environmental awareness training, which must include;
    - A brief description of the surrounding environment
    - Importance of the EMPr
    - Roles and responsibilities
    - Identified environmental risks
    - Mitigation measures to be implemented
    - No-go areas
    - Emergency procedures (Hydrocarbon spill)
- Undertake regular site visits to monitor compliance with all mitigation, monitoring and management measures contained in the EMPr and the Environmental Authorisation, during the pre-construction, construction and rehabilitation phases of the development;
- Evaluate the achievement of the performance indicators associated with each impact management objective specified in this EMPr;
- Liaise with site contractors, engineers and other members of the development team with regard to the requirements of the EMPr;
- Provide guidance as and when required regarding the implementation of the environmental management measures contained in the EMPr and EA, so as to assist the Holder and contractor in remaining compliant with these measures;
- Assist in finding environmentally acceptable solutions to construction problems;
- Ensure that the working areas, site camp facilities, access roads and no-go areas are properly demarcated;
- Ensure that proper topsoil management practices are adhered to on site;
- Ensure that proper waste management & pollution prevention strategies are practised on site;
- Examine method statements, where required;
- Recommend additional environmental protection measures, should this be necessary;
- Furnish contractors with verbal warnings in case of contravention of the EMPr;

- Recommend that the competent authority furnish errant contractors with predetermined fines, when verbal and / or written warnings are ignored;
- Ensure satisfactory rehabilitation of disturbed areas on site, after construction is complete;
- Keep detailed records of all site activities that may pertain to the environment, and produce **monthly** compliance-monitoring reports (ECO Reports) for submission to the Holder, and the Competent Authority at regular intervals during the construction phase;
- Submit a final post-construction inspection report, within 6 months of completion of the construction phase. The audit report must detail the rehabilitation measures undertaken, describe all major incidents or issues of non-compliance and any issues or aspects that require attention or follow-up.
- All ECO Reports and Inspection Reports must be submitted to the Holder and Competent Authority.

- Frequency of ECO visits

The ECO must conduct **Fortnightly** site visits during the construction phase, in addition to the start-up and closure inspections.

The ECO must conduct quarterly site visits for a period of 24 months following the completion of the construction phase of the proposed project, so as to ensure all implemented rehabilitation works are successful.

The ECO has the discretion to undertake additional visits if he / she feels this is justified due to the actions of the contractors, and to make *ad hoc* visits in order to ensure compliance.

- Authority of the ECO

The ECO has the authority to recommend to the decision-making authorities that they suspend all works (or part thereof) occurring on site, should any action being undertaken on site not comply with the environmental requirements, and where such actions pose a serious threat to any element of the surrounding environment.

The ECO has the authority to issue instructions to the Construction Contractor and/or Holder, regarding measures that must be implemented on site in order to ensure compliance with the EMPr and Environmental Authorisation, and/or to prevent environmental degradation or pollution from occurring.

The ECO has the authority to issue verbal and written warnings to contractors. Should verbal and written instructions and/or warnings be ignored, the ECO has the authority to request the Competent Authority to issue pre-determined fines or other penalties.

The ECO has the authority to report incidents of non-compliance to the Competent Authority at any time.

Duties and Responsibilities of the Environmental Auditor

In accordance with the requirements of the Environmental Impact Assessment Regulations, 2014 (as amended), the Holder of the Environmental Authorisation must, for the period that the Environmental Authorisation is valid, appoint a suitably qualified independent person to conduct an environmental audit to audit compliance with the conditions of the Environmental Authorisation and the EMPr.

The Holder is responsible for appointing, managing and remunerating the appointed auditor. The auditor may **not** be the appointed ECO.

The appointed auditor is to be provided with the completed EMR's and Checklists, as well as any other crucial information that may be relevant or requested (incident report, waybills etc) in order to effectively

report on the level of compliance with the conditions of the environmental authorisation and the EMPr. The appointed auditor must undertake environmental audits at the following stages;

- Every 6 months following the commencement date of the construction works.
- At practical completion of the construction period.
- Quarterly, for a period of 12 months following the practical completion of the construction period.
- Once a year, for the following 2 years after practical completion of the construction period.
- Or according to the frequency specified in the Environmental Authorisation.

Following each audit, the environmental auditor must submit an audit report to the Competent Authority (in this instance the DEA&DP).

- Environmental auditing and environmental audit reports must adhere to the requirements of the amended 2014 Environmental Impact Assessment Regulations, in particular Section 34 (*Auditing of Compliance with Environmental Authorisation, Environmental Management Programme*) and Appendix 7 (*Objective and Content of Environmental Audit Report*)
- The audit report must provide verifiable findings on the level of compliance with the provisions/ conditions of the Environmental Authorisation and the EMPr and must also comment on the ability of the measures contained in this EMPr to sufficiently avoid, manage and mitigate environmental impacts.
- Where the findings of the audit report indicate that the impact management measures stated in the EMPr are insufficient to adequately address environmental impacts, recommendations as to how the EMPr must be amended so as to address the identified shortcomings must be made and submitted to the competent authority together with the audit report.

APPENDIX E – PROTOCOL FOR CHANCE FOSSIL FINDS

<table>
<tr><td>Province & region:</td><td>George, Western Cape</td></tr>
<tr><td>Responsible Heritage Resources Agency</td><td>HERITAGE WESTERN CAPE (Contact details: Protea Assurance Building, Green Market Square, Cape Town 8000. Private Bag X9067, Cape Town 8001. Tel: 086-142 142. Fax: 021-483 9842. Email: hwc@pgwc.gov.za)</td></tr>
<tr><td>ECO protocol</td><td>1. Once alerted to fossil occurrence(s): alert site foreman, stop work in area immediately (N.B. safety first!), safeguard site with security tape / fence / sand bags if necessary.</td></tr>
<tr><td colspan="2">2. Record key data while fossil remains are still in situ:
Accurate geographic location – describe and mark on site map / 1: 50 000 map / satellite image / aerial photo
Context – describe position of fossils within stratigraphy (rock layering), depth below surface
Photograph fossil(s) in situ with scale, from different angles, including images showing context (e.g. rock layering)</td></tr>
<tr><td>3. If feasible to leave fossils in situ:
Alert Heritage Resources Agency and project palaeontologist (if any) who will advise on any necessary mitigation
Ensure fossil site remains safeguarded until clearance is given by the Heritage Resources Agency for work to resume</td><td>3. If not feasible to leave fossils in situ (emergency procedure only):
Carefully remove fossils, as far as possible still enclosed within the original sedimentary matrix (e.g. entire block of fossiliferous rock)
Photograph fossils against a plain, level background, with scale
Carefully wrap fossils in several layers of newspaper / tissue paper / plastic bags
Safeguard fossils together with locality and collection data (including collector and date) in a box in a safe place for examination by a palaeontologist
Alert Heritage Resources Agency and project palaeontologist (if any) who will advise on any necessary mitigation</td></tr>
<tr><td colspan="2">4. If required by Heritage Resources Agency, ensure that a suitably-qualified specialist palaeontologist is appointed as soon as possible by the developer.</td></tr>
</table>

PROTOCOL FOR CHANCE FOSSIL FINDS

Procedure to follow if it is likely that the material identified is a fossil:

i The ECO or site agent must ensure that all **work ceases** immediately in the vicinity of the area where the fossil or fossils have been found;

ii The ECO or site agent must **inform HWC of the find immediately.** This information must include photographs of the findings and GPS co-ordinates;

iii The ECO or site agent must compile a **Preliminary Report and fill in the Fossil Discoveries: HWC Preliminary Record Form** within 24 hours without removing the fossil from its original position. The **Preliminary Report** records basic information about the find including:

- The date
- A description of the discovery
- A description of the fossil and its context (e.g. position and depth of find) Where and how the find has been stored
- Photographs to accompany the preliminary report (the more the better):
  - A scale must be used
  - Photos of location from several angles Photos of vertical section should be provided
  - Digital images of hole showing vertical section (side);
  - Digital images of fossil or fossils.

iv Upon receipt of this **Preliminary Report**, HWC will inform the ECO or site agent whether or not a rescue excavation or rescue collection by a palaeontologist is necessary.

v **Exposed finds must be stabilized where they are unstable and the site capped, e.g. with a plastic sheet or sand bags.** This protection should allow for the later excavation of the finds with due scientific care and diligence. HWC can advise on the most appropriate method for stabilization.

vi If the find cannot be stabilized, **the fossil may be collect with extreme care** by the ECO or the site agent and put aside and protected until HWC advises on further action. Finds collected in this way must be safely and securely stored in tissue paper and an appropriate box. Care must be taken to remove the all fossil material and any breakage of fossil material must be avoided at all costs.

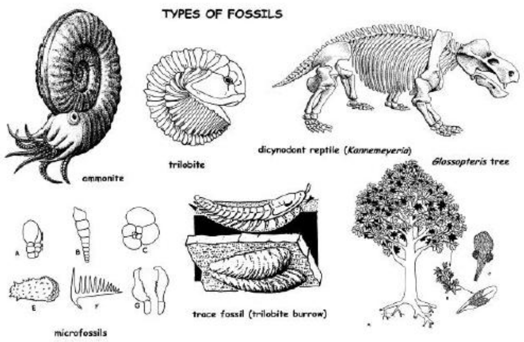
No work may continue in the vicinity of the find until HWC has indicated, in writing, that it is appropriate to proceed.

FOSSIL DISCOVERIES: HWC PRELIMINARY RECORDING FORM			
Name of project			
Name of fossil location			
Date of discovery			
Description of situation in which the fossil was found:			
Description of context in which the fossil was found:			
Description and condition of fossil identified:			
GPS coordinates:	Lat:	Long:	
If no co-ordinates available then please describe the location:			
Time of discovery:			
Depth of find in hole:			
Photographs (tick as appropriate and indicate number of the photograph)	Digital image of vertical section (side)		
	Fossil from different angles		
	Wider context of the find		
Temporary storage (where it is located and how it is conserved)			
Person identifying the fossil	Name: Contact:		
Recorder:	Name: Contact:		
Photographer	Name: Contact:		

Palaeontology: what is a fossil?

