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REVISED DRAFT BASIC ASSESSMENT REPORT

FOR THE

PROPOSED RESIDENTIAL DEVELOPMENT ON REMAINDER OF PORTION 21 OF FARM 195 KRAAIBOSCH, 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: Pieterkoen Development Company (Pty) Limited
PO Box 2582
George
6530

DATE: 7 February 2025

SES REF NO: 19/RD/PK/02/25
DEA&DP REF.NO.: 16/3/3/1/D2/19/0033/24





BASIC ASSESSMENT REPORT

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

NOVEMBER 2019

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

GENERAL PROJECT DESCRIPTION

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

Proposed Residential Development on Remainder of Portion 21 of Farm 195 Kraaibosch
George, Western Cape

The development is proposed to consist of:

- Single Residential II – Estate housing Flats - 84
- Business Zone III – Neighbourhood shop with 9 flats
- Community Zone I – Day Care / Pre School
- Single Residential Zone II - Estate Housing, Hotel, 10 rooms
- Single Residential Zone II - Estate Housing, Town Housing, 44
- Single Residential Zone II - Estate Housing, Group housing, 105
- Single Residential Zone II - Estate Housing, Dwellings, 79
- Single Residential Zone II – private Open Space
- Transport Use Zone II – Public Street
- Single Residential Zone II – Private Road
- Agriculture – Remainder
- Including associated infrastructure



Figure 1: Site development plan

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

1. **The purpose** of this template is to provide 0a 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, 1998 (Act No. 107 of 1998) ("NEMA") hereinafter referred to as the "NEMA EIA Regulations".
3. The required information must be typed within the spaces provided in this Basic Assessment Report ("BAR"). The sizes of the spaces provided are not necessarily indicative of the amount of information to be provided.
4. All applicable sections of this BAR must be completed.
5. Unless protected by law, all information contained in, and attached to this BAR, will become public information on receipt by the Competent Authority. If information is not submitted with this BAR due to such information being protected by law, the applicant and/or Environmental Assessment Practitioner ("EAP") must declare such non-disclosure and provide the reasons for believing that the information is protected.
6. This BAR is current as of **November 2019**. It is the responsibility of the Applicant/ EAP to ascertain whether subsequent versions of the BAR have been released by the Department. Visit this Department's website at <http://www.westerncape.gov.za/eadp> to check for the latest version of this BAR.
7. This BAR is the standard format, which must be used in all instances when preparing a BAR for Basic Assessment applications for an environmental authorisation in terms of the NEMA EIA Regulations when the Western Cape Government Department of Environmental Affairs and Development Planning ("DEA&DP") is the Competent Authority.
8. Unless otherwise indicated by the Department, one hard copy and one electronic copy of this BAR must be submitted to the Department at the postal address given below or by delivery thereof to the Registry Office of the Department. Reasonable access to copies of this Report must be provided to the relevant Organs of State for consultation purposes, which may, if so indicated by the Department, include providing a printed copy to a specific Organ of State.
9. This BAR must be duly dated and originally signed by the Applicant, EAP (if applicable) and Specialist(s) and must be submitted to the Department at the details provided below.
10. The Department's latest Circulars pertaining to the "One Environmental Management System" and the EIA Regulations, any subsequent Circulars, and guidelines must be taken into account when completing this BAR.
11. Should a water use licence application be required in terms of the National Water Act, 1998 (Act No. 36 of 1998) ("NWA"), the "One Environmental System" is applicable, specifically in terms of the synchronisation of the consideration of the application in terms of the NEMA and the NWA. Refer to this Department's Circular EADP 0028/2014: One Environmental Management System.
12. Where Section 38 of the National Heritage Resources Act, 1999 (Act No. 25 of 1999) ("NHRA") is triggered, a copy of Heritage Western Cape's final comment must be attached to the BAR.
13. The Screening Tool developed by the National Department of Environmental Affairs must be used to generate a screening report. Please use the Screening Tool link <https://screening.environment.gov.za/screeningtool> to generate the Screening Tool Report. The screening tool report must be attached to this BAR.

