GEORGE
TEL: +27 (0) 44 873 4923 **FAX:** +27 (0) 44 874 5953
EMAIL: info@sescc.net **WEBSITE:** www.sescc.net
ADDRESS: Unit 17 Cathedral Square, Cathedral 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

DRAFT
BASIC ASSESSMENT REPORT

FOR THE

PROPOSED FLOOD DAMAGE REPAIRS TO THE LANGENHOVEN SUBSTATION ON REMAINDER OF ERF 464, GEORGE, WESTERN CAPE.

In terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998) and the Environmental Impact Assessment Regulations, 2014 (as amended 7 April 2017)

PREPARED FOR: *George Municipality*
Electric Engineering Services
PO Box 19
George
6530

DATE: 20 October 2025

SES REF NO:
DEA&DP REF.NO.: 16/3/3/1/D2/20/0009/26

Western Cape Government

Department of Environmental Affairs and Development Planning

BASIC ASSESSMENT REPORT

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

APRIL 2024

BASIC ASSESSMENT REPORT

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

APRIL 2024

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

GENERAL PROJECT DESCRIPTION

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

Proposed flood damage repairs to the Langenhoven Substation, on ERF RE/464, George, Western Cape.

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

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

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

3. *Submission of documentation, reports and other correspondence:*

   The Department has adopted a digital format for corresponding with proponents/applicants or the general public. If there is a conflict between this approach and any provision in the legislation, then the provisions in the legislation prevail. If there is any uncertainty about the requirements or arrangements, the relevant Competent Authority must be consulted.

   The Directorate: Development Management has created generic e-mail addresses for the respective Regions, to centralise their administration. Please make use of the relevant general administration e-mail address below when submitting documents:

   DEADPEIAAdmin@westerncape.gov.za
   Directorate: Development Management (Region 1):
   City of Cape Town; West Coast District Municipal area;
   Cape Winelands District Municipal area and Overberg District Municipal area.

   DEADPEIAAdmin.George@westerncape.gov.za
   Directorate: Development Management (Region 3):
   Garden Route District Municipal area and Central Karoo District Municipal area

   General queries must be submitted via the general administration e-mail for EIA related queries. Where a case-officer of DEA&DP has been assigned, correspondence may be directed to such official and copied to the relevant general administration e-mail for record purposes.

   All correspondence, comments, requests and decisions in terms of applications, will be issued to either the applicant/requester in a digital format via email, with digital signatures, and copied to the Environmental Assessment Practitioner ("EAP") (where applicable).

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

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

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

7. This BAR is current as of **April 2024**. It is the responsibility of the Applicant/ EAP to ascertain whether subsequent versions of the BAR have been released by the Department. Visit this Department's website at http://www.westerncape.gov.za to check for the latest version of this BAR.

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

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

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

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

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

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

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

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

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

DEPARTMENTAL DETAILS	
CAPE TOWN OFFICE: **DIRECTORATE: DEVELOPMENT MANAGEMENT (REGION 1)** (City of Cape Town, West Coast District, Cape Winelands District & Overberg District)	**GEORGE REGIONAL OFFICE:** **DIRECTORATE: DEVELOPMENT MANAGEMENT (REGION 3)** (Central Karoo District & Garden Route District)
The completed Form must be sent via electronic mail to: DEADPEIAAdmin@westerncape.gov.za Queries should be directed to the Directorate: Development Management (Region 1) at: E-mail: DEADPEIAAdmin@westerncape.gov.za Tel: (021) 483-5829 Western Cape Government Department of Environmental Affairs and Development Planning Attention: Directorate: Development Management (Region 1) Private Bag X 9086 Cape Town, 8000	The completed Form must be sent via electronic mail to: DEADPEIAAdmin.George@westerncape.gov.za Queries should be directed to the Directorate: Development Management (Region 3) at: E-mail: DEADPEIAAdmin.George@westerncape.gov.za Tel: (044) 814-2006 Western Cape Government Department of Environmental Affairs and Development Planning Attention: Directorate: Development Management (Region 3) Private Bag X 6509 George, 6530

MAPS

Provide a location map (see below) as Appendix A1 to this BAR that shows the location of the proposed development and associated structures and infrastructure on the property.	
Locality Map:	The scale of the locality map must be at least 1:50 000. For linear activities or development proposals of more than 25 kilometres, a smaller scale e.g., 1:250 000 can be used. The scale must be indicated on the map. The map must indicate the following: • an accurate indication of the project site position as well as the positions of the alternative sites, if any; • road names or numbers of all the major roads as well as the roads that provide access to the site(s) • a north arrow; • a legend; and • a linear scale. For ocean based or aquatic activity, the coordinates must be provided within which the activity is to be undertaken and a map at an appropriate scale clearly indicating the area within which the activity is to be undertaken. Where comment from the Western Cape Government: Transport and Public Works is required, a map illustrating the properties (owned by the Western Cape Government: Transport and Public Works) that will be affected by the proposed development must be included in the Report.
Provide a detailed site development plan / site map (see below) as Appendix B1 to this BAR; and if applicable, all alternative properties and locations.	
Site Plan:	Detailed site development plan(s) must be prepared for each alternative site or alternative activity. The site plans must contain or conform to the following: • The detailed site plan must preferably be at a scale of 1:500 or at an appropriate scale. The scale must be clearly indicated on the plan, preferably together with a linear scale. • The property boundaries and numbers of all the properties within 50m of the site must be indicated on the site plan. • On land where the property has not been defined, the co-ordinates of the area in which the proposed activity or development is proposed must be provided. • The current land use (not zoning) as well as the land use zoning of each of the adjoining properties must be clearly indicated on the site plan. • The position of each component of the proposed activity or development as well as any other structures on the site must be indicated on the site plan. • Services, including electricity supply cables (indicate aboveground or underground), water supply pipelines, boreholes, sewage pipelines, storm water infrastructure and access roads that will form part of the proposed development **must** be clearly indicated on the site plan. • Servitudes and an indication of the purpose of each servitude must be indicated on the site plan. • Sensitive environmental elements within 100m of the site must be included on the site plan, including (but not limited to): o Watercourses / Rivers / Wetlands o Flood lines (*i.e.*, 1:100 year, 1:50 year and 1:10 year where applicable);

	○ Coastal Risk Zones as delineated for the Western Cape by the Department of Environmental Affairs and Development Planning ("DEA&DP"): ○ Ridges; ○ Cultural and historical features/landscapes; ○ Areas with indigenous vegetation (even if degraded or infested with alien species). • Whenever the slope of the site exceeds 1:10, a contour map of the site must be submitted. • North arrow A map/site plan must also be provided at an appropriate scale, which superimposes the proposed development and its associated structures and infrastructure on the environmental sensitivities of the preferred and alternative sites indicating any areas that should be avoided, including buffer areas.
Site photographs	Colour photographs of the site that shows the overall condition of the site and its surroundings (taken on the site and taken from outside the site) with a description of each photograph. The vantage points from which the photographs were taken must be indicated on the site plan, or locality plan as applicable. If available, please also provide a recent aerial photograph. Photographs must be attached to this BAR as **Appendix C**. The aerial photograph(s) should be supplemented with additional photographs of relevant features on the site. Date of photographs must be included. Please note that the above requirements must be duplicated for all alternative sites.
Biodiversity Overlay Map:	A map of the relevant biodiversity information and conditions must be provided as an overlay map on the property/site plan. The Map must be attached to this BAR as **Appendix D**.
Linear activities or development and multiple properties	GPS co-ordinates must be provided in degrees, minutes and seconds using the Hartebeeshoek 94 WGS84 co-ordinate system. Where numerous properties/sites are involved (linear activities) you must attach a list of the Farm Name(s)/Portion(s)/Erf number(s) to this BAR as an Appendix. For linear activities that are longer than 500m, please provide a map with the co-ordinates taken every 100m along the route to this BAR as **Appendix A3**.

ACRONYMS

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

ATTACHMENTS

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

The following checklist of attachments must be completed.

APPENDIX			**✓ (Tick) or x (cross)**
Appendix A:	**Maps**		
	Appendix A1:	**Locality Map**	✓
	Appendix A2:	**Coastal Risk Zones as delineated in terms of ICMA for the Western Cape by the Department of Environmental Affairs and Development Planning**	N/A
	Appendix A3:	**Map with the GPS co-ordinates for linear activities**	N/A
Appendix B:	**Appendix B1:**	**Site development plan(s)**	✓
	Appendix B2	**A map of appropriate scale, which superimposes the proposed development and its associated structures and infrastructure on the environmental sensitivities of the preferred site, indicating any areas that should be avoided, including buffer areas;**	
Appendix C:	**Photographs**		✓
Appendix D:	**Biodiversity overlay map**		✓
Appendix E:	**Permit(s) / license(s) / exemption notice, agreements, comments from State Department/Organs of state and service letters from the municipality.**		
	Appendix E1:	**Final comment/ROD from HWC**	
	Appendix E2:	**Copy of comment from Cape Nature**	
	Appendix E3:	**Final Comment from the DWS**	
	Appendix E4:	**Comment from the DEA: Oceans and Coast**	
	Appendix E5:	**Comment from the DAFF**	
	Appendix E6:	**Comment from WCG: Transport and Public Works**	
	Appendix E7:	**Comment from WCG: DoA**	
	Appendix E8:	**Comment from WCG: DHS**	
	Appendix E9:	**Comment from WCG: DoH**	

	Appendix E10:	**Comment from DEA&DP: Pollution Management**	
	Appendix E11:	**Comment from DEA&DP: Waste Management**	
	Appendix E12:	**Comment from DEA&DP: Biodiversity**	
	Appendix E13:	**Comment from DEA&DP: Air Quality**	
	Appendix E14:	**Comment from DEA&DP: Coastal Management**	
	Appendix E15:	**Comment from the local authority**	
	Appendix E16:	**Confirmation of all services (water, electricity, sewage, solid waste management)**	
	Appendix E17:	**Comment from the District Municipality**	
	Appendix E18:	**Copy of an exemption notice**	
	Appendix E19	**Pre-approval for the reclamation of land**	
	Appendix E20:	**Proof of agreement/TOR of the specialist studies conducted.**	
	Appendix E21:	**Proof of land use rights**	
	Appendix E22:	**Proof of public participation agreement for linear activities**	
Appendix F:	**Public participation information: including a copy of the register of I&APs, the comments and responses Report, proof of notices, advertisements and any other public participation information as is required.**		✓
Appendix F1:	**Proof of PP**		✓
Appendix F2:	**I &AP list**		✓
Appendix G:	**Specialist Report(s)**		✓
Appendix G1:	**Botanical Impact Assessment- Mark Berry**		✓
Appendix G2:	**Aquatic Impact Assessment- Debbie Fordham**		✓
Appendix G3:	**Terrestrial impact assessment-**		✓
Appendix H:	**EMPr**		✓

Appendix I:	**Screening tool report**	✓
Appendix J:	**The impact and risk assessment for each alternative**	Included in the BAR
Appendix K:	**Need and desirability for the proposed activity or development in terms of this Department's guideline on Need and Desirability (March 2013)/DEA Integrated Environmental Management Guideline**	N/A
Appendix…..	**Any other attachments must be included as subsequent appendices**	N/A

SECTION A: ADMINISTRATIVE DETAILS

Highlight the Departmental Region in which the intended application will fall	CAPE TOWN OFFICE: REGION 1		GEORGE OFFICE: BEGION 3
	(City of Cape Town, West Coast District	(Cape Winelands District & Overberg District)	(Central Karoo District & Garden Route District)

Duplicate this section where there is more than one Proponent Name of Applicant/Proponent:	George Local Municipality	
Name of contact person for Applicant/Proponent (if other):	MJ Rhode	
Company/ Trading name/State Department/Organ of State:	George Municipality: Electrical Engineering Services	
Company Registration Number:		
Postal address:	PO BOX 19 George	
		Postal code: 6530
Telephone:	( ) 27(0) 44-874 4098	Cell: +27(0) 79 881 7350
E-mail:	tremayne@urbanengineering.co.za	Fax: ( )
Company of EAP:	Sharples Environmental Services cc	
EAP name:	Michael Bennett (Registered EAP) Onela Mhobo (Candidate EAP)	
Postal address:	PO BOX 9087	
	George	Postal code: 6530
Telephone:	(+27) 44 873 4923	Cell:
E-mail:	michael@sescc.net Onela@sescc.net	Fax: ( )
Qualifications:	Michael: BSc Environmental & Geographic Sciences and Ocean and Atmospheric Science Onela: BSc Environmental Sciences BSc Honours Environmental Management	
EAP registration no:	Michael: 2021/3163 Onela: 2022/4522	
Duplicate this section where there is more than one landowner Name of landowner:	George Municipality	
Name of contact person for landowner (if other):	Johannes Franciscus Koegelenberg	
Postal address:	PO BOX	
	George	Postal code:6530
Telephone:	(0) 44 801 9278	Cell:
E-mail:	Jkoegelenberg@george.go.za	Fax: ( )
Name of Person in control of the land:	George Municipality	
Name of contact person for person in control of the land:	Johannes Franciscus Koegelenberg	
Postal address:	PO BOX 19	
	George	Postal code: 6530
Telephone:	(0) 44 801 9278	Cell:
E-mail:	jkoegelenberg@george.gov.za	Fax: ( )

Duplicate this section where there is more than one Municipal Jurisdiction	George Municipality

Municipality in whose area of jurisdiction the proposed activity will fall:		
Contact person:	Mr. Godfrey Louw	
Postal address:	PO Box 19	
	George	Postal code:6530
Telephone	(044) 801 9433	Cell:
E-mail:	glouw@george.gov.za	Fax: ( )

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

1.	Is the proposed development (please tick):	New	X	Expansion	
2.	Is the proposed site(s) a brownfield of greenfield site? Please explain.				
Brownfield					
~~3.~~	~~**For Linear activities or developments**~~				
~~3.1.~~	~~Provide the Farm(s)/Farm Portion(s)/Erf number(s) for all routes:~~				
~~3.2.~~	~~Development footprint of the proposed development for all alternatives.~~				m²
~~3.3.~~	~~Provide a description of the proposed development (e.g. for roads the length, width and width of the road reserve in the case of pipelines indicate the length and diameter) for all alternatives.~~				
~~3.4.~~	~~Indicate how access to the proposed routes will be obtained for all alternatives.~~				
~~3.5.~~	~~SG Digit codes of the Farms/Farm Portions/Erf numbers for all alternatives~~				
~~3.6.~~	~~**Starting point co-ordinates for all alternatives**~~				
	~~Latitude (S)~~	~~º~~	~~‘~~	~~“~~	
	~~Longitude (E)~~	~~º~~	~~‘~~	~~“~~	
	~~**Middle-point co-ordinates for all alternatives**~~				
	~~Latitude (S)~~	~~º~~	~~‘~~	~~“~~	
	~~Longitude (E)~~	~~º~~	~~‘~~	~~“~~	
	~~**End point co-ordinates for all alternatives**~~				
	~~Latitude (S)~~	~~º~~	~~‘~~	~~“~~	
	~~Longitude (E)~~	~~º~~	~~‘~~	~~“~~	
~~**Note: For Linear activities or developments longer than 500m, a map indicating the co-ordinates for every 100m along the route must be attached to this BAR as Appendix A3.**~~					
4.	**Other developments**				
4.1.	Property size(s) of all proposed site(s):				m²
4.2.	Developed footprint of the existing facility and associated infrastructure (if applicable):				Approx. 2537 m²
4.3.	Development footprint of the proposed development and associated infrastructure size(s) for all alternatives:				Approx. 580 m²
4.4.	Provide a detailed description of the proposed development and its associated infrastructure (This must include details of e.g. buildings, structures, infrastructure, storage facilities, sewage/effluent treatment and holding facilities).				