Fossils are the traces of ancient life (animal, plant or microbial) preserved within rocks and come in two forms:

- Body fossils preserve parts, casts or impressions of the original tissues of an organism (e.g. bones, teeth, wood, pollen grains); and
- Trace fossils such as trackways and burrows record ancient animal behaviour.



How to report chance fossil finds: What should I do if I find a fossil during construction/mining?

If you think you have identified a fossil:

Immediately inform the ECO or Site Agent. He/she will then contact HWC and write a report and if necessary operations will stop in that specific area until the fossil is recovered

Heritage Western Cape
ceoheritage@westerncape.gov.za
021 483 5959
www.hwc.org.za

Types of palaeontological finding - What does a fossil look like?

Fossils vary in size, from fossilised tree trunks and dinosaur bones down to very small animals or plants. Finds can be **individual fossils** (one isolated wood log or bone) or **clusters and beds** (several bones, teeth, animal or plant remains, trace fossils in close proximity or bones resembling part of a skeleton). A bed of fossils is a layer with many fossil remains.

Below there is a list of few examples of fossils which may be identified during excavations in the Western Cape.

Image	Description	Image	Description
	Leaves		Snail shells and other shells
	Fossil wood		Bones of larger animals
	The remains of fish and marine life (e.g. teeth, scales, starfish)		Large burrows made by moles and other animals
	Stromatolites		Traces made by burrowing insects (ants, wasps, dung-beetles etc.).
	Animal footprints		

Images provided by Dr John Almond

Text by HWC's Archaeology, Palaeontology & Meteorites Committee June 2016

APPENDIX F - EMPR REVIEW AND AMENDMENT REGISTER

EMPR REVIEW AND AMENDMENT REGISTER

Review Date	Description of Review and/or Amendment	Signature

APPENDIX G - ALIEN INVASIVE MANAGEMENT PROGRAMME

Invasive alien plants have a significant negative impact on the environment by causing direct habitat destruction, increasing the risk and intensity of wildfires, and reducing surface and sub-surface water. Landowners are under legal obligation to control alien plants occurring on their properties. Alien Invasive Plants require removal according to the Conservation of Agricultural Resources Act 43 of 1983 (CARA) and the National Environmental Management: Biodiversity Act (10 of 2004; NEMBA): Alien and Invasive Species Lists (GN R598 and GN R599 of 2014).

Category 1a and 1b listed invasive species must be controlled and eradicated. **Category 2** plants may only be grown if a permit is obtained, and the property owner ensures that the invasive species do not spread beyond his or her property. The growing of **Category 3** species is subject to various exemptions and prohibitions. Some invasive plants are categorised differently in different provinces. For example: the Spanish Broom plant is categorised as a category 1b (harmful) invasive plant in Eastern Cape and Western Cape, but it is a category 3 (less harmful) invasive plant in the other seven provinces.

Alien control programmes are long-term management projects and a clearing plan, which includes follow up actions for rehabilitation of the cleared area, is essential. This will save time, money and significant effort. Collective management and planning with neighbours allow for more cost-effective clearing and maintenance considering aliens seeds as easily dispersed across boundaries by wind or water courses. All clearing actions should be monitored and documented to keep track of which areas are due for follow-up clearing. A general rule of thumb is to first target lightly infested areas before tackling densely invaded areas and prioritize sensitive areas such as riverbanks and wetlands. Alien grasses are among the worst invaders in lowland ecosystems adjacent to farms but are often the most difficult to detect and control.

Several exotic invasive and other weed species were noted within the site, ranging from a few scattered individuals to dense infestations, in particular Black Wattle, Blackwood & Port Jackson Willow trees are common and abundant. The dense localised infestations of these tree species have a noticeable and definite impact to the habitat present and are a significant source of degradation. A weed management programme, as part of the construction contract including an after-care period will be required, until such time as natural vegetation has become adequately re-established. A two year after-care period is recommended.

Alien species recorded include:

- *Eucalyptus globulus* (Bloekom, NEMBA category 1b)
- *Arundo donax* (Giant Reed, NEMBA category 1b)
- *Acacia dealbata* (Silver Wattle, NEMBA 2)
- *Cenchrus clandestinus* (Kikuyi Grass, NEMBA 1b)
- *Acacia melanoxylon* (Blackwood, NEMBA 2)
- *Solanum chrysotrichum* (Giant Devil's-Fig, NEMBA category 1b)
- *Eucalyptus cladocalyx (Sugar Gum, NEMBA 2)*
- *Acacia mearnsii (Black Wattle, NEMBA 2)*
- *Acacia longifolia(Long-leaved Wattle, NEMBA category 1b)*
- *Pinus pinaster (Cluster Pine, NEMBA 2)*
- *Acacia saligna* (Port Jackson, NEMBA category 1b)

As indicated above, eleven of these are Category 1b and 2 invaders. In terms of the National Environmental Management: Biodiversity Act (NEMBA) (Act 10 of 2004) Alien and Invasive Species List (2016), category 1b invasive species require compulsory control as part of an invasive species control

programme. Also, the harbouring of category 2 species is prohibited without a permit. The presence of these species is not problematic yet but requires attention to curb future problems.

Invasive alien and weed species within the demarcated working corridor must be removed in accordance with the regulations contained in the National Environmental Management: Biodiversity Act (NEM:BA, Act 10 of 2004), the Invasive Species Regulations (October 2014), the Conservation of Agricultural Resources Act (CARA, Act 43 of 1983) and the Duty of Care principle contained in NEMA, Section 28. Removal of species should take place throughout the construction, operational, and maintenance phases, in accordance with the following:

- In consultation with the ECO, the Contractor must control the establishment of alien invasive species along the working corridor on an ongoing basis during construction and follow-up clearance to be conducted for a 2-year period.
- The Contractor is responsible for the removal of alien species within all areas disturbed during construction activities. Disturbed areas include (but are not limited to) access roads, construction camps, site areas and temporary storage areas.
- In consultation with relevant authorities, the Engineer may order the removal of alien plants (when necessary) within the confines of the site are to be included.
- In consultation with the ECO, any alien vegetation (including brushwood and seed-bearing material) that is cleared must be disposed of at an appropriately registered waste disposal facility.
- Removal of alien vegetation are to be done according to the Working for Water Guidelines.
- The following control measures may be used to ensure that the introduction and spread of alien invasive vegetation is minimised:
    - Seedlings and saplings can be removed through hand pulling and hoeing, treated with herbicide through a foliar spray or basal stem treatments.
    - Mature trees can be felled or ring barked or treated with herbicide by means of frilling or cut stump treatment.
    - Herbicide should not be applied in wet or windy conditions.
- Care should be taken with the choice of herbicide to ensure that no additional impact and loss of indigenous plant species occurs due to the herbicide used;
- Footprint areas should be kept as small as possible when removing alien plant species; and
- No vehicles should be allowed to drive through designated sensitive watercourse areas during the eradication of alien and weed species.
- After clearing is completed, an appropriate cover crop may be applied as provided in Rehabilitation Programme, should natural re-establishment of indigenous vegetation not take place in a timely manner.

APPENDIX H - REHABILITATION PROGRAMME

REHABILITATION PROGRAMME

Rehabilitation Objective

The overall objective of the rehabilitation plan is to minimize adverse environmental impacts associated with the activity whilst maximizing the future utilization of the site. Significant aspects to be borne in mind in this regard is, revegetation of undeveloped footprint and stability and environmental risk. The depression and immediate area of the working area must also be free of alien vegetation. Additional broad rehabilitation strategies / objectives include the following:

- Rehabilitating the worked-out areas to take place concurrently within prescribed framework established in the EMPr.
- All infrastructure, equipment, plant and other items used during the construction period will be removed from the site.
- Waste material of any description, including scrap, rubble and tyres, will be removed entirely from the site and disposed of at a recognised landfill facility. It will not be permitted to be buried or burned on site.
- Final rehabilitation shall be completed within a period specified by the Regional Manager.
- Final landscaping and rehabilitation of the site must be done to the satisfaction of the ECO and must adhere to all conditions/ requirements of the Environmental Authorisation.

1 Topsoil and Subsoil Replacement

Topsoil and subsoil will be stripped and stockpiled separately and only used in rehabilitation work towards the end of the operation. This is in contract to the gravel activity where rehabilitation and topsoil replacement was earmarked at the completion of each phase.

Stripped overburden will be backfilled into the worked-out areas where needed. Stripped topsoil will be spread over the re-profiled areas to an adequate depth to encourage plant regrowth. The vegetative cover will be stripped with the thin topsoil layer to provide organic matter to the relayed material and to ensure that the seed store contained in the topsoil is not diminished. Reseeding may be required should the stockpiles stand for too long and be considered barren from a seed bank point of view. Stockpiles should ideally be stored for no longer than a year.

The topsoil and overburden will be keyed into the reprofiled surfaces to ensure that they are not eroded or washed away. The topsoiled surface will be left fairly rough to enhance seedling establishment, reduce water runoff and increase infiltration.

2 Revegetation

All prepared surfaces will be seeded with suitable grass species to provide an initial ground cover and stabilize the soil surface. The following grass seed that is commonly available and suitable.

The overall revegetation plan will, therefore, be as follows:

- Ameliorate the aesthetic impact of the site
- Stabilise disturbed soil and rock faces
- Minimize surface erosion and consequent siltation of natural water course located on site

- Control wind-blown dust problems
- Enhance the physical properties of the soil
- Re-establish nutrient cycling
- Re-establish a stable ecological system
- Control alien and invasive vegetation

Every effort must be made to avoid unnecessary disturbance of the natural vegetation during operations.

3 Visual Impacts Amelioration

The overall visual impact of the proposed activities will be minimised by the following mitigating measures:

- Confining the footprint to an area as small as possible.
- Re-topsoiling and vegetating all disturbed areas.

4 Monitoring and Reporting

Adequate management, maintenance and monitoring of rehabilitation success will be carried out annually for at least 2 years by the EA Holder to ensure successful rehabilitation of the property until a closure certificate is obtained.

To minimise adverse environmental impacts associated with operations it is intended to adopt a progressive rehabilitation programme, which will entail carrying out the proposed rehabilitation procedures concurrently with activity.