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

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

DEPARTMENTAL DETAILS

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

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.	
<p>Locality Map:</p>	<p>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:</p> <ul style="list-style-type: none"> • 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. <p>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.</p> <p>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.</p>
Provide a detailed site development plan / site map (see below) as Appendix B1 to this BAR; and if applicable, all alternative properties and locations.	
<p>Site Plan:</p>	<p>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:</p>

	<ul style="list-style-type: none"> 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): <ul style="list-style-type: none"> Watercourses / Rivers / Wetlands 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 <p>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.</p>
Site photographs	<p>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.</p>
Biodiversity Overlay Map:	<p>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.</p>
Linear activities or development and multiple properties	<p>GPS co-ordinates must be provided in degrees, minutes and seconds using the Hartebeeshoek 94 WGS84 co-ordinate system.</p> <p>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.</p> <p>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.</p>

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
WCBS:	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 B1.1:	Site development plan(s)	✓
	Appendix B1.2:	Phasing Plan	✓
	Appendix B1.3:	Services	✓
	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 B3:	3D Renderings	✓
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 BOCMA	✓
	Appendix E4:	Comment from the DEA: Oceans and Coast	N/A
	Appendix E5:	Comment from the DAFF	X
	Appendix E6:	Comment from WCG: Transport and Public Works	X
	Appendix E7:	Comment from WCG: DoA	X
	Appendix E8:	Comment from WCG: DHS	N/A

	Appendix E9:	Comment from WCG: DoH	N/A
	Appendix E10:	Comment from DEA&DP: Pollution Management	N/A
	Appendix E11:	Comment from DEA&DP: Waste Management	N/A
	Appendix E12:	Comment from DEA&DP: Biodiversity	X
	Appendix E13:	Comment from DEA&DP: Air Quality	N/A
	Appendix E14:	Comment from DEA&DP: Coastal Management	N/A
	Appendix E15:	Comment from the local authority	X
	Appendix E16:	Confirmation of all services (water, electricity, sewage, solid waste management)	✓
	Appendix E17:	Comment from the District Municipality	X
	Appendix E18:	Copy of an exemption notice	N/A
	Appendix E19	Pre-approval for the reclamation of land	N/A
	Appendix E20:	Proof of agreement/TOR of the specialist studies conducted.	✓
	Appendix E21:	Proof of land use rights	✓
	Appendix E22:	Proof of public participation agreement for linear activities	N/A
Appendix F:	F1:	register of I&APs	✓
	F2:	proof of notices	✓
	F3:	All comments	✓
	F4:	Comments and Responses Report	✓
Appendix G:	Specialist Report(s) Appendix G1 - Botanical Compliance Statement Appendix G2.1 – Aquatic Biodiversity Impact Assessment Appendix G2.2 – WULA information Appendix G3 – Terrestrial Biodiversity Compliance Statement Appendix G4 – Faunal Compliance Statement Appendix G5a&b – Heritage and Archaeological Impact Assessment Appendix G6 – Agricultural Compliance Statement		✓

	Appendix G7 – Visual Impact Assessment	
Appendix H:	EMPr	✓
Appendix I:	Screening tool report	✓
Appendix J:	The impact and risk assessment for each alternative	Section H
Appendix K1:	Need and desirability (March 2013)	✓
Appendix K2:	Need and desirability (March 2017)	✓
Appendix L:	Appendix L1 - Engineering Report Appendix L2 - Electrical Services Report Appendix L3 – Municipal Confirmation Email	✓
Appendix M1:	Socio-Economic perspective	✓
Appendix M2:	Socio-Economic Impact Assessment	✓
Appendix N:	Planning Report	✓
Appendix O:	Traffic Impact Assessment and George Municipality letter	✓
Appendix P:	Stormwater Management Plan and George Municipality Letter	✓
Appendix Q:	Planning options and design alternatives report	✓