This project proposes to repair damages caused by heavy rainfall and flood events and install protection measures to prevent future damages to the Langenhoven Substation and surrounding area.

It is proposed to install gabion supporting structures to the south of the substation, construct an earth v-drain on the southern edge of the substation and a swale from the earth v-drain to the Camphersdrift river. Either a flared swale to spread the water out on the edge of the bush near

the river and allow it to flow naturally over ground down to the river will be constructed or an outlet structure as close to the river as possible with energy dissipators will be constructed.

The extent and scope of the proposed repair work include:

- Construct a gabion retaining structure (consisting of 2×1×1 m gabion baskets) on the northern side of the substation;
- Construct an earth V-drain along the southern edge of the substation; and
- Construct a trapezoidal grass swale with an outlet as close to the river as possible with energy dissipators to protect against erosion. Alternatively, construct a trapezoidal grass swale with a flared swale to spread the water out on the edge of the riverine scrub.

Figure 1: Proposed layout

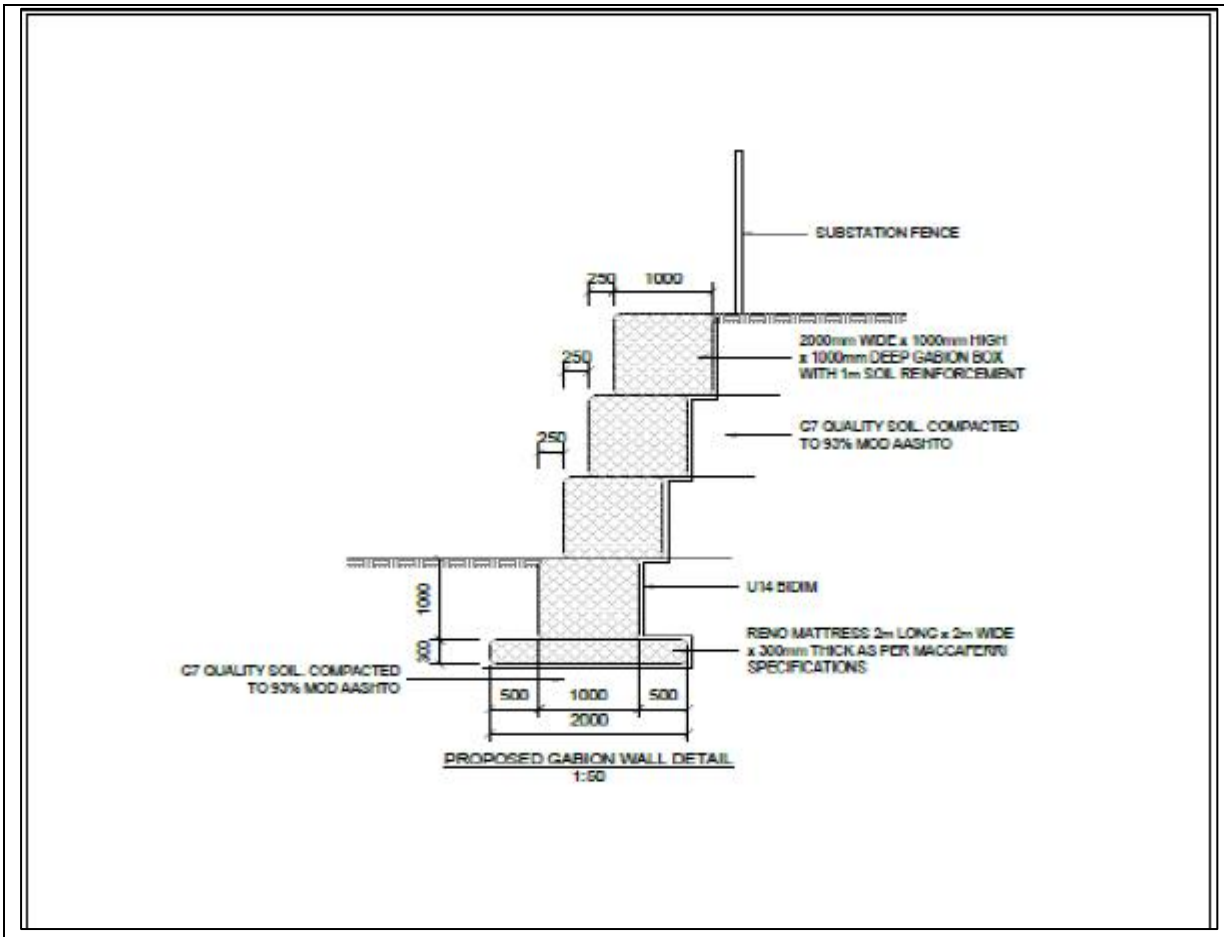

Figure 2: Sketch of the gabion retaining structure.

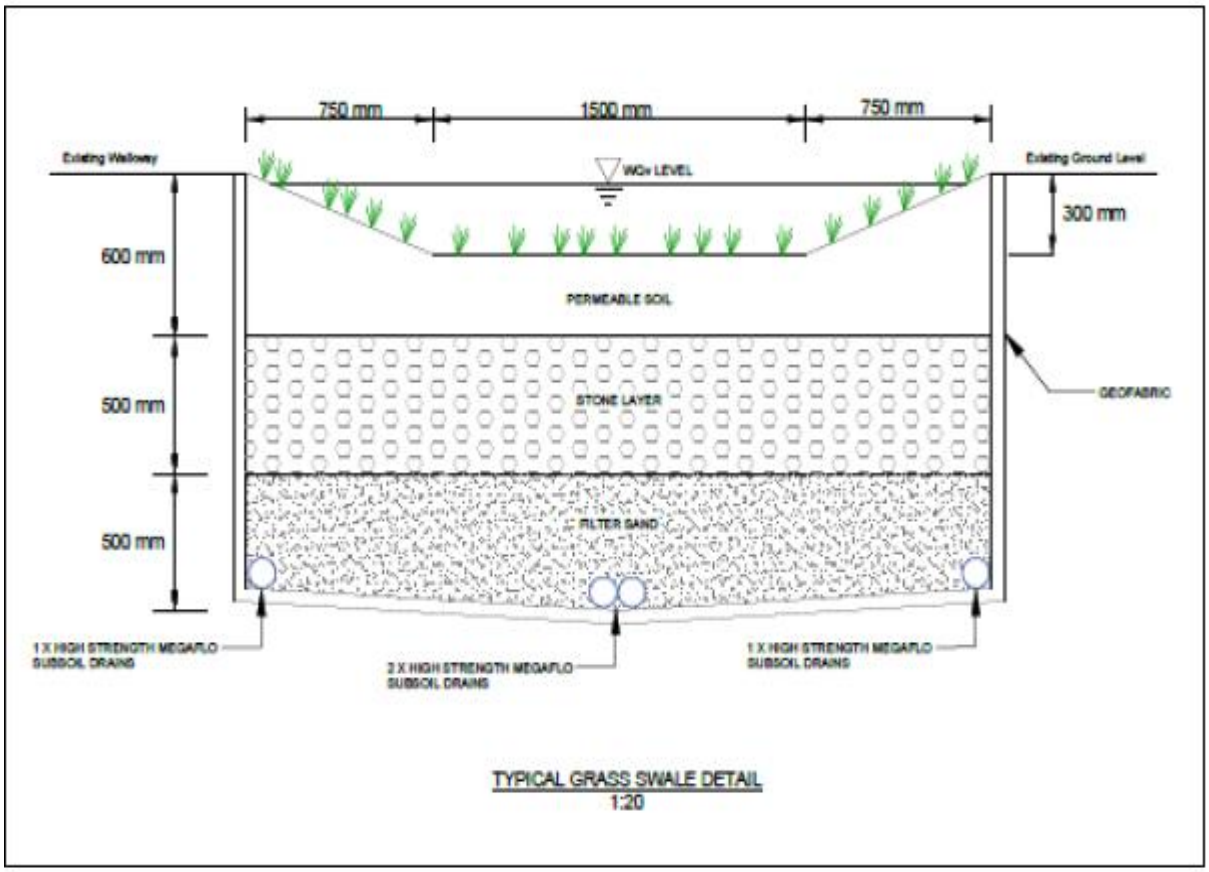

Figure 3: Grass Swale

4.5.	Indicate how access to the proposed site(s) will be obtained for all alternatives.				
The site is directly accessed from C.J. Langenhoven Road.					
4.6.	SG Digit code(s) of the proposed site(s) for all alternatives:				
	RE/464	C02700020000046400000			
4.7.	Coordinates of the proposed site(s) for all alternatives:				
	Latitude (S)		**33°**	**57'**	**16.62"**
	Longitude (E)		**22°**	**27'**	**07.83"**
	Latitude (S)		**33°**	**57'**	**18.35"**
	Longitude (E)		**22°**	**27'**	**07.83"**
	Latitude (S)		**33°**	**57'**	**19.01"**
	Longitude (E)		**22°**	**27'**	**07.15"**

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

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

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

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

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

3. Other legislation

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

- Amended Environmental Impact Assessment Regulations, GN No. R. 324 – 327 (7 April 2017)
- The Constitution of the Republic of South Africa, 1996 (Act 108 of 1996)
- National Environmental Management Laws Amendment Act, 2022, (NEMLAA 2022)

4. Policies

Explain which policies were considered and how the proposed activity or development complies and responds to these policies.

Policy 4.5.1.1 of the George municipality SDF 2023-2027

A1: Maintain, improve and expand basic engineering services (Water, sewer, **electricity,** stormwater and refuse removal)

5. Guidelines

List the guidelines which have been considered relevant to the proposed activity or development and explain how they have influenced the development proposal.

Guideline on Need and Desirability (2013)	Guideline considered during the assessment of the Need and Desirability of the proposed development project.
Guideline on Environmental Management Plans (2005)	Guideline considered in the compilation of the EMP attached to this Basic Assessment Report.
Guideline for the Review of Specialist Input into the EIA Process (2005)	Guideline considered during the review and integration of specialist input into this Basic Assessment Report
External Guideline: Generic Water Use Authorization Application Process (2007)	Guideline considered during the process of applying for the required water use authorization
Integrated Environmental Management Information Series 5: Impact Significance (2002)	Guideline considering during the identification and evaluation of potential impacts associated with the proposed development, and the reporting thereof in this Basic Assessment Report
Integrated Environmental Management Information Series 7: Cumulative Effects Assessment (2004)	Guideline considering during the assessment of the cumulative effect of the identified impacts.
Guideline on Public Participation (2013)	Guideline considered in the undertaking of the public participation for the proposed development. All relevant provisions contained in the guideline were adhered to in the basic assessment process as appropriate, except where an exemption/ deviation has been granted by the Competent Authority.
Guideline on Alternatives (2013)	Guideline considered when identifying and evaluating possible alternatives for the proposed development. Alternatives that were considered in the impact assessment process are reported on in this Basic Assessment Report (see section E)

6. Protocols

Explain how the proposed activity or development complies with the requirements of the protocols referred to in the NOI and/or application form

The following relevant protocols have been complied with were used by the specialists to compile their respective specialist reports:

- Aquatic Biodiversity Assessment Protocol
- Terrestrial Biodiversity protocol
- Plant Species Assessment protocol
- Animal Species Assessment protocol

SECTION D: APPLICABLE LISTED ACTIVITIES

List the applicable activities in terms of the NEMA EIA Regulations

Activity No(s):	Provide the relevant **Basic Assessment Activity(ies)** as set out in **Listing Notice 1**	Describe the portion of the proposed development to which the applicable listed activity relates.
12	**The development of—** (i) dams or weirs, where the dam or weir, including infrastructure and water surface area, exceeds 100 square metres; or (ii) infrastructure or structures with a physical footprint of 100 square metres or more; where such development occurs— (a) within a watercourse; (b) in front of a development setback; or (c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse; — **excluding**— (aa) the development of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour; (bb) where such development activities are related to the development of a port or harbour, in which case activity 26 in Listing Notice 2 of 2014 applies; (cc) activities listed in activity 14 in Listing Notice 2 of 2014 or activity 14 in Listing Notice 3 of 2014, in which case that activity applies; **(dd) where such development occurs within an urban area;** (ee) where such development occurs within existing roads, road reserves or railway line reserves; or (ff) the development of temporary infrastructure or structures where such infrastructure or structures will be removed within 6 weeks of the commencement of development and where indigenous vegetation will not be cleared.	The proposed activities will exceed 100 m² within a watercourse and within 32m of a watercourse. **Therefore, this activity will be triggered**.
19	**The infilling or depositing of any material of more than 10 cubic meters into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10 cubic meters from a watercourse;**	The construction of the gabion structures and outlet structure or flared swale will take place in and on the riverbank. **Therefore, this activity will be triggered**.

	but excluding where such infilling, depositing, dredging, excavation, removal or moving— (a) will occur behind a development setback; (b) is for maintenance purposes undertaken in accordance with a maintenance management plan; (c) falls within the ambit of activity 21 in this Notice, in which case that activity applies; (d) occurs within existing ports or harbours that will not increase the development footprint of the port or harbour; or (e) where such development is related to the development of a port or harbour, in which case activity 26 in Listing Notice 2 of 2014 applies.	
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.
12	**The clearance of an area of 300 square metres or more of indigenous vegetation** except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan. **(d) In 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;** iii. Within the littoral active zone or 100 metres inland from high water mark of the sea or an estuarine functional zone, whichever distance is the greater, excluding where such removal will occur behind the development setback line on erven in urban areas; iv. On land, where, at the time of the coming into effect of this Notice or thereafter such land was zoned open space, conservation or had an equivalent zoning; or v. On land designated for protection or conservation purposes in an Environmental Management Framework adopted in the prescribed manner, or a Spatial Development Framework adopted by the MEC or Minister.	Portions of the site is mapped as CBA1 and CBA2. Garden Route Shale Fynbos is the mapped vegetation type of the sites, and it has an ecosystem threat status of Endangered. Its is highly likely that more than 300m2 of vegetation will be removed for the rehabilitation measures and **therefore this activity will be triggered by the proposal.**

14	**The development of—** (i) dams or weirs, where the dam or weir, including infrastructure and water surface area exceeds 10 square metres; or (ii) infrastructure or structures with a physical footprint of 10 square metres or more; **where such development occurs—** **(a) within a watercourse**; (b) in front of a development setback; or **(c) if no development setback has been adopted, within 32 metres of a watercourse, measured from the edge of a watercourse;** excluding the development of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour. **i. Western Cape** **i. Outside urban areas:** (aa) A protected area identified in terms of NEMPAA, excluding conservancies; (bb) National Protected Area Expansion Strategy Focus areas; (cc) World Heritage Sites; (dd) Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as adopted by the competent authority; (ee) Sites or areas listed in terms of an international convention; **(ff) Critical biodiversity areas or ecosystem service areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans;** (gg) Core areas in biosphere reserves; or (hh) Areas on the estuary side of the development setback line or in an estuarine functional zone where no such setback line has been determined.	The proposed activities will exceed 10 m² within a watercourse and within 32m of a watercourse and portions of the site is mapped as CBA1 and CBA2. **Therefore, this activity will be triggered**.
Note: • The listed activities specified above must reconcile with activities applied for in the application form. The onus is on the Applicant to ensure that all applicable listed activities are included in the application. If a specific listed activity is not included in an Environmental Authorisation, a new application for Environmental Authorisation will have to be submitted. • Where additional listed activities have been identified, that have not been included in the application form, and amended application form must be submitted to the competent authority.		