APPENDIX I – ENVIRONMENTAL AWARENESS AND TRAINING BOOKLET

APPENDIX J – SCREENING TOOL REPORT

GEORGE
TEL: +27 (0) 44 873 4923 **FAX:** +27 (0) 44 874 5953
EMAIL: info@sescc.net **WEBSITE:** www.sescc.net
ADDRESS: 102 Merriman Street, George 6530
PO BOX: 9087, George , 6530

CAPE TOWN
TEL: +27 (0) 21 554 5195 **FAX:** +27 (0) 86 575 2869
EMAIL: betsy@sescc.net **WEBSITE:** www.sescc.net
ADDRESS: Tableview, Cape Town, 7441
PO BOX: 443, Milnerton, 7435

ENVIRONMENTAL AWARENESS TRAINING BOOKLET

Environmental Monitor's Forward

SES is here to ensure that everyone complies with the conditions of "Duty to Care". If these conditions are not complied with the project can be stopped and fines can be issued.

We hope that with your co-operation the project won't be stopped and fines won't be issued, and a successful project can be finished on time.

Notes:

- Workers working on this project must undergo environmental training.

- The information contained in this document should be used during day-to-day activities.

HOW IS THIS PROJECT IMPLEMENTING ENVIRONMENTAL MANAGEMENT?

This project is implementing Environmental Management on an ongoing basis throughout the duration of the project. The following aspects would be implemented to achieve the above stated:

- A dedicated Environmental Manager or Environmental Control Officer appointment to the project to implement and monitor Environmental Management.
- Regular environmental inspection on the site.
- Regular environmental training for workers
- Environmental audits on a regular basis.

WASTE TREATMENT

Refuse:

- Refuse waste includes: waste food, food containers, packaging materials, cans, bottles, newspapers and magazines.
- Day to day household waste should always be disposed of in the containers provided on site by the company.
- No dumping of waste anywhere other than in the bins provided.
- No burning of refuse.
- If there are not enough refuse containers on site, the ECO or supervisor needs to be informed.

Construction Waste:

- Construction waste includes: concrete, steel, cement, rock, pre-coated chips, wood, plastic, empty bags and rubble.
- Construction waste must be discarded in skips located in strategic areas for removal.
- Construction waste must not be discarded in holes or burned on site.

- Small amounts of construction waste should be collected and not discarded into vegetation or down fill slopes.
- Material should only be spoiled if a rehabilitation plan has been designed for the area.

Liquid waste:

- Liquid waste includes: concrete, paint, thinners, diesel, hydraulic fluids, cooking oil, chemicals, other fuel and sewage.
- Use facilities provided for waste.
- The liquid waste should be recycled as far as possible.
- Use chemical toilets and ablution facilities.

INFORM THE ENVIRONMENTAL CONTROL OFFICER (ECO) IMMEDIATELY OF ANY IMMEDIATE OR POTENTIAL ENVIRONMENTAL INCIDENT.

SPECIFIC ENVIRONMENTAL ISSUES

SPESIFIEKE OMGEWINGSKWESSIES
IMIBA ETHILE YEZOBUME BEMEKO YENDALO

The basic Do's and Don'ts towards environmental awareness are as follows:

Die basiese Moets en Moenies van omgewingsbesinning is as volg:

Oondoqo bo mawukwenze no mawungakwenzi kwilinge lezobume be meko yendalo bume ngoluhlobo:

Toilet Facilities:
Toilet Fasiliteite:
Izindlu Zangasese:

DO:

USE THE TOILET FACILITIES PROVIDED - REPORT FULL FACILITIES
MOET:
GEBRUIK MAAK VAN TOILET FASILITEITE WAT VOORSIEN WORD – RAPPORTEER AS FASILITEITE VOL IS
OMAWUKWENZE: SEBENZISA IZINDLU ZANGASESE EZIBONELELWEYO- NIKA INGXELO NGAMALUNGISELELO AGCWELEYO.

DO NOT:
USE THE BUSH
MOENIE:
DIE BOS GEBRUIK NIE
OMAWUNGAKWENZI: UKUSEBENZISA ITYHOLO.

Vehicles operation and maintenance:
Voertuig werking en onderhoud:
Ulawulo nophatho lezithuthi:

DO:
ENSURE THAT VEHICLES AND MACHINERY DO NOT LEAK FUEL OR OILS. REFUELLING, MAINTENANCE, SERVICING OR WASHING MUST BE DONE WITHIN THE DESIGNATED AREA IN THE CONSTRUCTION CAMP AREA ONLY.
MOET:
VERSEKER DAT VOERTUIE EN MASJINERIE NIE OLIES OF BRANDSTOF LEK NIE. VOLMAAK, ONDERHOUD, DIENS OF SKOONMAAK VAN VOERTUIE MOET SLEGS IN AANGEWYSTE AREAS IN DIE KONSTRUKSIE KAMP GESKIED.
OMAWUKWENZE: QINISEKISA IZITHUTHI NOMATSHINI ABAVUZI MAFUTHA OKANYE I OYILE, UKUGALELA, UKUPHATHA, UKULUNGISA OKANYE UKUHLAMBA KUFUNEKA KWENZIWE KUMMANDLA OTYUNJIWEYO KWINKAMPI YOLWAKHIWO KUPHELA NGOKUKHAWULEZILEYO.

DO:
REPORT ALL FUEL OR OIL SPILLS IMMEDIATELY & STOP THE SPILL CONTINUING.
MOET:
RAPPORTEER ENIGE BRANDSTOF OF OLIE STORTE & VERHOED DAT DIE STORT AANHOU.
OMAWUKWENZE: NIKA INGXELO NGE OLI NAMAFUTHA ACHITHEKILEYO, UZE UNQANDE UCHITHEKO LUNGAQHUBEKI.

DO:
PREVENT CONTAMINATION OR POLLUTION OF STREAMS AND WATER CHANNELS.
MOET:
VERHOED DIE KONTAMINASIE EN BESOEDELING VAN STROME & WATERKANALE.
OMAWUKWENZE : NQANDA USULELEKO OKANYE UNGCOLISEKO LWEMILAMBO NEMISELE YAMANZI.

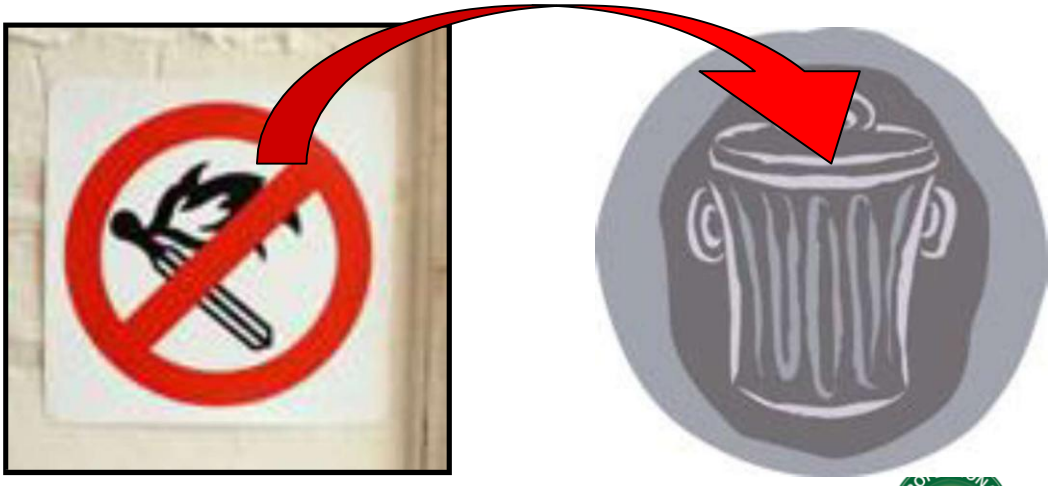
DO NOT:
ALLOW WASTE, LITTER, OILS OR FOREIGN MATERIALS INTO THE STREAM
MOENIE:
TOELAAT DAT AFVALPRODUKTE, GEMORS, OLIES OF VREEMDE MATERIALE IN STROME BELAND NIE.
OMAWUNGAKWENZI: MUSA UKUVUMELA INCITHO, ULAHLO, IOYILE OKANYE EZINYE IZINTO EMILANJENI.

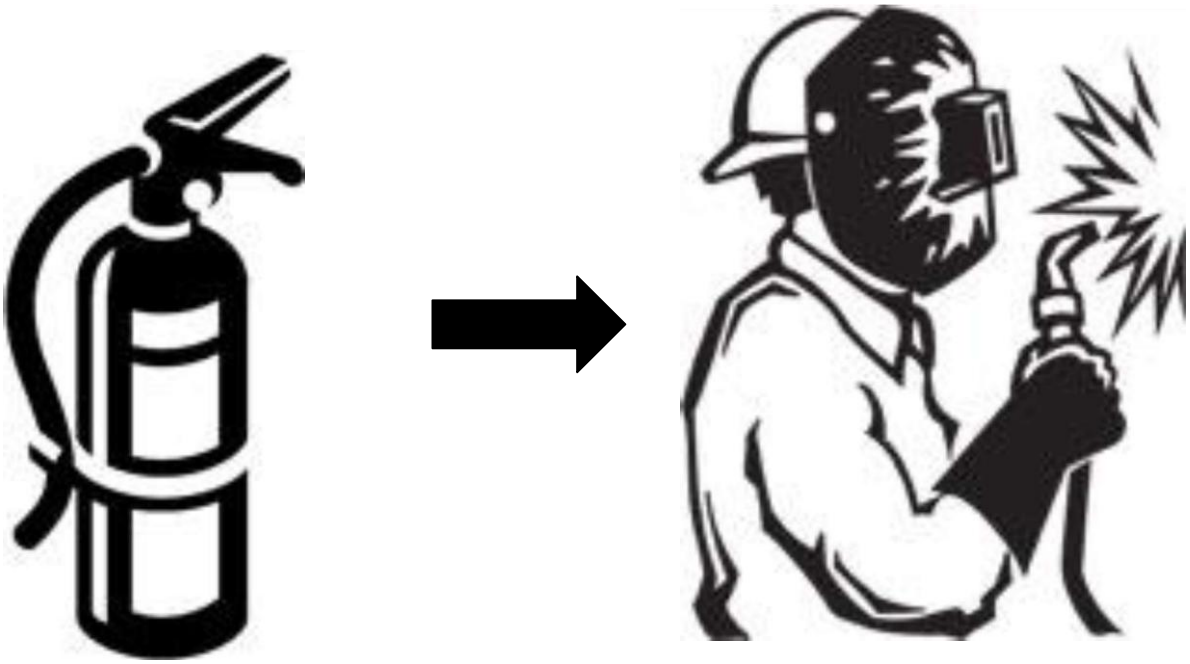
Fire Control:
Vuur Beheer:
Ulawulo Lemililo:

DO:
DISPOSE OF CIGARETTES AND MATCHES CAREFULLY. (Littering is an offence.)
MOET:
GOOI SIGARETTE & VUURHOUTJIES OP GEPASTE MANIER WEG WEG (rommelstrooi is 'n oortreding)
OMAWUKWENZE: LAHLA ISIGARETE NOOMATSHISI NGONONOPHELO (ukulahla lityala).