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

Activity No(s):	Provide the relevant **Basic Assessment Activity(ies)** as set out in **Category A**	Describe the portion of the proposed development to which the applicable listed activity relates.

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

Activity No(s):	Provide the relevant **Listed Activity(ies)**	Describe the portion of the proposed development to which the applicable listed activity relates.

SECTION E: PLANNING CONTEXT AND NEED AND DESIRABILITY

1.	Provide a description of the preferred alternative.

This project proposes to repair damages caused by heavy rainfall and flood events and install protection measures to prevent future damages to the Langenhoven Substation and surrounding area.

It is proposed to install gabion supporting structures to the south of the substation, construct an earth v-drain on the southern edge of the substation and a swale from the earth v-drain to the Camphersdrift river. Either a flared swale to spread the water out on the edge of the bush near the river and allow it to flow naturally over ground down to the river will be constructed or an outlet structure as close to the river as possible with energy dissipators will be constructed.

The extent and scope of the proposed repair work include:

- Construct a gabion retaining structure (consisting of 2×1×1 m gabion baskets) on the northern side of the substation;
- Construct an earth V-drain along the southern edge of the substation; and
- Construct a trapezoidal grass swale with an outlet as close to the river as possible with energy dissipators to protect against erosion. Alternatively, construct a trapezoidal grass swale with a flared swale to spread the water out on the edge of the riverine scrub.

Figure 4: Proposed layout

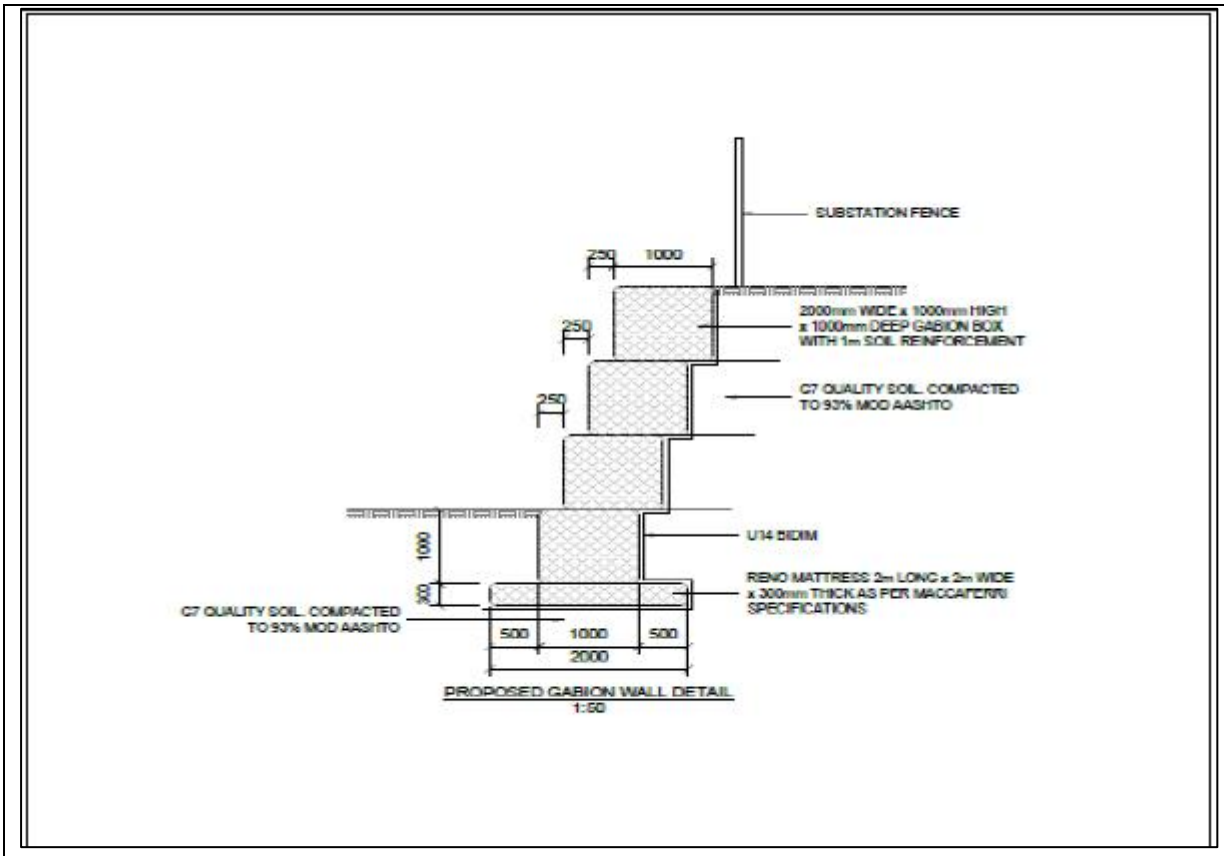

Figure 5: Sketch of the gabion retaining structure

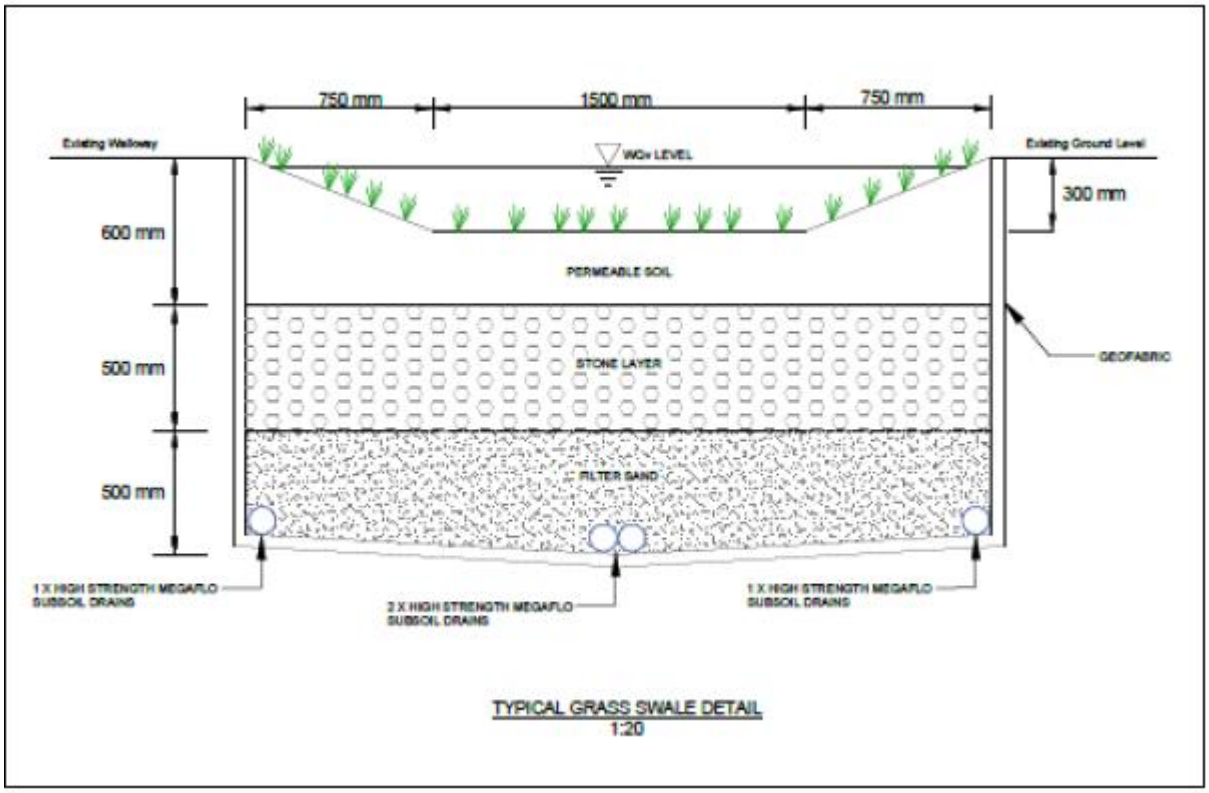

Figure 6: Grass Swale

2.	Explain how the proposed development is in line with the existing land use rights of the property as you have indicated in the NOI and application form? Include the proof of the existing land use rights granted in Appendix E21.
The proposal is to repair damages caused by heavy rainfall and flood events and install protection measures to prevent future damages to the Langenhoven Substation and surrounding areas.	

3.	Explain how potential conflict with respect to existing approvals for the proposed site (as indicated in the NOI/and or application form) and the proposed development have been resolved.
N/A	
4.	Explain how the proposed development will be in line with the following?
4.1	The Provincial Spatial Development Framework.
N/A- the proposal only includes the repair of damages caused by heavy rainfall and flood events and install protection measures to prevent future damages to the Langenhoven Substation and surrounding areas.	
4.2	The Integrated Development Plan of the local municipality.
N/A- The proposal only includes the repair of damages caused by heavy rainfall and flood events and install protection measures to prevent future damages to the Langenhoven Substation and surrounding areas. No new developments are proposed as part of the proposed flood repairs.	
4.3.	The Spatial Development Framework of the local municipality.
N/A- The proposal only includes the repair of damages caused by heavy rainfall and flood events and install protection measures to prevent future damages to the Langenhoven Substation and surrounding areas. No new developments are proposed as part of the proposed flood repairs.	
4.4.	The Environmental Management Framework applicable to the area.
N/A- No EMF adopted for George.	
5.	Explain how comments from the relevant authorities and/or specialist(s) with respect to biodiversity have influenced the proposed development.
To be included in the final BAR.	
6.	Explain how the Western Cape Biodiversity Spatial Plan (including the guidelines in the handbook) has influenced the proposed development.
According to the Botanical impact assessment by Mark Berry: The site falls inside the George biodiversity network. Being located next to the Camfersdrift River, it includes aquatic and terrestrial critical biodiversity areas (CBA's), as well as a degraded critical biodiversity area (CBA2). These are all aligned with the Camfersdrift River and adjacent tracts of parkland, which act as an ecological corridor linking the Outeniqua Mountains with the coastline. Reasons for the importance of the mapped CBA's include the presence of ecological processes (FEPA river corridor) and water resource protection (Gwaing & South Eastern Coastal Belt). The closest protected area is the Van Kervel Local Authority Nature Reserve, located 1.4 km away to the northeast of the site. The Witfontein Nature Reserve is located ±3 km away to the north. CBA's are defined as areas in a natural condition that are required to meet biodiversity targets, for species, ecosystems or ecological processes and infrastructure (Pool-Stanvliet, 2017). These sites are selected for meeting national targets for species, habitats and ecological processes (Pool-Stanvliet, 2017). Many of these areas support known occurrences of threatened plant species, and/or may be essential elements of designated ecological corridors. Loss of designated CBA's is therefore not recommended. ESA's, on the other hand, are supporting zones required to prevent the degradation of CBA's and Protected Areas. ESA's must be managed to minimize impact on ecological processes and ecological infrastructure functioning, especially soil and water-related services, and to allow for faunal movement.	
7.	Explain how the proposed development is in line with the intention/purpose of the relevant zones as defined in the ICMA.
N/A	
8.	Explain whether the screening report has changed from the one submitted together with the application form. The screening report must be attached as Appendix I.
The screening tool has not changed.	
9.	Explain how the proposed development will optimise vacant land available within an urban area.
N/A	
10.	Explain how the proposed development will optimise the use of existing resources and infrastructure.
The proposal includes the repair of damages caused by heavy rainfall and flood events and install protection measures to prevent future damages to the Langenhoven Substation and surrounding areas. No new developments are proposed as part of the proposed flood repairs.	
11.	Explain whether the necessary services are available and whether the local authority has confirmed sufficient, spare, unallocated service capacity. (Confirmation of all services must be included in Appendix E16).
N/A	

12.	In addition to the above, explain the need and desirability of the proposed activity or development in terms of this Department's guideline on Need and Desirability (March 2013) or the DEA's Integrated Environmental Management Guideline on Need and Desirability. This may be attached to this BAR as Appendix K.
Not applicable, the municipality has a responsibility to maintain its infrastructure. Motivation in Terms of need and desirability is deemed not necessary.	

SECTION F: PUBLIC PARTICIPATION

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

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

N/A

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

PPP to be included in final BAR

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

To be included in the final BAR

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

Only relevant State departments will be requested to comment.

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

To be included in the final BAR

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

To be included in the final BAR

Note:

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

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

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

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

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

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

- a site map showing where the site notice was displayed, dated photographs showing the notice displayed on site and a copy of the text displayed on the notice;
- in terms of the written notices given, a copy of the written notice sent, as well as:

- if registered mail was sent, a list of the registered mail sent (showing the registered mail number, the name of the person the mail was sent to, the address of the person and the date the registered mail was sent);
- if normal mail was sent, a list of the mail sent (showing the name of the person the mail was sent to, the address of the person, the date the mail was sent, and the signature of the post office worker or the post office stamp indicating that the letter was sent);
- if a facsimile was sent, a copy of the facsimile Report;
- if an electronic mail was sent, a copy of the electronic mail sent; and
- if a "mail drop" was done, a signed register of "mail drops" received (showing the name of the person the notice was handed to, the address of the person, the date, and the signature of the person); and

- a copy of the newspaper advertisement ("newspaper clipping") that was placed, indicating the name of the newspaper and date of publication (of such quality that the wording in the advertisement is legible).

SECTION G: DESCRIPTION OF THE RECEIVING ENVIRONMENT

All specialist studies must be attached as Appendix G.

1. Groundwater

1.1.	Was a specialist study conducted?	YES	NO
1.2.	Provide the name and or company who conducted the specialist study.		
N/A			
1.3.	Indicate above which aquifer your proposed development will be located and explain how this has influenced your proposed development.		
N/A			
1.4.	Indicate the depth of groundwater and explain how the depth of groundwater and type of aquifer (if present) has influenced your proposed development.		
N/A			

2. Surface water

2.1.	Was a specialist study conducted?	YES	NO
2.2.	Provide the name and/or company who conducted the specialist study.		
Debbie Fordham- Upstream consulting			
2.3.	Explain how the presence of watercourse(s) and/or wetlands on the property(ies) has influenced your proposed development.		

The proposal is to repair damages caused by heavy rainfall and flood events and install protection measures to prevent future damages to the Langenhoven Substation and surrounding areas.

The site is located centrally in George, near the Camfersdrift River and provincial hospital, and accessed off C.J. Langenhoven Street.

According the aquatic biodiversity assessment report by Debbie Fordham:

CAMPHERSDRIFT RIVER

The Camfersdrift River originates in the Outeniqua mountains and flows through the town of George before entering the Gwaiing River. The river system becomes increasingly modified as it flows through the town due to past and present impacts of human activities. The valley becomes less confined downslope of the mountains and historically it is likely that the river was more sinuous in nature. Valley bottom wetland associated with the river system has experienced significant loss, but pockets do remain, largely downstream where the slope lessens.