DO:
ENSURE A WORKING FIRE EXTINGUISHER IS IMMEDIATELY AT HAND IF ANY "HOT WORK" IS UNDERTAKEN e.g. welding, grinding, gas cutting etc.
MOET:
VERSEKER DAT 'N WERKENDE BRANDBLUSSER BYDERHAND IS INDIEN "WARM WERK" GEDOEN WORD bv. Sweiswerk.
OMAWUKWENZE: QINISEKISA ISICIMA-MLILO ESISEBENZAYO SISESANDLENI UKUBA KUKHO UMSEBENZI "OTSHISAYO" OWENZIWAYO, umz. ukuwelda, ugubo, ukuqhawula ugesi, njl.

DO NOT:
MAKE ANY FIRES
MOENIE:
ENIGE VURE MAAK OF ENIGEIETS VERBRAND NIE
OMAWUNGAKWENZI: UKWENZA IMILILO OKANYE UTSHISE NOKUBA YINTONI.





Fencing and Restricted Areas:
Omheining en Beperkte Areas:
Ubiyelo Nemimanndla Engavumelekanga:

DO:

CONFINE WORK AND STORAGE OF EQUIPMENT TO WITHIN THE IMMEDIATE WORK AREA.
MOET:
BEPERK ALLE WERK EN STOOR VAN GEREEDSKAP TOT IN DIE GEGEWE WERKAREA.
OMAWUKWENZE:GCINA UMSEBENZI NEZIXHOBO ZOKUSEBENZA NGAKUMMANDLA OKUSETYENZELWA KUWO.

DO NOT:
ENTER ANY FENCED OFF OR MARKED AREA. SUCH AREAS HAVE BEEN MARKED WITH "NO-GO AREA" SIGNS AND SHOULD BE ADHERED TO.
MOENIE:
ENIGE OMHEINDE OF GEMERKTE AREAS BINNEGAAN NIE. SULKE AREAS IS MET "NO-GO AREA" TEKENS GEMERK EN MOET GEHOORSAAM WORD.
OMAWUNGAKWENZI: MUSA UKUNGENA KWI NDAWO EBIYIWEYO OKANYE EPHAWULWEYO. IMIMANDLA ENJALO IPHAWULWE NGAMAGAMA ATHI "**NO-GO AREA** "

NO-GO AREA

Safety:
Veiligheid:
Ukhuseleko:

DO:
USE ALL SAFETY EQUIPMENT AND COMPLY WITH ALL SAFETY PROCEDURES.
MOET:
GEBRUIK ALLE VEILIGHEIDSGEREEDSKAP EN VOLDOEN AAN ALLE VEILIGHEIDS PROSEDURES.
OMAWUKWENZE: SEBENZISA ZONKE IZIXHOBO ZOKHUSELEKO, UZE UTHOBELE YONKE IMIGAQO YOKHUSELO.

Driving and Dust:
Bestuur en Stof:
Uqhubo Nothuli:

DO:
DRIVE ON DESIGNATED ROUTES ONLY.
MOET:
NET OP AANGEWYSTE ROETES BESTUUR.
OMAWUKWENZE: QHUBA KWIMIMANDLA EPHAWULWEYO KUPHELA.

DO NOT:
SPEED OR DRIVE RECKLESSLY
MOENIE:
JAAG OF ROEKELOOS BESTUUR NIE.
OMAWUNGAKWENZI: SUKUQHUBA NGESANTYA ESIPHEZULU OKANYE NGOKUNGAKHATHALI.

DO NOT:
ALLOW CEMENT TO BLOW AROUND.
MOENIE;
TOELAAT DAT SEMENT WEGWAAI NIE.
OMAWUNGAKWENZI: MUSUKUVUMELA ISAMENTE ISASAZWE.

DO NOT:
CAUSE EXCESSIVE DUST
MOENIE:
OORDREWE STOF VEROORSAAK NIE.


SLOW


PPC

Vegetation protection:
Plantegroei Beskerming:
Ukhuselo Lwezityalo:

DO NOT:
DAMAGE OR REMOVE ANY VEGETATION WITHOUT DIRECT INSTRUCTION.
MOENIE:
ENIGE PLANTEGROEI SONDER DIREKTE INSTRUKSIE BESKADIG OF VERWYDER NIE.
OMAWUNGAKWENZI: MUSA UKUTSHABALALISA OKANYE USUSE NASIPHINA ISITYALO NGAPHANDLE KOMYALELO.

Animals:
Diere:
Izilwanyana:

DO NOT:
INJURE, CAPTURE/SNARE, FEED OR CHASE ANIMALS – this includes birds, frogs, snakes, lizards, tortoises, etc.
MOENIE:
ENIGE DIERE BESEER, VANG, VOER OF JAAG NIE – dit sluit in: voëls, paddas, slange akkedisse, skilpaaie ens.
OMAWUNGAKWENZI: MUSA UKWENZAKALISA, UKUBAMBA, UKONDLA OKANYE UKULEQA IZILWANYANA- okuquka iintaka, amasele, iinyoka, amacilikishe, izikolopati.

DO:
REPORT ANY INJURY OF AN ANIMAL.
MOET:
DIE BESERING VAN 'N DIER RAPPORTEER.
OMAWUKWENZE: XELA NASIPHI ISENZAKALO SESILWANYANA.

Preventing Pollution:
Voorkoming van Besoedeling:
Ukhuselo Longcoliseko:

DO:
CLEAR YOUR WORK AREAS OF LITTER AND BUILDING RUBBLE AT THE END OF EACH DAY – use the waste bins provided and ensure that litter will not blow away.
MOET:
RUIM NA ELKE DAG DIE WERK AREA OP EN GOOI ENIGE ROMMEL WEG IN DIE GEGEWE HOUERS – maak seker dat rommel nie kan wegwaai nie.
OMAWUKWENZE: COCA INDAWO OSEBENZA KUYO, IZINTO EZILAHLIWEYO NENKUNKUMA YOKWAKHA QHO EKUPHELENI KWEMINI-sebenzisa imigqomo yenkunkuma uze uqiniseke ukuba inkunkuma ayivuthuzwa ngumoya.

DO NOT:
ALLOW WASTE BINS TO OVERFLOW OR WASTE TO BLOWAROUND.
MOENIE:
TOELAAT DAT ROMMELHOUERS OORVLOEI OF DAT ROMMEL ROND WAAI NIE.
OMAWUNGAKWENZI: MUSA UKUVUMELA IMIGQOMO YENKUNKUMA IGCWALE KAKHULU OKANYE INKUNKUMA ISASAZEKE.

DO NOT:
LITTER OR LEAVE FOOD LAYING AROUND
MOENIE:
ROMMEL OF KOS LAAT RONDLÊ NIE.
OMAWUNGAKWENZI: MUSA UKUNGCOLISA OKANYE USHIYE UKUTYA KULELE INDAWO YONKE.

DO NOT:
BURY ANY LITTER OR WASTE IN THE GROUND.
MOENIE:
ENIGE ROMMEL OF GEMORS IN DIE GROND BEGRAWE NIE.
OMAWUNGAKWENZI: MUSA UKUNGCWABA INKUNKUMA EMHLABENI.


GLASS
CARDBOARD
PAPER

SCREENING REPORT FOR AN ENVIRONMENTAL AUTHORIZATION AS REQUIRED BY THE 2014 EIA REGULATIONS – PROPOSED SITE ENVIRONMENTAL SENSITIVITY

EIA Reference number: 16/3/3/6/7/1/D1/14/0099/25

Project name: Garden Route Road and Culvert Project

Project title: Bitou Road and Culvert Infrastructure Project

Date screening report generated: 15/09/2025 16:33:14

Applicant: Western Cape Government Department of Infrastructure

Compiler: Sharples Environmental Services

Compiler signature: 
.....