Identified plant species in this reach include:
Isolepis digitata, Cliffortia odorata, Zantedeschia aethiopica, Pteridium aquilinum, Isopelis prolifera, Helicrysum sp., and *Cynodon dactylon*. The vegetation is highly restricted to the riverbanks and interspersed with alien invasive plant species, such as Callistemon *viminalis (Bottlebush), Rubus cuneifolius (Bramble) Lantana camara, Arundo donax (Spanish Reed), Acacia mearnsii (Black Wattle), Cenchrus clandestinus* (Kikuyu grass), and *Solanum mauritianum* (Bugweed).

Current state of the River Bank:

The river has a mixed bed alluvial channel which has undergone incision and is in a highly modified state. The right channel bank (nearest to the substation) is approximately 1.2m in height and relatively steep. However, it is densely vegetated by *Cliffortia odorata* (an indigenous, obligate wetland plant species) which provides protection against bank erosion.
The left bank in this reach has been straightened and stabilised with a gabion wall for development. Directly downstream of the reach assessed the river flows through the Langenhoven Street culvert. A newly upgraded stormwater pipe outlet and headwall has been constructed in the right bank. These stabilised banks prevent the natural migration of the active channel, and thereby reduce physical habitat diversity and dynamics, as well as altering the sediment trapping functions of rivers and their floodplains.

Present Ecological State (PES):
The PES of a river, watercourse or wetland represents the extent to which it has changed from the reference or near pristine condition (Category A) towards a highly impacted system where there has been an extensive loss of natural habit and biota, as well as ecosystem functioning (Category E). The rapid Index of Habitat Integrity (IHI) tool (Kleynhans, 1996) was used to determine Camfersdrift River PES score by comparing the current state of the in-stream and riparian habitats (with existing impacts) relative to the estimated reference state without anthropogenic impacts. It was determined that the reach of the Camfersdrift River assessed is in a largely modified present ecological state, having scored within the 'C/D' Ecological Category. This is predominantly because of urban development and alien invasive plant encroachment in this reach. The reach has experienced a large loss of natural habitat, biota and basic ecosystem functions.

Ecological Importance and Sensitivity (EIS):
The Ecological Importance and Sensitivity (EIS) of riparian areas is a representation of the importance of the aquatic resource for the maintenance of ecological functioning, and ability to recover from disturbance (Kleynhans & Louw, 2007). The ecological importance and sensitivity category of the Camfersdrift River was determined as being 'High' (B category). It is an important longitudinal linkage between the mountains and the Gwaiing River and does contain some unique species that are sensitive to change. The river provides significant flood attenuation services and natural habitat in the urban area.

LSS-HGM2 – UNCHANNELLED VALLEY BOTTOM WETLAND
The unchannelled valley bottom wetland is located directly upslope of the substation – with the substation having been constructed historically within the toe of the watercourse. The infilling of the toe, and the creation of a berm above the substation, has resulted in an impoundment directly upslope in the wetland. This has resulted in an area of increased inundation and disconnected the wetland to the Camfersdrift River.

PES
The overall ecological category for LSS-HGM2 was determined to be '**C'** indicating a **moderately modified PES**. The recommended management objective for this wetland would be to prevent any further deterioration of ecological state and, as a minimum, to maintain the 'C' PES category.

Ecological Importance and Sensitivity (EIS)
Although no rare or endangered species were found during site assessment, there is suitable habitat for them to occur here. The system provides valuable ecological refuge in a predominantly urban landscape. It functions as a critical node in the broader drainage network, both in terms of biodiversity support and landscape stability. The wetland EIS is considered moderate.

IDENTIFIED IMPACTS:

Disturbance To Aquatic Habitat and Biota:
The disturbance or loss of aquatic vegetation and habitat refers to the direct physical destruction or disturbance of aquatic habitat caused by earthworks, vegetation clearing, and encroachment and colonisation of habitat by invasive alien plants.

Pre-construction-

Site clearing and the presence of heavy machinery and human activity will result in some disturbance to aquatic habitat. While habitat loss is minimal, the presence of people and machines can temporarily displace wildlife, such as birds and small mammals, and disrupt breeding cycles or foraging.

Construction-
During construction there will be excavation and earthworks within the HGM2 wetland for installation of the gabion structure, as well as within the right bank riparian area of the Camfersdrift River for construction of the swale. This will require the clearance of vegetation and transformation of peripheral riparian habitat for infrastructure. The movement of soil can result in turbidity and sedimentation directly harming or burying aquatic organisms. Additionally, noise and vibration from machinery can disturb wildlife, forcing them to abandon the area.

Operational phase-
The earthen bank in the HGM2 wetland will be permanently replaced with the gabion wall, and should construction encroach into the wetland itself, there will be some loss of habitat. This is the same for the encroachment of the swale into the Camfersdrift River (but requires less hard infrastructure). Post construction, invasive alien plants will colonise any disturbed areas which are not rehabilitated and will out-compete indigenous vegetation. Without mitigation, the impact can result in further deterioration in freshwater ecosystem integrity, and a reduction in the supply of ecosystem services.

HYDROLOGICAL MODIFICATION
Hydrological alterations associated with the project include changes in the distribution of water inputs and flows within the watercourses. These are likely to be minor and highly localised (if not entirely avoided).

Pre- Construction-
Site clearing and access routes can result in a minor, localised compaction of soils which can reduce water infiltration, potentially leading to increased surface runoff from the disturbed area, but the overall hydrological impact is low.

Construction Phase-
Excavation of the existing infill and installation of the new wall and its foundation will require temporary drainage alteration and minor flow concentration. The excavation will temporarily disrupt the flow of surface water and shallow groundwater in the immediate vicinity. Contractors may need to de-water the site, which can temporarily lower the water level. The new formal wall may slightly alter the way floodwaters move past the structure, but since the existing infill already had a "damming" effect, this is likely a modification of an existing condition rather than a new impact.

Operational Phase-
The presence of the formal gabion wall in the HGM2 wetland during both low flow and high flow (flood) conditions will reduce overtopping and increase flood attenuation behind the wall. This could increase the extent of inundation upstream of the wall during major flood events. Additionally, the compacted foundation and the wall itself can act as a permanent subsurface barrier, altering shallow groundwater flow patterns. However, the infilling is not a new impact and the change in material may only have minor effect.

CHANGES TO GEOMORPHOLOGY
Geomorphology refers to the physical form and structure of the wetland, including its channels, banks, and overall shape. This shape is also driven by sedimentation and erosion as a result of increased turbidity and sediment deposition, caused by soil erosion and earthworks that are associated with construction activities, as well as instability and collapse of unstable soils during project operation. These impacts can result in the deterioration of aquatic ecosystem integrity and a reduction/loss of habitat for aquatic dependent flora & fauna.

Pre- Construction phase-

Site access and establishment will involve clearing vegetation and compacting the soil at the wetland's edge. However, the existing infill bank is already an altered geomorphic feature. The pre-construction activities may cause localised soil compaction and minor erosion from the access path. This is generally a low-level impact unless the access path is extensive or poorly planned.

Construction phase
Vegetation clearing, earthworks, and exposure of bare soils within and upslope of the aquatic habitat during construction will decrease the soil binding capacity and cohesion of the upslope soils and thus increase the risk of erosion and sedimentation downslope and in the wetland. This may cause the burying of aquatic habitat and also cause aquatic faunal fatalities. Ineffective site stormwater management, particularly in periods of high runoff, can lead to soil erosion from confined flows This increase in volume and velocity of runoff increases the particle carrying capacity of the water flowing over the surface.
Where soil erosion problems and bank stability concerns initiated during the construction phase are not timeously and adequately addressed, these can persist into the operational phase of the project and continue to have a negative impact.

Operational phase-
The gabion wall will replace the existing earthen bank and therefore no significant changes in the wetland are expected. However, should the wall be constructed into the wetland it will change the geomorphology. Also, if the wall's foundation is placed at a lower elevation than the existing berm, or if it is undermined by scour during flood events, it could fail and trigger erosion. The swale from the substation to the Camfersdrift River will concentrate sheetwash to a single discharge point resulting in changes to water input patterns and potential bank instability/ erosion. This increase in volume and velocity of runoff increases the particle carrying capacity of the water flowing over the surface.

CHANGES TO SURFACE WATER QUALITY

Water and/or soil pollution cause negative changes in the physical, chemical and biological characteristics of water resources (i.e. water quality). This can result in possible deterioration in aquatic ecosystem integrity and a reduction in, or loss of, species of conservation concern (i.e. rare, threatened/endangered species). The result is only disturbance tolerant species remaining.

Construction phase-
During construction there are a number of potential pollution inputs into the aquatic system (such as hydrocarbons and raw cement). These pollutants alter the water quality parameters such as turbidity, nutrient levels, chemical oxygen demand and pH. These alternations impact the species composition of the systems, especially species sensitive to minor changes in these parameters. Sudden drastic changes in water quality can also have chronic effects on aquatic biota in general and result in localised extinctions. Hydrocarbons including petrol/diesel and oils/grease/lubricants associated with construction activities (machinery, maintenance, storage, handling) may potentially enter the system by means of surface runoff or through dumping by construction workers.

As the existing earthen material is excavated, it will inevitably mix with the wetland's water, causing high turbidity. This is also the case for the excavation of the swale upslope of the river. The fine sediment particles will remain suspended for a period, reducing light penetration for aquatic plants and potentially smothering macroinvertebrates.

Operational phase-
Operationally there should be minimal impact on water quality. Provided the swale to the Camfersdrift River does not result in any erosion or introduce and contaminants, it may have a positive impact be reducing the current volume of sediment being washed into the river from unmanaged stormwater runoff.

Water Use Authorisation
The National Water Act (NWA), 1998 (Act 36 of 1998), aims to manage national water resources in

order to achieve sustainable use of water for the benefit of all water users. This requires that the quality of water resources is protected, and integrated management of water resources takes place. Chapter 4 of the National Water Act addresses the use of water and stipulates the various types of licensed and unlicensed entitlements to the use of water.

An application for a General Authorisation in terms of Section 21 of the National Water Act (Act 36 of 1998) is currently in progress

3. Coastal Environment

3.1.	Was a specialist study conducted?	YES	NO
3.2.	Provide the name and/or company who conducted the specialist study.		
N/A			
3.3.	Explain how the relevant considerations of Section 63 of the ICMA were taken into account and explain how this influenced your proposed development.		
N/A			
3.4.	Explain how estuary management plans (if applicable) has influenced the proposed development.		
N./A			
3.5.	Explain how the modelled coastal risk zones, the coastal protection zone, littoral active zone and estuarine functional zones, have influenced the proposed development.		

4. Biodiversity

4.1.	Were specialist studies conducted?	YES	NO
4.2.	Provide the name and/or company who conducted the specialist studies.		

Botanical impact assessment- Mark Berry
Terrestrial-Faunal and avifaunal species compliance statement report for the proposed flood damage repairs to the Langenhoven Substation, remainder of Erf 464 and Erf 20781- Dr. Jacobus Visser
Aquatic Biodiversity Impact assessment- Debbie Fordham

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

Vegetation map: According to the 2018 Vegetation Map of South Africa, the site is located inside Garden Route Shale Fynbos (Figure 4-5). The latter occurs in patches along the coastal foothills from northeast of Heidelberg in the Western Cape to Clarkson in the Eastern Cape (Mucina, 2006). Structurally, it is described as a tall, dense proteoid and ericaceous fynbos in wetter areas, and graminoid fynbos in the drier areas (Mucina, 2006).

Ecosystem threat status: Due to its transformed state and rate of transformation, Garden Route Shale Fynbos is currently listed as Endangered in the Revised National List of Threatened Ecosystems (DEA, 2022). Only 44% of its original habitat remains2. It has been transformed mainly for cultivation (pastures) and pine plantations (Mucina, 2006). It is also considered to be poorly protected, with only 5.7% formally protected in the Garden Route National Park and Boosmansbos Wilderness Area (Mucina, 2006).

Important species: The presence or absence of threatened (i.e., species of conservation concern) and ecologically important species informs the ecological condition and sensitivity of the site. The

latest conservation status of species is checked in the Red List of South African Plants (Raimondo et al. 2009) (www.redlist.sanbi.org).

There were no Species of Conservation Concern (SCC) or protected tree species, such as kasuur or milkwood, were recorded on the site.

The riverine corridor downstream from C.J. Langenhoven Road has been mapped as a NWM5 channelled valley-bottom wetland, as well as a National Freshwater Ecosystem Priority Areas (NFEPA) wetland. The NFEPA project provides strategic spatial priorities for conserving South Africa's freshwater ecosystems and supports sustainable use of water resources. This riverine corridor and impoundment (artificial) have been included in the Western Cape biodiversity network as aquatic (river) and terrestrial critical biodiversity areas (CBA's).

Terrestrial Biodiversity (Vegetation)

The area around the substation is highly transformed/modified, comprising a flat grassy area leading to the Camfersdrift River, and an embankment/impoundment on the northern side of substation. Most of the indigenous species recorded are associated with the riparian habitat next to the Camfersdrift River. However, the latter is also modified by past development activities. No proper fynbos was encountered, only some riparian scrub associated with the river. The quality of the latter is also poor due to a high presence of pioneers and invasive species. The rest of the site, including the embankment, is covered by grasses and weeds. The botanical attributes of the site are presented in the figure below :

Figure 7: Botanical attributes of the site. The untoned areas are highly transformed.

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

According to the Botanical impact assessment by Mark Berry:

The site falls inside the George biodiversity network. Being located next to the Camfersdrift River, it includes aquatic and terrestrial critical biodiversity areas (CBA's), as well as a degraded critical biodiversity area (CBA2). These are all aligned with the Camfersdrift River and adjacent tracts of parkland, which act as an ecological corridor linking the Outeniqua Mountains with the coastline.

Reasons for the importance of the mapped CBA's include the presence of ecological processes (FEPA river corridor) and water resource protection (Gwaing & South Eastern Coastal Belt).

According to the terrestrial biodiversity compliance statement by Dr. Visser:

Critical Biodiversity Areas (CBAs) are areas required to meet biodiversity targets for ecosystems, species and ecological processes, as identified in a systematic biodiversity plan (Purves and Holmes, 2015). The site currently overlaps terrestrial CBA1 over the north-western extent due to the historical presence of "Endangered" Garden Route Granite Fynbos (Figure 8). Notably, none of this vegetation type remains over this transformed area. Sections to the north are also mapped as degraded terrestrial CBA 2 owing to the historical presence of the above vegetation type, but similarly exist in a degraded and modified state. Finally, the southern part of the site is mapped as aquatic CBA1 owing to the presence of the Camfersdrift River drainage channel. This river channel currently harbours poor water quality along with an incidence of alien and invasive vegetation.

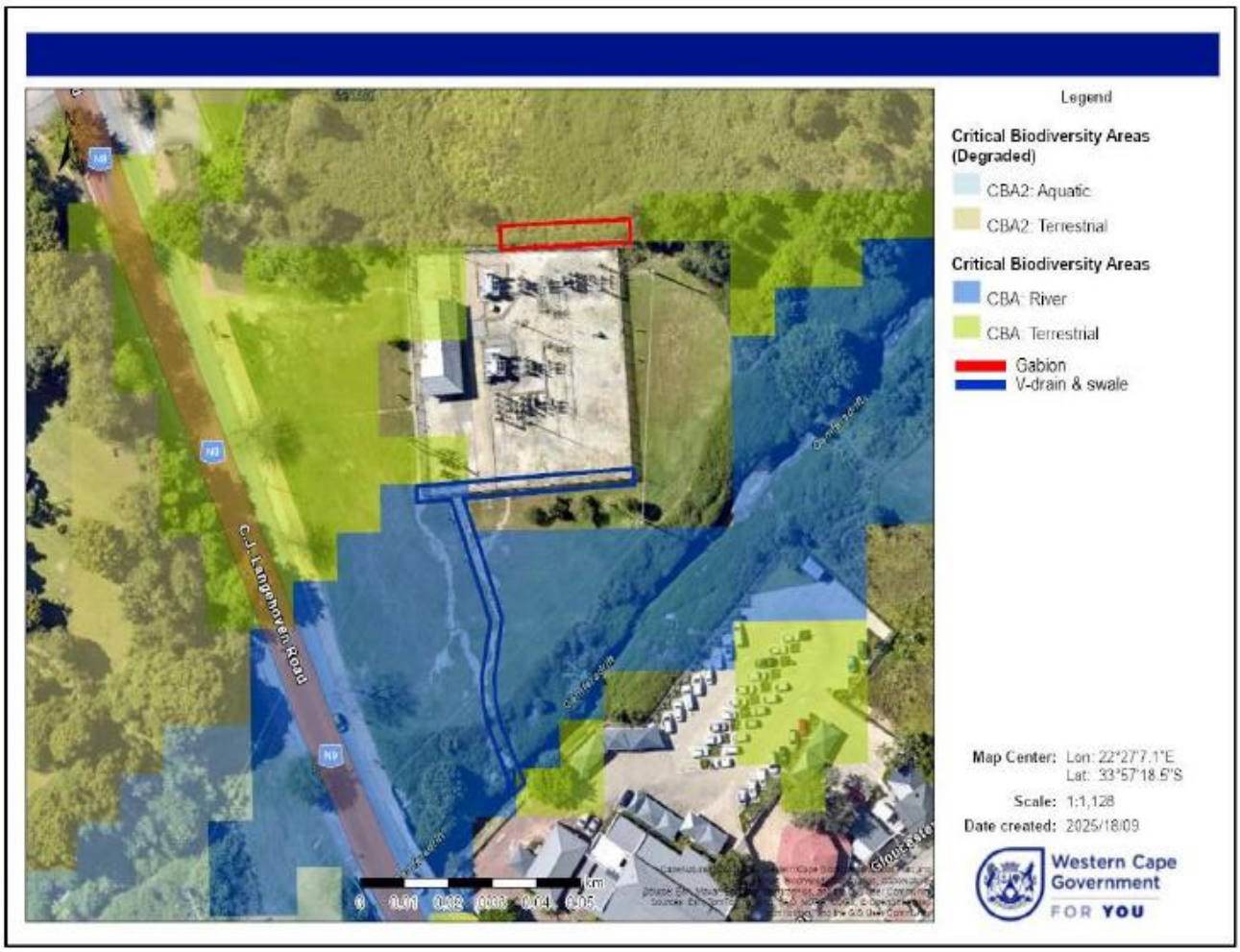

Figure 8: Spatial location of Critically Biodiversity Areas (CBAs) overlapping with the study area.

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

The area around the substation is highly transformed/modified, comprising a flat grassy area leading to the Camphersdrift River, and an embankment/impoundment on the northern side of substation. Most of the indigenous species recorded are associated with the riparian habitat next to the Camphersdrift River. However, the latter is also modified by past development activities. No proper fynbos was encountered, only some riparian scrub associated with the river. The quality of the latter is also poor due to a high presence of pioneers and invasive species. The rest of the site, including the embankment, is covered by grasses and weeds.

The site is highly transformed or degraded by past construction activities. There is also a notable presence of invasive species. However, the Camphersdrift River and adjacent riparian zone on the southern side is worth protecting as a water resource. Two options are presented for the proposed outlet of the grass swale, namely an outlet inside the riparian zone or a flared swale to spread the water out on the edge of the riverine scrub. Due to the modified state of the riverbank, both options are acceptable, provided that neither will result in erosion or further degradation of the riverine habitat. The affected vegetation is not of botanical interest but protects the riverbank from erosion. It may also have value as an ecological corridor for certain biota to move upstream or downstream, at least theoretically. The rest of the site, including the impoundment on northern side of substation, does not present any botanical constraints.

The project encroaches on the biodiversity (CBA) network. However, no permanent impact is expected on the network due to the nature of the project. One can expect a temporary impact on its functionality. The only mitigation measures for impacts in this regard would be to rehabilitate the affected area of the Camphersdrift River after construction, encourage the re-establishment of indigenous vegetation, and implement alien control. As an indirect impact, earthworks during the construction phase will provide ideal conditions for the establishment of invasive alien species. A high presence of aliens, such as black wattle, blackwood and bugweed, will exacerbate this impact.

According to the botanical impact statement by Mark Berry;

The following indigenous shrub species were recorded on site, namely Helichrysum petiolare, H. cymosum, H. foetidum, Pseudognaphalium undulatum, Senecio rigidus, Delairea odorata, Nidorella ivifolia, Crassula sarmentosa (introduced), Cliffortia odorata (dominant) and Gomphocarpus physocarpus. Hemicryptophytes and geophytes recorded include Cheilanthes viridis, Pteridium aquilinum, Isolepis prolifera, Cynodon dactylon, Commelina sp, Zantedeschia aethiopica and Wachendorfia thyrsiflora. Nearly all of them are associated with the riparian scrub next to the Camfersdrift River. Floristic association with Garden Route Shale Fynbos is poor. Only Helichrysum cymosum and Pteridium aquilinum are considered to be important taxa in the latter, which is indicative of the transformed state of the site. Also, no Species of Conservation Concern (SCC) or protected tree species, such as kasuur or milkwood, were recorded. All the recorded species are widespread and common in the region.

Alien species recorded on site include Acacia mearnsii (black wattle, category 2), A. melanoxylon (blackwood, 2), Phytolacca octandra (inkberry, 1b), Solanum mauritianum (bugweed, 1b), Cirsium vulgare (spear thistle, 1b), Erigeron cf sumatrensis (fleabane), Datura stramonium (olieboom, 1b), Physalis peruviana (gooseberry), Verbena bonariensis (purple top, 1b), Arundo donax (Spanish reed, 1b) and Paspalum urvillei (giant paspalum). Figure 5-5 shows a few of the alien species. As indicated above, the majority 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, such as black wattle and blackwood, is prohibited without a permit. Black wattle, which is indicative of past disturbances, is considered a serious threat to the environment and very difficult to control.

Due to the transformed/modified state of the site, a site ecological importance (SEI) map was not prepared. Even the riparian habitat will score a low SEI value as it should recover quickly following construction work

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

N/A. The closest protected area is the Van Kervel Local Authority Nature Reserve, located 1.4 km away to the northeast of the site. The Witfontein Nature Reserve is located ±3 km away to the north.

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

According to the Terrestrial faunal and avifaunal species compliance statement by Dr. Visser

<u>Avifaunal</u>

In total, 28 bird species were recorded within and around the study area, all of which are currently classified as "Least concern" by the IUCN. All avifauna on the site constitutes common species which

are regularly encountered in urban landscapes and tolerant to regular disturbance. Notably, avifaunal diversity is clustered around larger trees in the area with few birds' species located over the transformed open parts of the site.

Butterflies
Only a single butterfly species, the Painted Lady (Vanessa cardui), was recorded in the study area with this species currently classified as "Least concern" by the IUCN. The presence of only this common butterfly species (in low numbers) indicates the degraded ecological nature of the site where few flowering plants are evident.

Grasshoppers
The presence of the Yellow-winged Agile Grasshopper was evaluated based on suitable habitat (recently burnt Schlerophyll on south-facing slopes) for this species - a habitat type which is not present on this degraded and transformed site. To this end, suitable habitat for the Yellow-winged Agile Grasshopper is not present and it is highly unlikely that this species will occur either on the site or in the surrounding landscape.

Spiders
The Banded-legged Trapdoor Spider (Moggridgea terricola) inhabits the Fynbos biome at altitudes ranging from 7 to 243 m above sea level (Dippenaar-Schoeman et al. 2021). Given the open, transformed and degraded nature of the site, it is unlikely that this species will be present.

Faunal and avifaunal diversity within the study area
Faunal and avifaunal diversity in the study area and surrounding landscape is comprised of relatively common species of "Least Concern" (IUCN, 2021), with the exception of a single C. duthieae to the north-east, and outside of the site. Given the urban setting, high levels of daily disturbance (through vibration from vehicles and people) and degraded habitat structure (significant signs of pollution and a high incidence of alien and invasive vegetation), species on the site are disturbance-prone with a notable impairment of both diversity and subpopulation sizes. The site and surrounding areas therefore display impaired ecosystem dynamics and is less sensitive from a faunal perspective. Furthermore, the proposed project footprints are small and all located in already transformed areas and the proposed development is highly unlikely to impact on any notable ecological processes or impinge on any faunal subpopulations.

5. Geographical Aspects

Explain whether any geographical aspects will be affected and how has this influenced the proposed activity or development.

6. Heritage Resources

6.1.	Was a specialist study conducted?	YES	NO
6.2.	Provide the name and/or company who conducted the specialist study.		
6.3.	Explain how areas that contain sensitive heritage resources have influenced the proposed development.		

7. Historical and Cultural Aspects

Explain whether there are any culturally or historically significant elements as defined in Section 2 of the NHRA that will be affected and how has this influenced the proposed development.
N/A

8. Socio/Economic Aspects

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

	According to Census 2022 the George municipality has a population of 294 929 which is the highest population in the Garden Route District municipality.
8.2.	Explain the socio-economic value/contribution of the proposed development.
The proposed project will provide temporary employment	
8.3.	Explain what social initiatives will be implemented by applicant to address the needs of the community and to uplift the area.
The proposal is to repair the damages caused by heavy rainfalls and flood events and install protection measures to prevent future damages to the Langenhoven Substation and surrounding areas. Therefore, this proposal is going to address the needs of the community by protecting vulnerable infrastructure, ensuring reliable power supply and provide jobs to the locals.	
8.4.	Explain whether the proposed development will impact on people's health and well-being (e.g. in terms of noise, odours, visual character and sense of place etc) and how has this influenced the proposed development.
Temporary construction related nuisances such as noise impacts.	

SECTION H: ALTERNATIVES, METHODOLOGY AND ASSESSMENT OF ALTERNATIVES

1. Details of the alternatives identified and considered

1.1.	Property and site alternatives to avoid negative impacts, mitigate unavoidable negative impacts and maximise positive impacts.
Provide a description of the preferred property and site alternative.	
The proposal is to repair the damages caused by heavy rainfalls and flood events and install protection measures to prevent future damages to the Langenhoven Substation and surrounding areas.	
Provide a description of any other property and site alternatives investigated.	
No site alternatives	
Provide a motivation for the preferred property and site alternative including the outcome of the site selectin matrix.	
Not applicable	
Provide a full description of the process followed to reach the preferred alternative within the site.	
Not applicable	
Provide a detailed motivation if no property and site alternatives were considered.	
This proposal is not for a new development but rather to address flood damaged infrastructure and install protective measures to prevent future damages to the Langenhoven substation.	
List the positive and negative impacts that the property and site alternatives will have on the environment.	
Not Applicable.	
1.2.	Activity alternatives to avoid negative impacts, mitigate unavoidable negative impacts and maximise positive impacts.
Provide a description of the preferred activity alternative.	
The proposal is to repair the damages caused by heavy rainfalls and flood events and install protection measures to prevent future damages to the Langenhoven Substation and surrounding areas.	
Provide a description of any other activity alternatives investigated.	
No alternative	
Provide a motivation for the preferred activity alternative.	
No alternative	
Provide a detailed motivation if no activity alternatives exist.	
The proposal is to repaid the damages caused by heavy rainfalls and flood events and install protective measures to prevent future damages to the Langenhoven Substation.	
List the positive and negative impacts that the activity alternatives will have on the environment.	
No alternative activity.	
1.3.	Design or layout alternatives to avoid negative impacts, mitigate unavoidable negative impacts and maximise positive impacts
Provide a description of the preferred design or layout alternative.	
This project proposes to repair damages caused by heavy rainfall and flood events and install protection measures to prevent future damages to the Langenhoven Substation and surrounding area.	

It is proposed to install gabion supporting structures to the south of the substation, construct an earth v-drain on the southern edge of the substation and a swale from the earth v-drain to the Camphersdrift river. Either a flared swale to spread the water out on the edge of the bush near the river and allow it to flow naturally over ground down to the river will be constructed or an outlet structure as close to the river as possible with energy dissipators will be constructed.

The extent and scope of the proposed repair work include:

- Construct a gabion retaining structure (consisting of 2×1×1 m gabion baskets) on the northern side of the substation;
- Construct an earth V-drain along the southern edge of the substation; and
- Construct a trapezoidal grass swale with an outlet as close to the river as possible with energy dissipators to protect against erosion. Alternatively, construct a trapezoidal grass swale with a flared swale to spread the water out on the edge of the riverine scrub.

Figure 9: Proposed layout

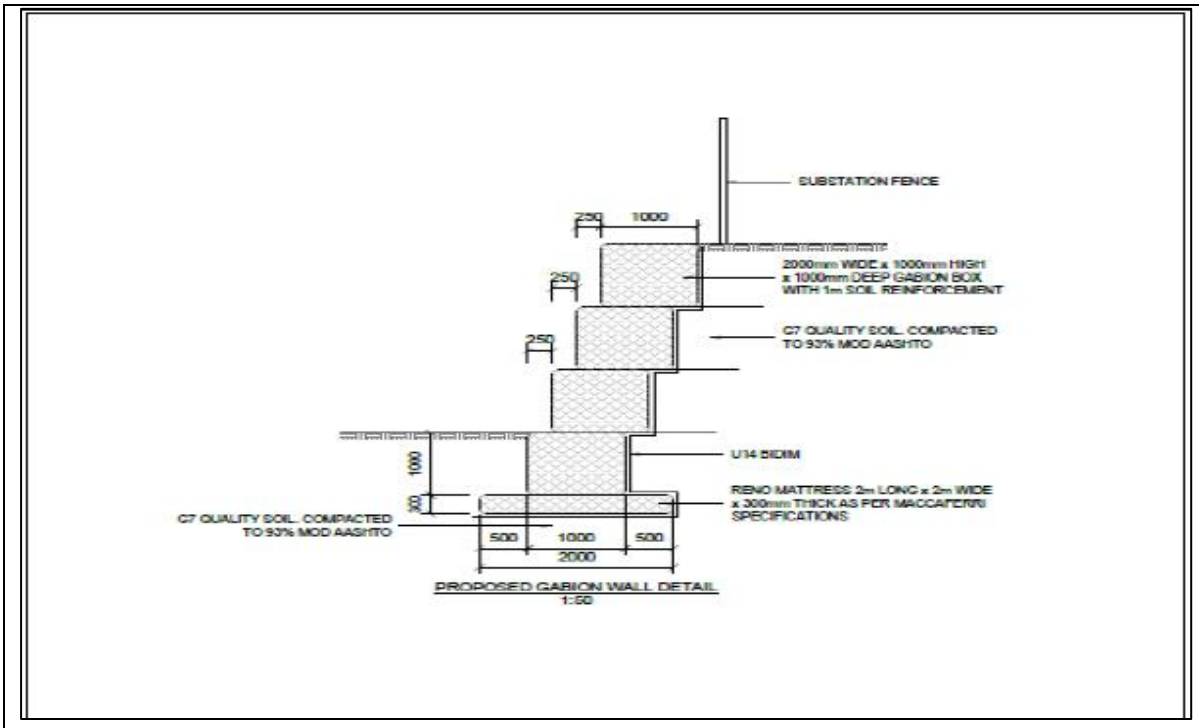

Figure 10: Sketch of the gabion retaining structure.