Application Category: Infrastructure|Transport Services|Roads|Public

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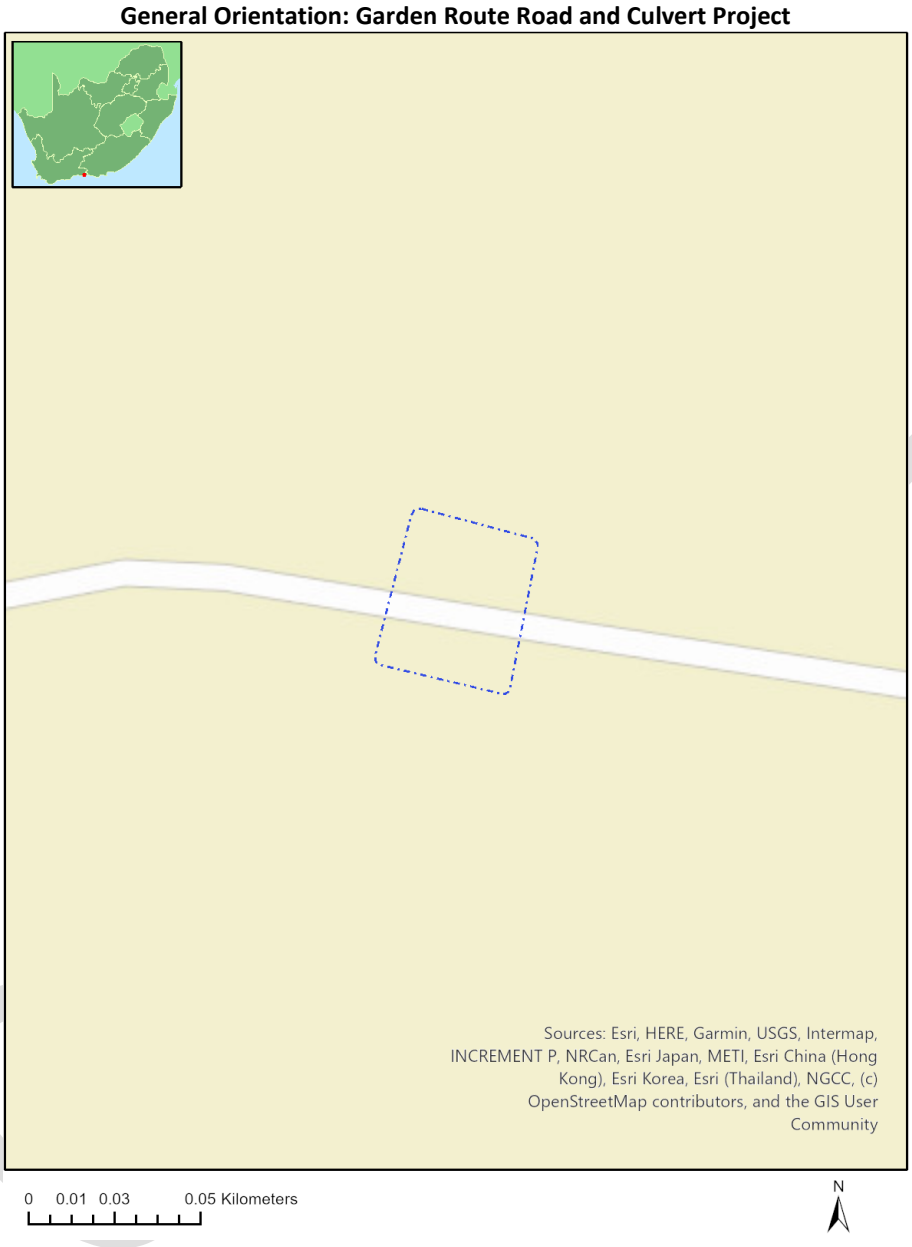
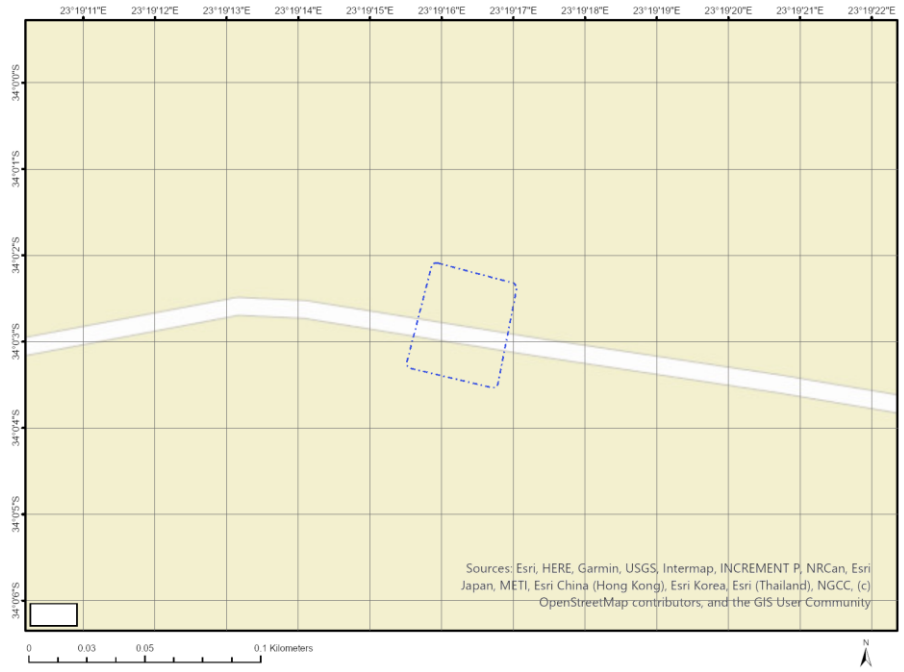
Proposed Project Location

Orientation map 1: General location



Map of proposed site and relevant area(s)



Cadastral details of the proposed site

Property details:

No	Farm Name	Farm/ Erf No	Portion	Latitude	Longitude	Property Type
1	HELDERWATER	586	0	34°0'30.82S	23°18'44.13E	Farm
2	WITTEDRIFT	306	0	34°0'10.33S	23°20'45.02E	Farm
3		591	0	33°59'50.1S	23°19'37.99E	Farm
4		501	0	34°0'6.21S	23°19'29.19E	Farm Portion
5	WITTEDRIFT	306	22	34°0'5.63S	23°19'13.26E	Farm Portion
6	HELDERWATER	586	0	34°0'29.72S	23°18'50.75E	Farm Portion
7		501	1	34°0'18.69S	23°19'9.13E	Farm Portion
8		501	0	34°0'1.5S	23°19'34.86E	Farm Portion
9		501	2	33°59'56.61S	23°19'40.74E	Farm Portion
10		591	0	33°59'58.41S	23°19'38.13E	Farm Portion

Development footprint[1] vertices:
No development footprint(s) specified.

Wind and Solar developments with an approved Environmental Authorisation or applications under consideration within 30 km of the proposed area

No nearby wind or solar developments found.

[1] "development footprint", means the area within the site on which the development will take place and incudes all ancillary developments for example roads, power lines, boundary walls, paving etc. which require vegetation clearance or which will be disturbed and for which the application has been submitted.

Environmental Management Frameworks relevant to the application

No intersections with EMF areas found.

Environmental screening results and assessment outcomes

The following sections contain a summary of any development incentives, restrictions, exclusions or prohibitions that apply to the proposed development site as well as the most environmental sensitive features on the site based on the site sensitivity screening results for the application classification that was selected. The application classification selected for this report is: **Infrastructure|Transport Services|Roads|Public**.

Relevant development incentives, restrictions, exclusions or prohibitions

The following development incentives, restrictions, exclusions or prohibitions and their implications that apply to this site are indicated below.

Incentive, restriction or prohibition	Implication
Garden Route National Park Buffer	https://screening.environment.gov.za/ScreeningDownloads/DevelopmentZones/grnp_approved_plan.pdf
South African Conservation Areas	https://screening.environment.gov.za/ScreeningDownloads/DevelopmentZones/SACAD_OR_2025_Q1_Metadata.pdf

Proposed Development Area Environmental Sensitivity

The following summary of the development site environmental sensitivities is identified. Only the highest environmental sensitivity is indicated. The footprint environmental sensitivities for the proposed development footprint as identified, are indicative only and must be verified on site by a suitably qualified person before the specialist assessments identified below can be confirmed.

Theme	Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
Agriculture Theme		X		
Animal Species Theme		X		
Aquatic Biodiversity Theme	X			
Archaeological and Cultural Heritage Theme				X
Civil Aviation Theme		X		
Defence Theme				X
Paleontology Theme			X	
Plant Species Theme			X	
Terrestrial Biodiversity Theme	X			

Specialist assessments identified

Based on the selected classification, and the known impacts associated with the proposed development, the following list of specialist assessments have been identified for inclusion in the

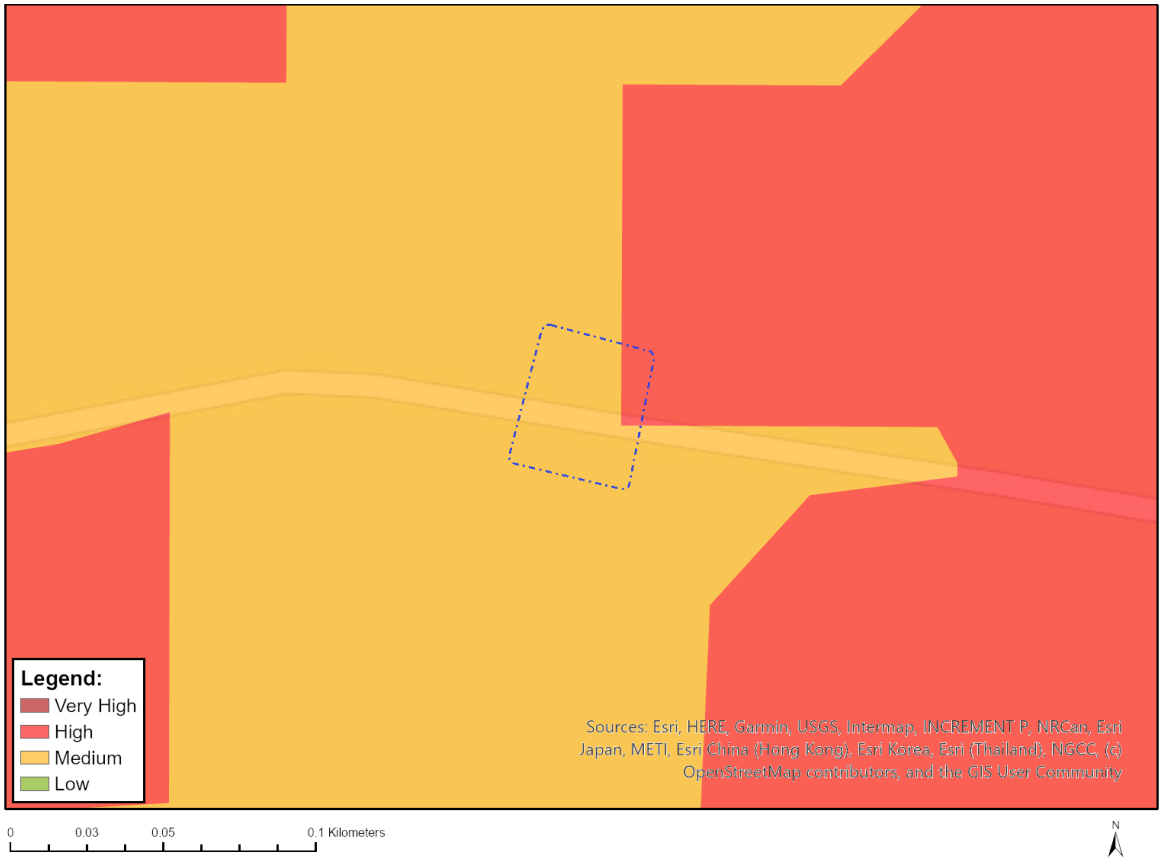
assessment report. It is the responsibility of the EAP to confirm this list and to motivate in the assessment report, the reason for not including any of the identified specialist study including the provision of photographic evidence of the site situation.