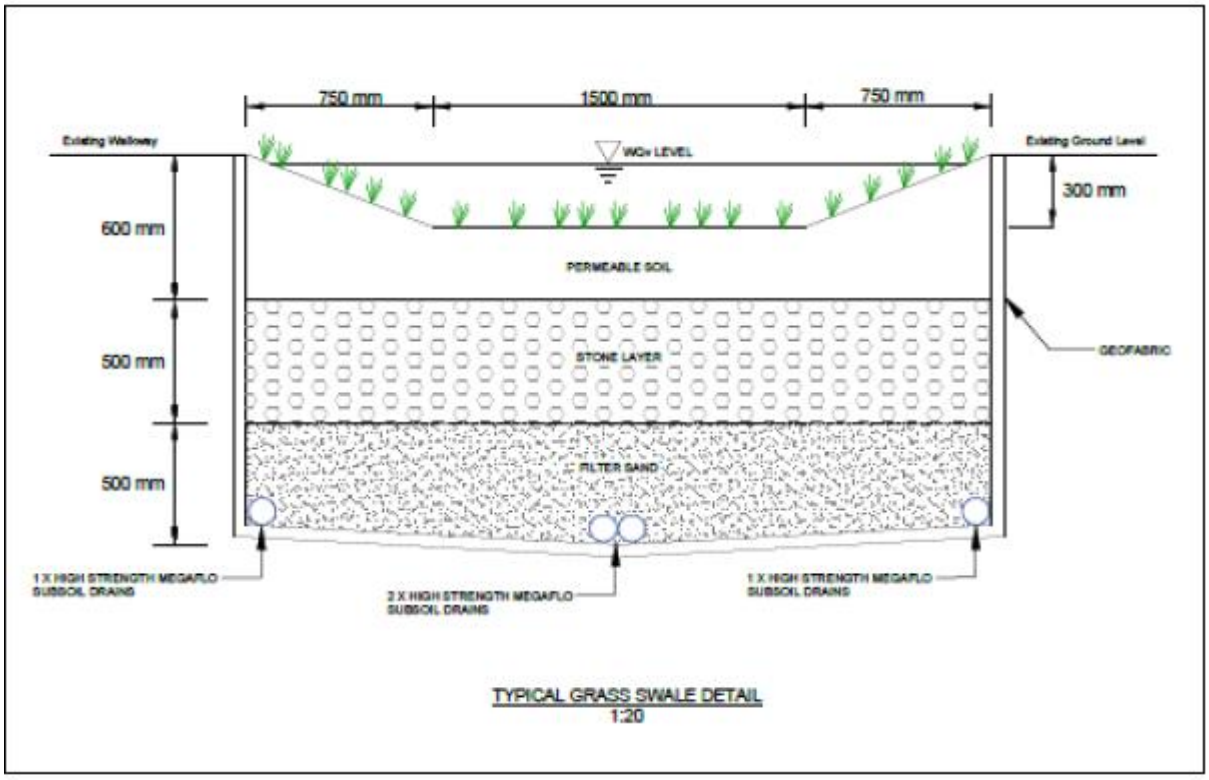

Figure 11:Grass swale

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

Two project alternatives were provided for assessment, with the only structural difference being the design of the swale outlet. Alternative A has "an outlet as close to the river as possible with energy dissipators to protect against erosion" while Alternative B is described as "a flared swale to spread the water out on the edge of the bush near the river."

Alternative B Scope of work:

- Construct gabion retaining structure (red polygon.
- Construct earth v-drain along the southern edge of the substation (green polygon.

- Construct trapezoidal grass swale (blue) with a flared swale to spread the water out on the edge of the bush near the river."

Provide a motivation for the preferred design or layout alternative.

According to the aquatic impact assessment report by Debbie Fordham:

From an aquatic biodiversity perspective, Alternative B is preferred as it is set back from the Camfersdrift River channel (meaning less riparian vegetation and bank disturbance) and diffuses the discharge over a broader area, effectively reducing flow velocity and promoting natural attenuation through filtration. Alternative A, by directing water to a single, discrete outlet, concentrates its energy, which can lead to localized erosion and habitat degradation at the discharge point.

The impact significance upon aquatic biodiversity for the project was determined as Low after mitigation. Alternative B is likely to have a lower impact significance, and is therefore the preferred alternative, however, with mitigation, both designs can achieve low impact upon aquatic biodiversity.

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

N/A

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

Positive

- Protect municipal infrastructure
- Repair flood caused damage at the Langehoven Substation
- Greatest use of allocated flood repair budget

Negative

- Temporary disturbances to the biophysical environment
- Temporary construction related nuisances such as noise.

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

Provide a description of the preferred technology alternative:

Not applicable.

Provide a description of any other technology alternatives investigated.

Not applicable.

Provide a motivation for the preferred technology alternative.

Not applicable.

Provide a detailed motivation if no alternatives exist.

Not applicable.

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

Not applicable.

1.5.	Operational alternatives to avoid negative impacts, mitigate unavoidable negative impacts and maximise positive impacts.

Provide a description of the preferred operational alternative.

Not applicable.

Provide a description of any other operational alternatives investigated.

Not applicable.

Provide a motivation for the preferred operational alternative.

Not applicable.

Provide a detailed motivation if no alternatives exist.

Not applicable.

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

Not applicable.

1.6.	The option of not implementing the activity (the 'No-Go' Option).

Provide an explanation as to why the 'No-Go' Option is not preferred.

Not applicable

1.7.	Provide and explanation as to whether any other alternatives to avoid negative impacts, mitigate unavoidable negative impacts and maximise positive impacts, or detailed motivation if no reasonable or feasible alternatives exist.

Not applicable, refer to design alternatives.

1.8.	Provide a concluding statement indicating the preferred alternatives, including the preferred location of the activity.
Not applicable, refer to design alternatives.	

2. "No-Go" areas

Explain what "no-go" area(s) have been identified during identification of the alternatives and provide the co-ordinates of the "no-go" area(s).
The proposed activities are in close proximity to two watercourses – the Camfersdrift River and a tributary wetland system. As such the proposed No-Go areas will be the extent of the Camphersdrift river and the wetland

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

Describe the methodology to be used in determining and ranking the nature, significance, consequences, extent, duration of the potential environmental impacts and risks associated with the proposed activity or development and alternatives, the degree to which the impact or risk can be reversed and the degree to which the impact and risk may cause irreplaceable loss of resources.

The assessment criteria utilised in this environmental impact assessment is based on, and adapted from, the Guideline on Impact Significance, Integrated Environmental Management Information Series 5 (Department of Environmental Affairs and Tourism (DEAT), 2002) and the Guideline 5: Assessment of Alternatives and Impacts in Support of the Environmental Impact Assessment Regulations (DEAT, 2006).

Determination of Extent (Scale):

Site specific	On site or within 100 m of the site boundary, but not beyond the property boundaries.
Local	The impacted area includes the whole or a measurable portion of the site and property, but could affect the area surrounding the development, including the neighbouring properties and wider municipal area.
Regional	The impact would affect the broader region (e.g., neighbouring towns) beyond the boundaries of the adjacent properties.
National	The impact would affect the whole country (if applicable).

Determination of Duration:

Temporary	The impact will be limited to the construction phase.
Short term	The impact will either disappear with mitigation or will be mitigated through a natural process in a period shorter than 8 months after the completion of the construction phase.
Medium term	The impact will last up to the end of the construction phase, where after it will be entirely negated in a period shorter than 3 years after the completion of construction activities.
Long term	The impact will continue for the entire operational lifetime of the development but will be mitigated by direct human action or by natural processes thereafter.
Permanent	This is the only class of impact that will be non-transitory. Such impacts are regarded to be irreversible, irrespective of what mitigation is applied.

Determination of Probability:

Improbable	The possibility of the impact occurring is very low, due either to the circumstances, design or experience.
Probable	There is a possibility that the impact will occur to the extent that provisions must therefore be made.

Highly probable	It is most likely that the impacts will occur at some stage of the development. Plans must be drawn up to mitigate the activity before the activity commences.
Definite	The impact will take place regardless of any prevention plans.

Determination of Significance (without mitigation):

No significance	The impact is not substantial and does not require any mitigation action.
Low	The impact is of little importance but may require limited mitigation.
Medium	The impact is of sufficient importance and is therefore considered to have a negative impact. Mitigation is required to reduce the negative impacts to acceptable levels.
Medium-High	The impact is of high importance and is therefore considered to have a negative impact. Mitigation is required to manage the negative impacts to acceptable levels.
High	The impact is of great importance. Failure to mitigate, with the objective of reducing the impact to acceptable levels, could render the entire development option or entire project proposal unacceptable. Mitigation is therefore essential.
Very High	The impact is critical. Mitigation measures cannot reduce the impact to acceptable levels. As such the impact renders the proposal unacceptable.

Determination of Significance (with mitigation):

No significance	The impact will be mitigated to the point where it is regarded to be insubstantial.
Low	The impact will be mitigated to the point where it is of limited importance.
Medium	Notwithstanding the successful implementation of the mitigation measures, the impact will remain of significance. However, taken within the overall context of the project, such a persistent impact does not constitute a fatal flaw.
High	Mitigation of the impact is not possible on a cost-effective basis. The impact continues to be of great importance, and taken within the overall context of the project, is considered to be a fatal flaw in the project proposal.

Determination of Reversibility:

Completely Reversible	The impact is reversible with implementation of minor mitigation measures
Partly Reversible	The impact is partly reversible but more intense mitigation measures
Barely Reversible	The impact is unlikely to be reversed even with intense mitigation measures
Irreversible	The impact is irreversible, and no mitigation measures exist

Determination of Degree to which an Impact can be Mitigated:

Can be mitigated	The impact is reversible with implementation of minor mitigation measures
Can be partly mitigated	The impact is partly reversible but more intense mitigation measures
Can be barely mitigated	The impact is unlikely to be reversed even with intense mitigation measures
Not able to mitigate	The impact is irreversible, and no mitigation measures exist

Determination of Loss of Resources:

No loss of resource	The impact will not result in the loss of any resources
Marginal loss of resource	The impact will result in marginal loss of resources
Significant loss of resources	The impact will result in significant loss of resources
Complete loss of resources	The impact will result in a complete loss of all resources

Determination of Cumulative Impact:

Negligible	The impact would result in negligible to no cumulative effects
Low	The impact would result in insignificant cumulative effects
Medium	The impact would result in minor cumulative effects
High	The impact would result in significant cumulative effects

Determination of Consequence significance:

Negligible	The impact would result in negligible to no consequences
Low	The impact would result in insignificant consequences
Medium	The impact would result in minor consequences
High	The impact would result in significant consequences

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

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

Alternative:	Alternative A and B	No Go
PLANNING, DESIGN AND DEVELOPMENT PHASE		
Potential impact and risk:	**Impact on terrestrial biodiversity.**	
Nature of impact:	Negative	
Extent and duration of impact:	• Development footprint & immediate surroundings • Short to medium term	
Consequence of impact or risk:	• Minor clearing (damage) of riverine scrub. • Temporary impact on the functionality of biodiversity network. • Increased opportunity for alien infestation. • Pollution of watercourse.	
Probability of occurrence:	Medium	
Degree to which the impact may cause irreplaceable loss of resources:	Medium	
Degree to which the impact can be reversed:	Medium High	
Indirect impacts:	• Earthworks during the construction phase will provide ideal conditions for the establishment of invasive alien species.	
Cumulative impact prior to mitigation:	The cumulative botanical impact of the project is expected to be equivalent to the impact on terrestrial biodiversity and plant species described above, i.e. the continued erosion of Garden Route Shale Fynbos, the	

	biodiversity network, as well as the loss of plant species. In this instance, the slight loss of biodiversity and resultant cumulative impact will be acceptable, due to the transformed or degraded state of the site. The affected riverine area on the southern side of site can be rehabilitated.	
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Low	No impact
Degree to which the impact can be avoided:	Medium	
Degree to which the impact can be managed:	High	
Degree to which the impact can be mitigated:	High	
Proposed mitigation:	• Fence off the construction area where it encroaches on the Camphersdrift River. The watercourse and adjacent riparian zone outside the works area must not be disturbed in any way. • Rehabilitate the watercourse and riparian zone by removing all the invasive aliens within 30 m of the construction area. Planting of a few locally indigenous species suitable for the habitat may also be required. Remove all construction waste from the area once construction is completed. • Allow at least 24 months for the monitoring of rehabilitation success and alien infestation on the site post construction.	
Residual impacts:	None identified.	
Cumulative impact post mitigation:	The cumulative botanical impact of the project is expected to be equivalent to the impact on terrestrial biodiversity and plant species described above, i.e. the continued erosion of Garden Route Shale Fynbos, the biodiversity network, as well as the loss of plant species. In this instance, the slight loss of biodiversity and resultant cumulative impact will be acceptable, due to the transformed or degraded state of the site. The affected riverine area on the southern side of site can be rehabilitated.	
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Very low	
OPERATIONAL PHASE		
Potential impact and risk:	• Impact on terrestrial biodiversity.	
Nature of impact:	Negative	
Extent and duration of impact:	Development footprint and immediate surroundings Long term	
Consequence of impact or risk:	• Increased alien infestation. • Erosion due to poor rehabilitation efforts or stormwater control.	

Probability of occurrence:	Medium	
Degree to which the impact may cause irreplaceable loss of resources:	Medium-low	
Degree to which the impact can be reversed:	High	
Indirect impacts:	None identified.	
Cumulative impact prior to mitigation:	The cumulative botanical impact of the project is expected to be equivalent to the impact on terrestrial biodiversity and plant species described above, i.e. the continued erosion of Garden Route Shale Fynbos, the biodiversity network, as well as the loss of plant species. In this instance, the slight loss of biodiversity and resultant cumulative impact will be acceptable, due to the transformed or degraded state of the site. The affected riverine area on the southern side of site can be rehabilitated	
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Low	
Degree to which the impact can be avoided:	Low	
Degree to which the impact can be managed:	High	
Degree to which the impact can be mitigated:	High	
Proposed mitigation:	• Monitor the area bordering on the new infrastructure for rehabilitation success and erosion. Where needed, rehabilitate/revegetate disturbed surfaces expediently. Erosion prevention measures may be needed on steep slopes, such as logs or netting, to slow down runoff and potential erosion. Mulching and seeding with indigenous fynbos seed may also be needed. • As a long-term maintenance requirement, keep the site and immediate surrounding area clear of invasive aliens, focussing on species such as black wattle, blackwood, inkberry, bugweed, spear thistle and Spanish reed. These species are category 1b and 2 invaders that require compulsory control as part of an invasive species control programme. Please note that it is a legal requirement for landowners to clear alien vegetation on their land.	
Residual impacts:	None identified.	
Cumulative impact post mitigation:	The cumulative botanical impact of the project is expected to be equivalent to the impact on terrestrial biodiversity and plant species described above, i.e. the continued erosion of Garden Route Shale Fynbos, the biodiversity network, as well as the loss of plant species. In	

	this instance, the slight loss of biodiversity and resultant cumulative impact will be acceptable, due to the transformed or degraded state of the site. The affected riverine area on the southern side of site can be rehabilitated	
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Low	No impact

Alternative:	**Alternative A and B**	**No go**
PLANNING, DESIGN AND DEVELOPMENT PHASE		
Potential impact and risk:	**Impact of the project on flora & potential SCC.**	
Nature of impact:	Negative	
Extent and duration of impact:	• Development footprint & immediate surroundings • Short to medium term	
Consequence of impact or risk:	• Loss of indigenous flora & potential SCC	
Probability of occurrence:	Medium	
Degree to which the impact may cause irreplaceable loss of resources:	Medium	
Degree to which the impact can be reversed:	Medium- High	
Indirect impacts:	Earthworks during the construction phase will provide ideal conditions for the establishment of invasive alien species. A high presence of aliens, such as black wattle, blackwood and bugweed, will exacerbate this impact.	
Cumulative impact prior to mitigation:	The cumulative botanical impact of the project is expected to be equivalent to the impact on terrestrial biodiversity and plant species described above, i.e. the continued erosion of Garden Route Shale Fynbos, the biodiversity network, as well as the loss of plant species. In this instance, the slight loss of biodiversity and resultant cumulative impact will be acceptable, due to the transformed or degraded state of the site. The affected riverine area on the southern side of site can be rehabilitated.	
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Low	No impact
Degree to which the impact can be avoided:	Medium	
Degree to which the impact can be managed:	High	
Degree to which the impact can be mitigated:	High	
Proposed mitigation:	• Fence off the construction area where it encroaches on the Camphersdrift River. The	

	watercourse and adjacent riparian zone outside the works area must not be disturbed in any way. • Rehabilitate the watercourse and riparian zone by removing all the invasive aliens within 30 m of the construction area. Planting of a few locally indigenous species suitable for the habitat may also be required. Remove all construction waste from the area once construction is completed. • Allow at least 24 months for the monitoring of rehabilitation success and alien infestation on the site post construction.	
Residual impacts:	None identified.	
Cumulative impact post mitigation:	The cumulative botanical impact of the project is expected to be equivalent to the impact on terrestrial biodiversity and plant species described above, i.e. the continued erosion of Garden Route Shale Fynbos, the biodiversity network, as well as the loss of plant species. In this instance, the slight loss of biodiversity and resultant cumulative impact will be acceptable, due to the transformed or degraded state of the site. The affected riverine area on the southern side of site can be rehabilitated.	
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Very low	No Impact
OPERATIONAL PHASE		
Potential impact and risk:	Impact of the project on flora & potential SCC.	
Nature of impact:	Negative	
Extent and duration of impact:	Development footprint & immediate surroundings Long term	
Consequence of impact or risk:	Alien infestation & resulting displacement of indigenous flora	
Probability of occurrence:	Medium	
Degree to which the impact may cause irreplaceable loss of resources:	Medium-low	
Degree to which the impact can be reversed:	High	
Indirect impacts:	None identified.	
Cumulative impact prior to mitigation:	The cumulative botanical impact of the project is expected to be equivalent to the impact on terrestrial biodiversity and plant species described above, i.e. the continued erosion of Garden Route Shale Fynbos, the biodiversity network, as well as the loss of plant species. In this instance, the slight loss of biodiversity and resultant cumulative impact will be acceptable, due to the transformed or degraded state of the site. The affected riverine area on the southern side of site can be rehabilitated.	
Significance rating of impact prior to mitigation (e.g. Low, Medium,	Low	No impact

Medium-High, High, or Very-High)		
Degree to which the impact can be avoided:	Medium	
Degree to which the impact can be managed:	High	
Degree to which the impact can be mitigated:	High	
Proposed mitigation:	• Monitor the area bordering on the new infrastructure for rehabilitation success and erosion. Where needed, rehabilitate/revegetate disturbed surfaces expediently. Erosion prevention measures may be needed on steep slopes, such as logs or netting, to slow down runoff and potential erosion. Mulching and seeding with indigenous fynbos seed may also be needed. • As a long-term maintenance requirement, keep the site and immediate surrounding area clear of invasive aliens, focussing on species such as black wattle, blackwood, inkberry, bugweed, spear thistle and Spanish reed. These species are category 1b and 2 invaders that require compulsory control as part of an invasive species control programme. Please note that it is a legal requirement for landowners to clear alien vegetation on their land.	
Residual impacts:	None identified.	
Cumulative impact post mitigation:	The cumulative botanical impact of the project is expected to be equivalent to the impact on terrestrial biodiversity and plant species described above, i.e. the continued erosion of Garden Route Shale Fynbos, the biodiversity network, as well as the loss of plant species. In this instance, the slight loss of biodiversity and resultant cumulative impact will be acceptable, due to the transformed or degraded state of the site. The affected riverine area on the southern side of site can be rehabilitated.	
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Low	No Impact

Alternative:	Alternative A	Alternative B	No Go.
PLANNING, DESIGN AND DEVELOPMENT PHASE			
Potential impact and risk:	**Disturbances of aquatic habitat and biota.**		
Nature of impact:	Negative		
Extent and duration of impact:	• Local and Short-term	• Site Specific and Short-term	

Consequence of impact or risk:	• Disturbance of aquatic habitat biota from clearance of vegetation, earthworks, and further invasive alien plant infestation, which can result in deterioration in freshwater ecosystem integrity, and a reduction in the supply of ecosystem services	• Disturbance of aquatic habitat biota from clearance of vegetation, earthworks, and further invasive alien plant infestation, which can result in deterioration in freshwater ecosystem integrity, and a reduction in the supply of ecosystem services	
Probability of occurrence:	Highly Probable	Highly Probable	
Degree to which the impact may cause irreplaceable loss of resources:	Marginal loss	No Loss	
Degree to which the impact can be reversed:	Partly Reversible	Partly Reversible	
Indirect impacts:	• Probable	• Probable.	
Cumulative impact prior to mitigation:	Low	Low	
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Medium	Medium	No impact
Degree to which the impact can be avoided:	Low	Medium	
Degree to which the impact can be managed:	High	High	
Degree to which the impact can be mitigated:	Can be partly mitigated	Can be mitigated	
Proposed mitigation:	• 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.	• zone by removing all the invasive aliens within 30 m of the construction area. Planting of a few locally indigenous species suitable for the habitat may also	

	• Do not infill any wetland habitat and keep the gabion wall within current disturbance footprint. • Work as far as possible from the bank with limited work within the wetland. • The construction boundary must be clearly demarcated. • The construction boundary must be clearly demarcated. • The construction boundary must be clearly demarcated. • Vegetation removal must be avoided as far as possible. Any indigenous vegetation removed during construction must be stored in a wet area nearby for replacement following construction. • Remove any alien plant species within the working corridor.	be required. Remove all construction waste from the area once construction is completed. • Allow at least 24 months for the monitoring of rehabilitation success and alien infestation on the site post construction.	
Residual impacts:	Very Low	None	
Cumulative impact post mitigation:	Negligible	None	
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Low	Low	No impact

Alternative:	Alternative A	Alternative B	No Go
	PLANNING, DESIGN AND DEVELOPMENT PHASE		
Potential impact and risk:	**Changes to the hydrological regime**		
Nature of impact:	Negative		
Extent and duration of impact:	• Site Specific and Short-term	• Site Specific and temporary	
Consequence of impact or risk:	• Changes to surface water input patterns and retention	• Changes to surface water input patterns and retention	
Probability of occurrence:	Highly Probable	Highly Probable	
Degree to which the impact may cause	Marginal loss	No Loss	

irreplaceable loss of resources:			
Degree to which the impact can be reversed:	Partly Reversible	Partly Reversible	
Indirect impacts:	• Probable	• Probable.	
Cumulative impact prior to mitigation:	Low	Low	
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Medium	Medium	No impact
Degree to which the impact can be avoided:	Low	Medium	
Degree to which the impact can be managed:	High	High	
Degree to which the impact can be mitigated:	Can be partly mitigated	Can be mitigated	
Proposed mitigation:	• Diversions must be temporary in nature and no permanent walls, berms or dams may be installed within a watercourse. • The stormwater management infrastructure, such 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 drain outlets. Contingency plans must be in place for high rainfall events which may occur during construction. • Allow for grass to grow taller in swale – don't mow it. • Direct it to stormwater outlet, (if possible).		•
Residual impacts:	Very Low	None	
Cumulative impact post mitigation:	Negligible	None	
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Low	Low	No Impact

Alternative:	Alternative A	Alternative B	No Go
PLANNING, DESIGN AND DEVELOPMENT PHASE			
Potential impact and risk:	**Geomorphological changes**		
Nature of impact:	Negative		
Extent and duration of impact:	• Local and long term	• Site Specific and medium term	
Consequence of impact or risk:	• Excavation in the wetland and in Camfersdrift River riparian area, and erosion at swale outlet in operation	• Excavation in the wetland and in Camfersdrift River riparian area, and erosion at swale outlet in operation	
Probability of occurrence:	Highly Probable	Improbable	
Degree to which the impact may cause irreplaceable loss of resources:	Marginal loss	No Loss	
Degree to which the impact can be reversed:	Partly Reversible	Partly Reversible	
Indirect impacts:	• Probable	• Improbable	
Cumulative impact prior to mitigation:	Low	Very Low	
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Medium	Low	No impact
Degree to which the impact can be avoided:	Medium	Low	
Degree to which the impact can be managed:	High	High	
Degree to which the impact can be mitigated:	Can be partly mitigated	Can be mitigated	
Proposed mitigation:	• Prevent unnecessary encroachment into the wetland • Rehabilitate disturbed areas to pre-disturbance state • Prevent and monitor erosion at swale outlet • Do not drain the wetland • 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.		
Residual impacts:	Low	None	

Cumulative impact post mitigation:	Low	No impact	
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Low	Very Low	No Impact

Alternative:	Alternative A	Alternative B	No go
PLANNING, DESIGN AND DEVELOPMENT PHASE			
Potential impact and risk:	**Changes to surface water quality**		
Nature of impact:	Negative		
Extent and duration of impact:	• Local and short term	• Site Specific and short term	
Consequence of impact or risk:	• During construction, 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. This can result in possible deterioration in aquatic ecosystem integrity and species diversity.	• During construction, 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. This can result in possible deterioration in aquatic ecosystem integrity and species diversity.	
Probability of occurrence:	Probable	Improbable	
Degree to which the impact may cause irreplaceable loss of resources:	Marginal loss	Marginal loss	
Degree to which the impact can be reversed:	Reversible	Reversible	
Indirect impacts:	Probable	Probable	
Cumulative impact prior to mitigation:	Medium	Medium	
Significance rating of	Medium	Medium	No Impact

impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)			
Degree to which the impact can be avoided:	High	High	
Degree to which the impact can be managed:	High	High	
Degree to which the impact can be mitigated:	Can be mitigated	Can be mitigated	
Proposed mitigation:	• 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.		
Residual impacts:	None	None	
Cumulative impact post mitigation:	None	None	
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	No impact	No impact	No impact

SECTION I: FINDINGS, IMPACT MANAGEMENT AND MITIGATION MEASURES

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

Table 1 below summarises the potential impacts associated with the proposal post mitigation.

Impact	Alternative A	Alternative B
Construction		
Impact on terrestrial biodiversity	Very low	Very low
Impact on flora and SCC	Very low	Very low
Disturbance of aquatic habitat and biota	Low	Low
Changes in hydrological regime	No impact	No impact
Geomorphological changes	Low	Very low
Changes to surface and water quality	No impact	No impact
Operational phase		
Impact on terrestrial biodiversity	Low	No impact
Impact on flora and SCC	Low	No impact

CONSTRUCTION PHASE IMPACTS

Impact on terrestrial biodiversity:
Minor clearing (damage) of riverine scrub. Temporary impact on the functionality of biodiversity network. Increased opportunity for alien infestation. Pollution of watercourse.

Impacts on flora and SCC:
Loss of indigenous flora & potential SCC.

Disturbance of aquatic habitat and biota:
Disturbance of aquatic habitat biota from clearance of vegetation, earthworks, and further invasive alien plant infestation, which can result in deterioration in freshwater ecosystem integrity, and a reduction in the supply of ecosystem services.

Changes in hydrological regime:
Changes to surface water input patterns and retention.

Geomorphological changes:
Excavation in the wetland and in Camfersdrift River riparian area, and erosion at swale outlet in operation.

Changes to surface water quality:
During construction, 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. This can result in possible deterioration in aquatic ecosystem integrity and species diversity.

OPERATIONAL PHASE IMPACTS

Impact on terrestrial biodiversity:
Increased alien infestation. Erosion due to poor rehabilitation efforts or stormwater control.

Impacts on flora and potential SCC.
Alien infestation and resulting displacement of indigenous flora.

Impact on terrestrial biodiversity:
Minor clearing (damage) of riverine scrub. Temporary impact on the functionality of biodiversity network. Increased opportunity for alien infestation. Pollution of watercourse.

Impacts on flora and SCC:
Loss of indigenous flora & potential SCC.

Disturbance of aquatic habitat and biota:
Disturbance of aquatic habitat biota from clearance of vegetation, earthworks, and further invasive alien plant infestation, which can result in deterioration in freshwater ecosystem integrity, and a reduction in the supply of ecosystem services.

Changes in hydrological regime:
Changes to surface water input patterns and retention.

Geomorphological changes:
Excavation in the wetland and in Camfersdrift River riparian area, and erosion at swale outlet in operation.

Impacts identified in the Terrestrial faunal and avifaunal species compliance statement:

- The study area is located within an urban setting and is surrounded by residential areas, business parks, a hospital and busy roads, from where daily noise and vibration is evident (through vehicles and human foot traffic).
- The proposed project footprints exist in a completely transformed state with no natural habitat, while habitats in the surrounding area appear highly degraded with major signs of pollution human foot traffic (vagrancy, as well as from people traversing the site), a high incidence of alien and invasive vegetation and poor water quality.
- The site harbours a common disturbance-prone terrestrial faunal and avifaunal profile.

These impacts are of a major extent, and appear to have heavily impinged on biodiversity patterns and processes within the study area landscape, adding to the degraded nature of ecosystem characteristics.

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

Botanical impact assessment by Mark Berry.
Construction phase

- Fence off the construction area where it encroaches on the Camfersdrift River. The watercourse and adjacent riparian zone outside the works area must not be disturbed in any way.
- Rehabilitate the watercourse and riparian zone by removing all the invasive aliens within 30 m of the construction area. Planting of a few locally indigenous species suitable for the habitat may also be required. Remove all construction waste from the area once construction is completed.
- Allow at least 24 months for the monitoring of rehabilitation success and alien infestation on the site post construction.

Operational phase

- Monitor the area bordering on the new infrastructure for rehabilitation success and erosion. Where needed, rehabilitate/revegetate disturbed surfaces expediently. Erosion prevention measures may be needed on steep slopes, such as logs or netting, to slow down runoff and potential erosion. Mulching and seeding with indigenous fynbos seed may also be needed.
- As a long-term maintenance requirement, keep the site and immediate surrounding area clear of invasive aliens, focussing on species such as black wattle, blackwood, inkberry, bugweed, spear thistle and Spanish reed. These species are category 1b and 2 invaders that require compulsory control as part of an invasive species control programme. Please note that it is a legal requirement for landowners to clear alien vegetation on their land.