No	Specialist assessment	Assessment Protocol
1	Agricultural Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Agriculture_Assessment_Protocols.pdf
2	Landscape/Visual Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
3	Archaeological and Cultural Heritage Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/GuidanceforHIA.pdf
4	Palaeontology Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/GuidanceforPIA.pdf
5	Terrestrial Biodiversity Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Terrestrial_Biodiversity_Assessment_Protocols.pdf
6	Aquatic Biodiversity Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Aquatic_Biodiversity_Assessment_Protocols.pdf
7	Noise Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Noise_Impacts_Assessment_Protocol.pdf
8	Traffic Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
9	Geotechnical Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
10	Socio-Economic Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
11	Ambient Air Quality Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
12	Plant Species Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Plant_Species_Assessment_Protocols.pdf
13	Animal Species Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Animal_Species_Assessment_Protocols.pdf

Results of the environmental sensitivity of the proposed area.

The following section represents the results of the screening for environmental sensitivity of the proposed site for relevant environmental themes associated with the project classification. It is the duty of the EAP to ensure that the environmental themes provided by the screening tool are comprehensive and complete for the project. Refer to the disclaimer.

MAP OF RELATIVE AGRICULTURE THEME SENSITIVITY

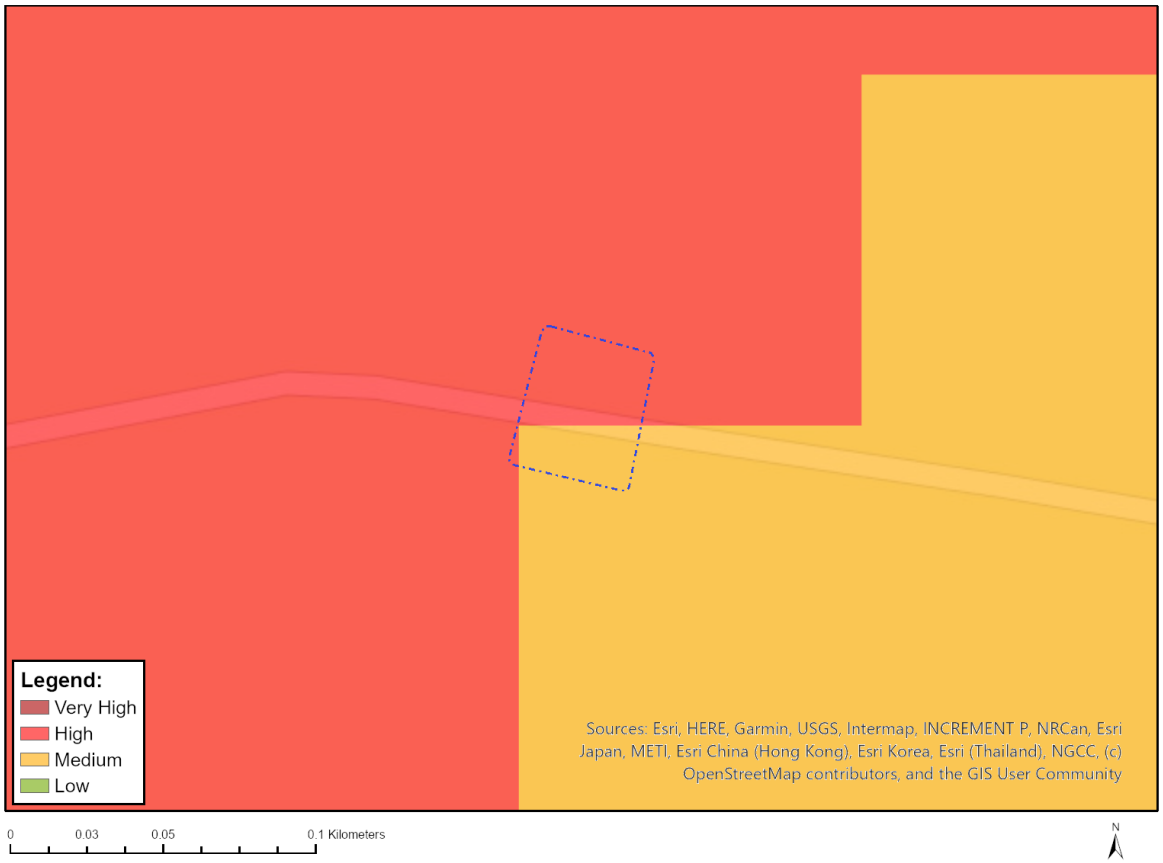


Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
	X		

Sensitivity Features:

Sensitivity	Feature(s)
High	08. Moderate
Medium	07. Low-Moderate

MAP OF RELATIVE ANIMAL SPECIES THEME SENSITIVITY



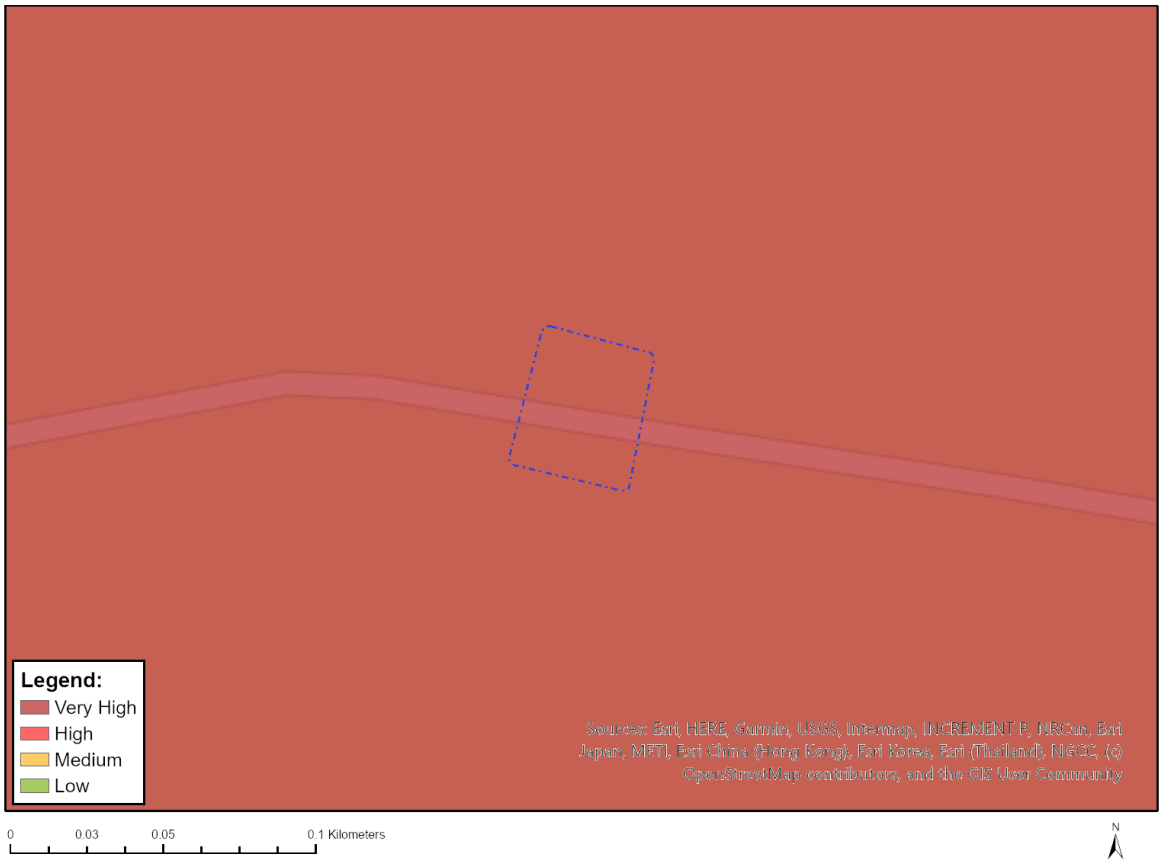
Where only a sensitive plant unique number or sensitive animal unique number is provided in the screening report and an assessment is required, the environmental assessment practitioner (EAP) or specialist is required to email SANBI at eiadatarequests@sanbi.org.za listing all sensitive species with their unique identifiers for which information is required. The name has been withheld as the species may be prone to illegal harvesting and must be protected. SANBI will release the actual species name after the details of the EAP or specialist have been documented.

Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
	X		

Sensitivity Features:

Sensitivity	Feature(s)
High	Aves-Circus ranivorus
High	Aves-Neotis denhami
Medium	Amphibia-Afrixalus knysnae
Medium	Aves-Stephanoaetus coronatus
Medium	Mammalia-Chlorotalpa duthieae
Medium	Sensitive species 8
Medium	Invertebrate-Aneuryphymus montanus

MAP OF RELATIVE AQUATIC BIODIVERSITY THEME SENSITIVITY

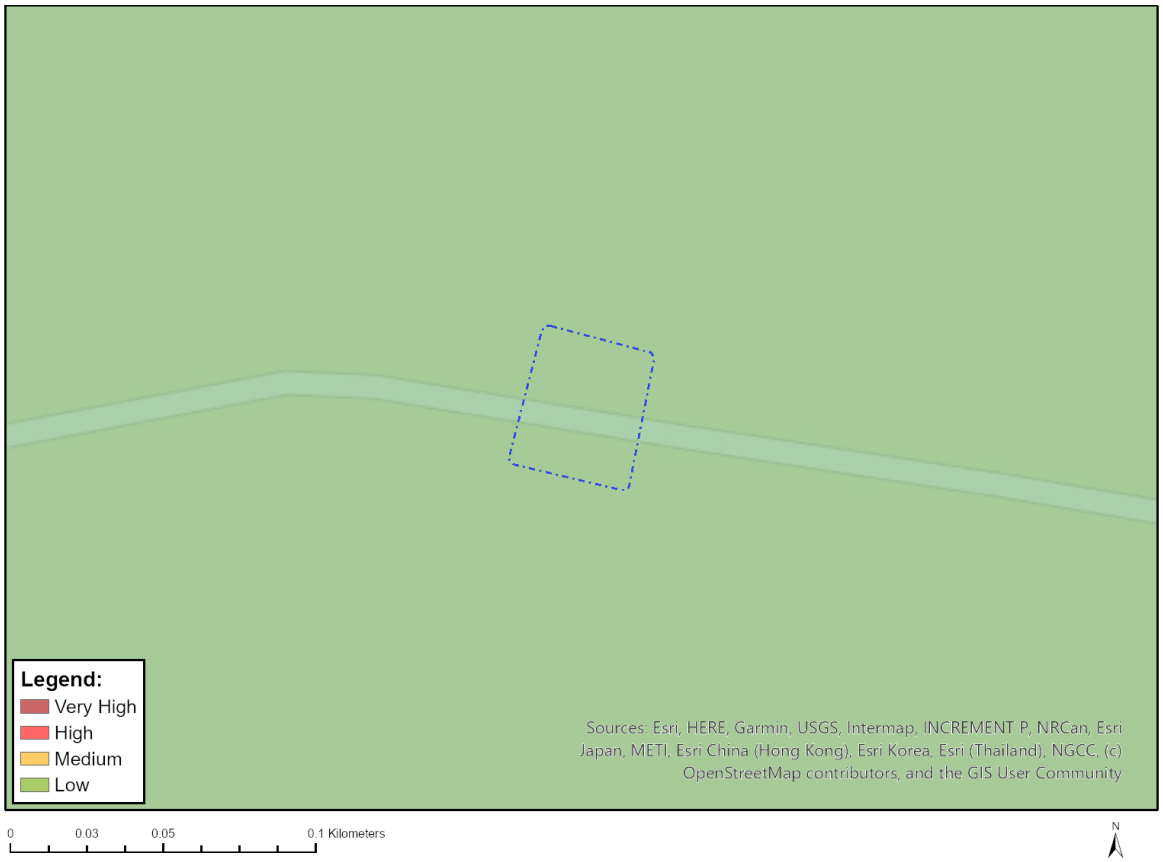


Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
X			

Sensitivity Features:

Sensitivity	Feature(s)
Very High	FEPA Subcatchment
Very High	SWSA (sw)_Outeniqua

MAP OF RELATIVE ARCHAEOLOGICAL AND CULTURAL HERITAGE THEME SENSITIVITY

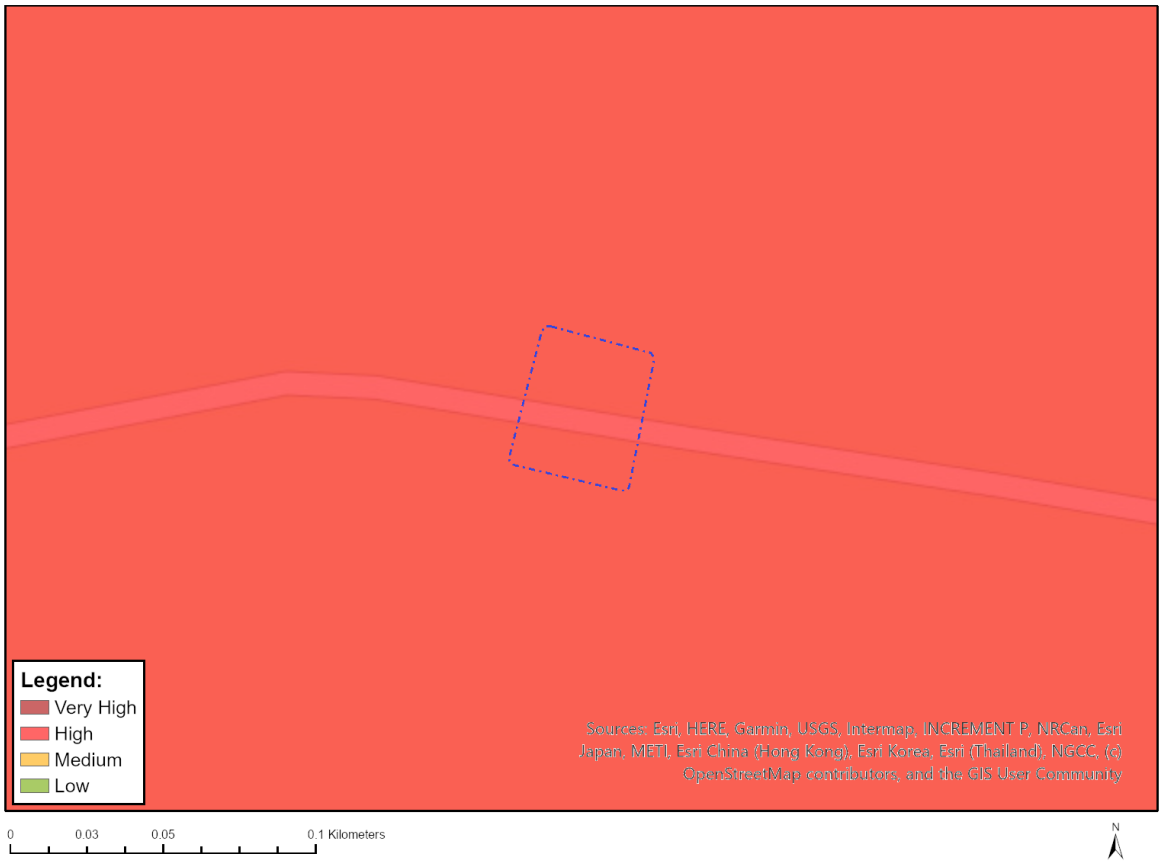


Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
			X

Sensitivity Features:

Sensitivity	Feature(s)
Low	Low Sensitivity

MAP OF RELATIVE CIVIL AVIATION THEME SENSITIVITY

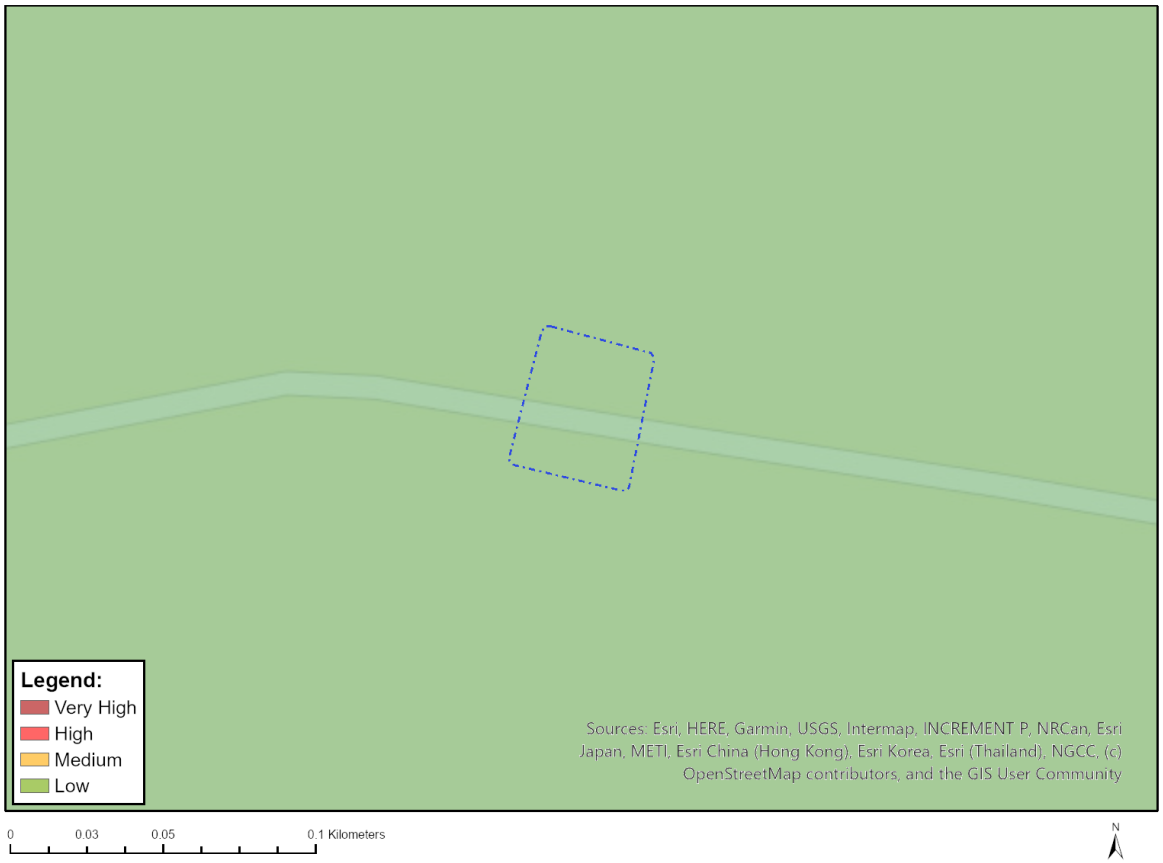


Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
	X		

Sensitivity Features:

Sensitivity	Feature(s)
High	Within 8 km of other civil aviation aerodrome

MAP OF RELATIVE DEFENCE THEME SENSITIVITY

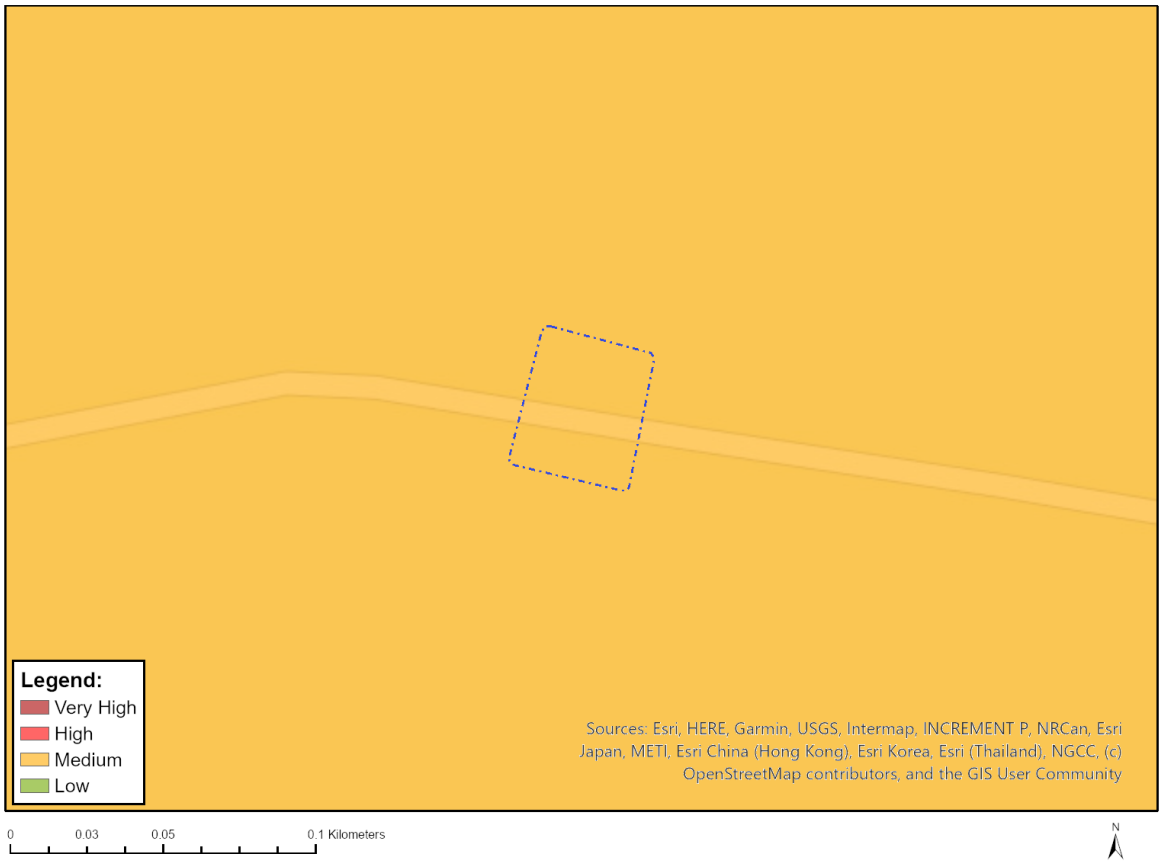


Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
			X

Sensitivity Features:

Sensitivity	Feature(s)
Low	Low Sensitivity

MAP OF RELATIVE PALEONTOLOGY THEME SENSITIVITY

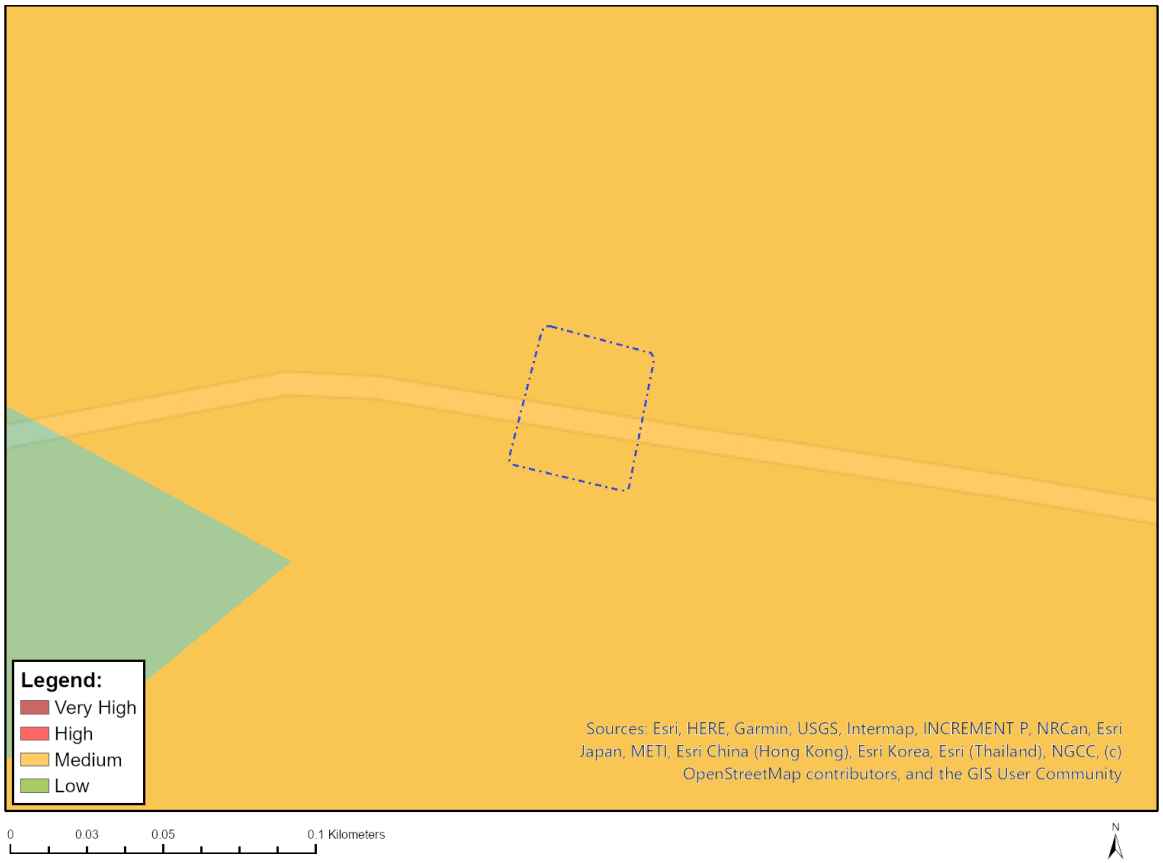


Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
		X	

Sensitivity Features:

Sensitivity	Feature(s)
Medium	Features with a Medium paleontological sensitivity

MAP OF RELATIVE PLANT SPECIES THEME SENSITIVITY



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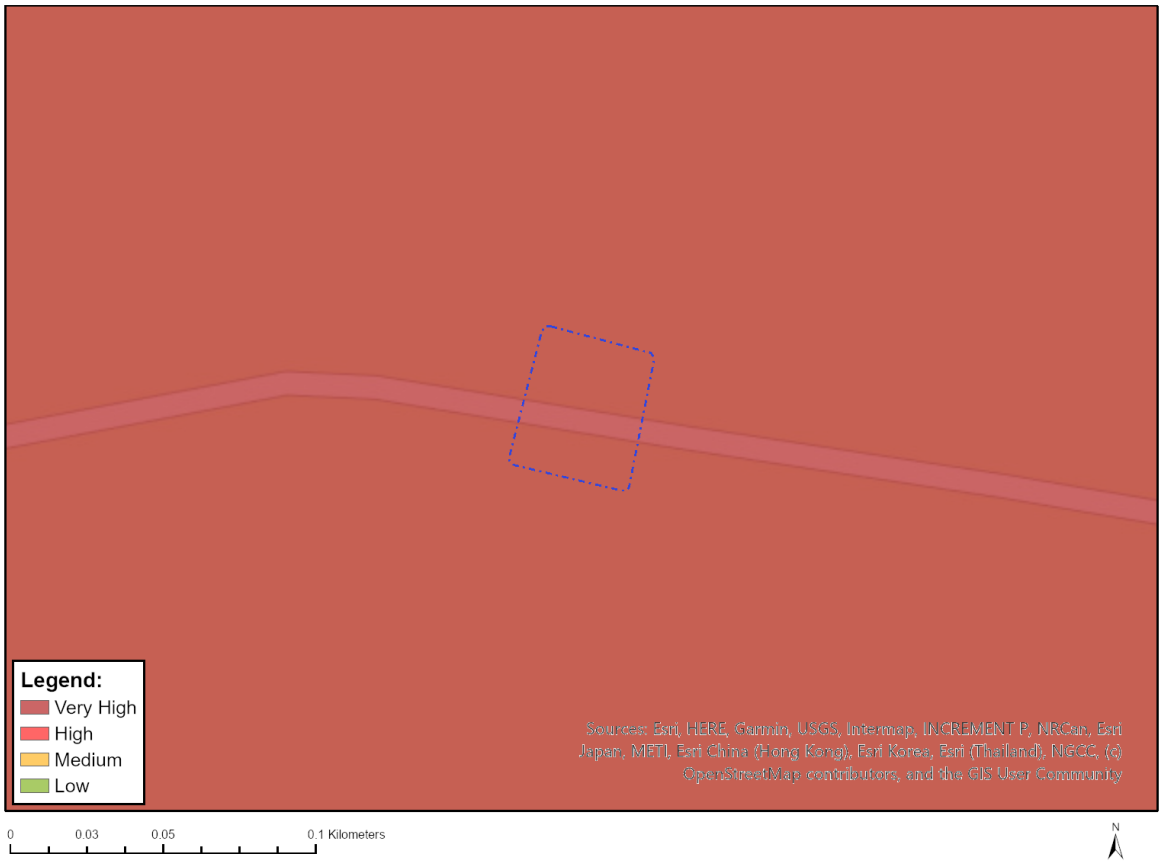
Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
		X	

Sensitivity Features:

Sensitivity	Feature(s)
Medium	Ruschia duthiae
Medium	Leucospermum glabrum
Medium	Selago burchellii
Medium	Sensitive species 419
Medium	Acmadenia alternifolia
Medium	Sensitive species 763

MAP OF RELATIVE TERRESTRIAL BIODIVERSITY THEME SENSITIVITY



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
X			

Sensitivity Features:

Sensitivity	Feature(s)
Very High	CBA: Terrestrial
Very High	CBA2: Terrestrial
Very High	FEPA Subcatchment
Very High	SWSA (sw)_Outeniqua
Very High	National Protected Area Expansion Strategy (NPAES)
Very High	SANParks PAES (2025)
Very High	EN_Garden Route Shale Fynbos