Freshwater Assessment Report Impact Management measures by Debbie Fordham

- 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.
- Do not infill any wetland habitat and keep the gabion wall within current disturbance footprint.
- Work as far as possible from the bank with limited work within the wetland.
- The construction boundary must be clearly demarcated.
- The construction boundary must be clearly demarcated.
- The construction boundary must be clearly demarcated.
- Vegetation removal must be avoided as far as possible. Any indigenous vegetation removed during construction must be stored in a wet area nearby for replacement following construction.
- Remove any alien plant species within the working corridor
- Diversions must be temporary in nature and no permanent walls, berms or dams may be installed within a watercourse.
- The stormwater management infrastructure, such 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 drain outlets. Contingency plans must be in place for high rainfall events which may occur during construction.
- Allow for grass to grow taller in swale – don't mow it.
- Direct it to stormwater outlet, (if possible).
- Prevent unnecessary encroachment into the wetland
- Rehabilitate disturbed areas to pre-disturbance state
- Prevent and monitor erosion at swale outlet
- Do not drain the wetland
- 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.
- 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 rehabilitate.

Terrestrial faunal and avifaunal species compliance statement report:

Because the spatial extent of these works will be spatially restricted (less than 500m2) to already transformed areas with no remaining natural habitat, no notable terrestrial or avifaunal

subpopulations a "Very low" SEI, the project is expected to lead to minimal to no negative impacts on the receiving environment. Along with this, the scope of works is expected to be of a very short term (less than one year) and impacts on remaining areas outside of the proposed footprints are also expected to be of no significance. To this end, any of the two-development alternative will be able to proceed without affecting ecosystem processes and biodiversity patterns either on the site or in the local landscape. Because the site does deliver ecosystem services in the form of aquatic zones which feed the Camfersdrift River and associated wetlands downstream, while also representing a green space, it is however suggested that the Municipality organise a clean-up of waste in the area and address illegal waste dumping as this is currently degrading natural areas, not only on the site, but also in the broader landscape of the Camfersdrift River. Indeed, this river system is sensitive to disturbance, given the presence of the Knysna Leaf-folding Frog in the upper reaches not far from the site

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

All mitigation measures will be implemented.

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

There will be some temporary noise, visual (construction site) and potential dust impacts during the construction phase which will be managed and mitigated by the EMPr and ECO during the construction phase.

The development will provide temporary jobs during the construction phase in the form of labour and casual work opportunities during the operational phase in the form of security, general shop worker's, house cleaning, etc.

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

The municipality has been awarded funding to fix flood damage and the proposal is therefore to do just this within the allocated budget. To address the pressures of climate change and increases in flood events a far larger look at the river and drainage systems would have to be undertaken and far more funding would have to be acquired.

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

No conflicting recommendations.

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

Recommendations were provided in the Freshwater, Botanical Assessments Reports, as well as in the terrestrial faunal and avifaunal species compliance statement report which have been incorporated into the EMPr and will be implemented during the construction phase.

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

MITIGATION HIERARCHY	
AVOID IMPACTS	A stormwater management plan will be implemented to help to attenuate and filter pollutants on site and to regulate stormwater flows to offsite natural watercourses.
MINIMISE IMPACTS	The recommended mitigation measures of the specialist reports in addition to the compressive mitigation measures contained in the EMPR will minimise the impact of the development.
RECTIFY	The disturbances created by the construction phase will be rehabilitated in accordance with the EMPr.
OFFSET	None necessary.

SECTION J: GENERAL

1. Environmental Impact Statement

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

Botanical impact statement: Mark Berry

The site is highly transformed or degraded by past construction activities. There is also a notable presence of invasive species. However, the Camphersdrift River and adjacent riparian zone on the southern side is worth protecting as a water resource. Two options are presented for the proposed outlet of the grass swale, namely an outlet inside the riparian zone or a flared swale on the edge of the riverine scrub. Due to the modified state of the riverbank, both options are acceptable, provided that neither will result in erosion or further degradation of the riverine habitat. No SCC were recorded, and none are expected to occur on site. Given the transformed or degraded state of the site, the impact on terrestrial biodiversity and plant species is of low significance.
It is therefore recommended that the proposed project be considered for approval, but subject to the proposed mitigation measures listed above.

Aquatic impact assessment report by Debbie Fordham:
The aquatic biodiversity assessment for the proposed repair works at the Langenhoven Substation has identified the presence of riparian and wetland habitat of moderate ecological importance and sensitivity. Potential impacts relating to habitat disturbance, hydrological modification, geomorphological change and water quality degradation were assessed. With appropriate mitigation, these impacts are of low significance. Alternative B, which makes use of a flared swale to diffuse stormwater before it enters the Camfersdrift River, is considered the preferred option from an aquatic biodiversity perspective. Implementation of the mitigation measures, strict control of construction activities, and rehabilitation of disturbed areas will ensure that the ecological condition of the affected watercourses is maintained and that no unacceptable impacts occur. On this basis, the proposed works can be authorised from an aquatic biodiversity perspective, subject to adherence to the recommended mitigation measures and monitoring requirements.

Terrestrial Faunal and Avifaunal species compliance statement report.

The proposed development is unlikely to have any notable negative impacts on terrestrial fauna or avifauna over the proposed project footprints, remaining natural areas around the site, or in the local landscape. Also considering the limited scope of works proposed to restore and upgrade infrastructure, there is no reason why the proposed development should not proceed from a terrestrial faunal and avifaunal biodiversity perspective.

1.2.	Provide a map that that superimposes the preferred activity and its associated structures and infrastructure on the environmental sensitivities of the preferred site indicating any areas that should be avoided, including buffers. (Attach map to this BAR as Appendix B2)
	The proposal will be undertaken within the sensitive feature on site and as such the watercourse and its riparian zone at each site outside of the footprint and the smallest practical working area around the footprints must be regarded as No-Go areas to avoid.
1.3.	Provide a summary of the positive and negative impacts and risks that the proposed activity or development and alternatives will have on the environment and community.

Positive:

- Secure and protect municipal infrastructure
- Prevent future damages to the Langenhoven Substation
- Ensure reliable power supply

Negative:

- Temporary noise and construction related inconveniences
- Temporary disturbances to the biophysical environment

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

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

In order to obtain/reach the impact management objects the corresponding mitigation measures prescribed in the BAR and EMPr must be implemented. The Impact monitoring will be undertaken by an appointed and independent ECO. The impact management outcomes will be monitored by the appointed ECO, in addition to the implementation of mitigation measures during the duration of the development, if all management mitigation measures are implemented successfully the resulting

impact management outcomes will mean that the develop was undertaken with no significant or avoidable impacts to the environment.

Pre construction	
Impact Management objectives	Impact management outcomes
To appoint a suitably qualified and experienced Environmental Control Officer	The conditions of Environmental Authorisation and the requirements of the EMPr are implemented and monitored during all phases of the development, which will promote sound environmental management on site.
Identify and demarcate working areas and site facilities	Future construction activities will be restricted to within the designated areas & environmentally sensitive areas (no-go areas) will be protected from disturbance
To set up and equip the site camp and associated site facilities in a manner that will promote good environmental management.	Site camp facilities do not impact significantly on environment. The equipment required to implement the provisions of the EMPr are provided on site.
Environmental Control Officer to conduct an inspection prior to the commencement of construction activities on site	Good environmental management is promoted and enforced by the ECO during the full preconstruction and construction phases. Site facilities are appropriately located on site. Construction workers receive environmental awareness training before commencing work on site
Construction phase	
To limit the impact on terrestrial biodiversity	Impact on terrestrial biodiversity is limited to what is only required to undertake activities
Impact on flora and SCC	No SCC were present on site
To limit the disturbance of aquatic habitat and biota	The disturbance to undertake the activities are limited to the footprint and a reasonable working are around the sites
To Limit Changes in hydrological regime	Freshwater ecosystem water quality remains the same.
To limit Geomorphological changes	Impact on the wetland and camfersdrift river riparian area is limited. .
To limit changes to surface water quality	No pollutants enter the watercourse and modify/contaminate the surface water.
Post- Construction	
To limit the impact on terrestrial biodiversity	The disturbed areas are rehabilitated sufficiently and no alien vegetation establish in the recovering areas
To limit the impact of flora and SCC	No increase in alien species on site

2.2.	Provide a description of any aspects that were conditional to the findings of the assessment either by the EAP or specialist that must be included as conditions of the authorisation.

The EMPr must be implemented, this is however a standard condition of Environmental Authorisation. All mitigation measures from the specialists have been incorporated into the EMPr and as such are conditional to the environmental authorisation.

2.3.	Provide a reasoned opinion as to whether the proposed activity or development should or should not be authorised, and if the opinion is that it should be authorised, any conditions that should be included in the authorisation.

The proposed rehabilitation and protection of infrastructure should be authorised.

As seen in the body of this Basic Assessment Report, the negative impacts associated with the construction phase can be mitigated to that of a no significance to low significance for terrestrial biodiversity and fauna and avifauna. Potential impacts relating to habitat disturbance, hydrological modification, geomorphological change and water quality degradation were assessed. With appropriate mitigation, these impacts are of low significance.

Proposed Conditions of Authorisation:

- The EMPr must be implemented.
- An ECO must be appointed to monitor compliance with the EMPr

2.4.	Provide a description of any assumptions, uncertainties and gaps in knowledge that relate to the assessment and mitigation measures proposed.

Assumptions and Limitation of the Botanical Impact Assessment Report by Mark Berry:

The following limitations and assumptions apply to the study:

- Since fieldwork was carried out in winter, flowering plants that only flower at other times of the year (e.g. spring to summer), such as certain bulb species (notably from the Iridaceae & Orchidaceae families), may have been missed. However, the overall confidence in the completeness and accuracy of the botanical findings is considered to be good.

Notwithstanding the above limitation and the fact that the site is highly degraded or transformed, the specialist is of the opinion that the survey and findings are adequate to aid decision making. A follow-up botanical survey during spring or early summer is not considered necessary.

Assumptions and limitation of the aquatic impact assessment report by Debbie Fordham:

- The proposal will be undertaken within the sensitive feature on site and as such the watercourse and its riparian zone at each site outside of the footprint and the smallest practical working area around the footprints must be regarded as No-Go areas to avoid.
- While disturbance and transformation of habitats can lead to shifts in the type and extent of aquatic ecosystems, it is important to note that the current extent and classification is reported on here.
- All soil/vegetation/terrain sampling points were recorded using a Garmin Montana Global Positioning System (GPS) and captured using Geographical Information Systems (GIS) for further processing.
- Infield soil and vegetation sampling was only undertaken within a specific focal area around the proposed activities, while the remaining watercourses were delineated at a desktop level with limited accuracy.
- No detailed assessment of aquatic fauna/biota (e.g. fish, invertebrates, microphytes, etc.) was undertaken, and not deemed necessary.
- The vegetation information provided is based on observation not formal vegetation plots. As such species documented in this report should be considered as a list of dominant and/or indicator wetland/riparian species.
- The vegetation information provided is based on observation not formal vegetation plots. As such species documented in this report should be considered as a list of dominant and/or indicator wetland/riparian species.
- The vegetation information provided is based on observation not formal vegetation plots. As such species documented in this report should be considered as a list of dominant and/or indicator wetland/riparian species.

Assumptions and limitations of the Terrestrial Faunal and Avifaunal Species Compliance Statement Report by Dr. Jacobus Visser.

Weather conditions during the surveying period combined with a relatively open habitat structure were optimal for detecting a representative sample of the terrestrial faunal and avifaunal species diversity across the study area. Even so, not all species could be observed (especially cryptic species), and it is further possible that the surveying period did not correspond to the activity period or activity season of some species. Although it is therefore possible that the observed faunal composition of the study area only partly reflects the species

	richness of, and faunal abundances within the study area (Appendix D), the inclusion and consideration of SCC was further based on a thorough desktop assessment and further takes account the habitat composition of the site meaning that the capacity of the site to support subpopulations of SCC were considered.
2.5.	The period for which the EA is required, the date the activity will be concluded and when the post construction monitoring requirements should be finalised.
The EA is required for 5 years. This will allow for funding to be allocated, the tender process to secure a contractor and to implement the proposal.	

3. Water

Since the Western Cape is a water scarce area explain what measures will be implemented to avoid the use of potable water during the development and operational phase and what measures will be implemented to reduce your water demand, save water and measures to reuse or recycle water.
Water will be required for compacting ground material and concrete batching. During the operational phase the proposal will not use water.

4. Waste

Explain what measures have been taken to reduce, reuse or recycle waste.
An integrated waste management system must be adopted on site. Recyclable and reusable materials will be handled us such. Unrecyclable items will be taken to the George landfill.

5. Energy Efficiency

8.1.	Explain what design measures have been taken to ensure that the development proposal will be energy efficient.
The proposal will not use power during the operational phase. Generators will be used during the construction phase if required.	

SECTION K: DECLARATIONS

DECLARATION OF THE APPLICANT

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

I, MICHAEL JOHN RHODE, ID number [redacted] in my personal capacity or duly authorised thereto hereby declare/affirm that all the information submitted or to be submitted as part of this application form is true and correct, and that:

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

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

2026/2/11

Signature of the Applicant: Date: 2026/2/11

George Municipality

Name of company (if applicable):

DECLARATION OF THE ENVIRONMENTAL ASSESSMENT PRACTITIONER ("EAP")

I Michael Bennett....., EAP Registration number 2021/316..... as the appointed EAP hereby declare/affirm the correctness of the:

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

Signature of the EAP: Date: 4 March 2026

Sharples Environmental Services

Name of company (if applicable):

DECLARATION OF THE REVIEW EAP

I ……, EAP Registration number …….. as the appointed Review EAP hereby declare/affirm that:

- I have reviewed all the work produced by the EAP;
- I have reviewed the correctness of the information provided as part of this Report;
- I meet all of the general requirements of EAPs as set out in Regulation 13 of the NEMA EIA Regulations;
- I have disclosed to the applicant, the EAP, the specialist (if any), the review specialist (if any), the Department and I&APs, all material information that has or may have the potential to influence the decision of the Department or the objectivity of any Report, plan or document prepared as part of the application; and
- I am aware that a false declaration is an offence in terms of Regulation 48 of the NEMA EIA Regulations.

Signature of the EAP: Date:

Name of company (if applicable):

DECLARATION OF THE SPECIALIST

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

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

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

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

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

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

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

Signature of the EAP: Date:

Name of company (if applicable):

DECLARATION OF THE REVIEW SPECIALIST

I ……., as the appointed Review Specialist hereby declare/affirm that:

- I have reviewed all the work produced by the Specialist(s):
- I have reviewed the correctness of the specialist information provided as part of this Report;
- I meet all of the general requirements of specialists as set out in Regulation 13 of the NEMA EIA Regulations;
- I have disclosed to the applicant, the EAP, the review EAP (if applicable), the Specialist(s), the Department and I&APs, all material information that has or may have the potential to influence the decision of the Department or the objectivity of any Report, plan or document prepared as part of the application; and
- I am aware that a false declaration is an offence in terms of Regulation 48 of the NEMA EIA Regulations.

Signature of the EAP: Date:

Name of company (if applicable):