SECTION A: ADMINISTRATIVE DETAILS

Highlight the Departmental Region in which the intended application will fall	CAPE TOWN OFFICE:		GEORGE OFFICE:
	REGION 1 (City of Cape Town, West Coast District)	REGION 2 (Cape Winelands District & Overberg District)	REGION 3 (Central Karoo District & Garden Route District)
Duplicate this section where there is more than one Proponent Name of Applicant/Proponent: Name of contact person for Applicant/Proponent (if other): Company/ Trading name/State Department/Organ of State: Company Registration Number: Postal address: Telephone: E-mail:	Pieterkoen Development Company (Pty) Limited		
	Justin Branford		
	Pieterkoen Development Company (Pty) Limited		
	2022 / 749109 / 07		
	PO Box 2582		
	George		Postal code: 6530
	(044) 871 1206		Cell: (083) 284 0728
	Justin.branford@igen.co.za		Fax: ()
	Company of EAP: EAP name: Postal address: Telephone: E-mail: Qualifications:	Sharples Environmental Services cc	
Michael Bennett (Registered EAP)			
PO Box 9087			
George		Postal code: 6530	
044 873 4923		Cell:	
michael@sesc.net		Fax: ()	
Michael: BSc: Environmental and geographical Science & Ocean and Atmospheric Science			

EAPASA registration no:	Michael: 2021/3163		
Duplicate this section where there is more than one landowner Name of landowner: Name of contact person for landowner (if other): Postal address: Telephone: E-mail:	Pieterkoen Development Company (Pty) Limited		
	Justin Branford		
	PO Box 2582		
	George	Postal code: 6530	
	(044) 8711 206	Cell: (083) 284 0728	
	Justin.Branford@igen.co.za	Fax: ()	
Name of Person in control of the land: Name of contact person for person in control of the land: Postal address: Telephone: E-mail:	Justin Branford		
	PO Box 2582		
	George	Postal code: 6530	
	(044) 8711 206	Cell: (083) 284 0728	
	Justin.Branford@igen.co.za	Fax: ()	
Duplicate this section where there is more than one Municipal Jurisdiction Municipality in whose area of jurisdiction the proposed activity will fall: Contact person: Postal address: Telephone: E-mail:	George Municipality		
	Municipal Manager		
	PO Box 19		
	George	Postal code: 6530	
	(044) 801 9476	Cell:	
	tlduplooy@george.gov.za.	Fax: ()	

SECTION B: CONFIRMATION OF SPECIFIC PROJECT DETAILS AS INCLUDED 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.			
Both, there is an existing house and buildings however the rest of the site is undeveloped.				
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.			—m ²
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)	°	'	"
	Longitude (E)	°	'	"
Middle point co-ordinates for all alternatives				
	Latitude (S)	°	'	"
	Longitude (E)	°	'	"
End point co-ordinates for all alternatives				
	Latitude (S)	°	'	"

Longitude (E)	0	4	44
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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):	21.28 ha 212 800 m ²
4.2.	Developed footprint of the existing facility and associated infrastructure (if applicable):	Approx. 0.1735 ha 1 735 m ²
4.3.	Development footprint of the proposed development and associated infrastructure size(s) for all alternatives:	Approx. 17 ha 170 000m ²
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).	

The applicant proposes to develop the property as per the Site Development Plan below (Appendix B1.1). The development is proposed to consist of:

- Single Residential II – Estate housing Flats - 84
- Business Zone III – Neighbourhood shop with 9 flats
- Community Zone I – Day Care / Pre School
- Single Residential Zone II - Estate Housing, Hotel, 10 rooms
- Single Residential Zone II - Estate Housing, Town Housing, 44
- Single Residential Zone II - Estate Housing, Group housing, 105
- Single Residential Zone II - Estate Housing, Dwellings, 79
- Single Residential Zone II – private Open Space
- Transport Use Zone II – Public Street
- Single Residential Zone II – Private Road
- Agriculture – Remainder
- Including associated infrastructure



Figure 2: Proposed Site Development Plan.

The appointed consulting engineers have prepared a services report highlighting the available civil services for this development based on the Architects layout - SUB/003.1, dated 2 December 2024 (figure 2). It is envisaged that the development implementation will be phased over a period of six years.

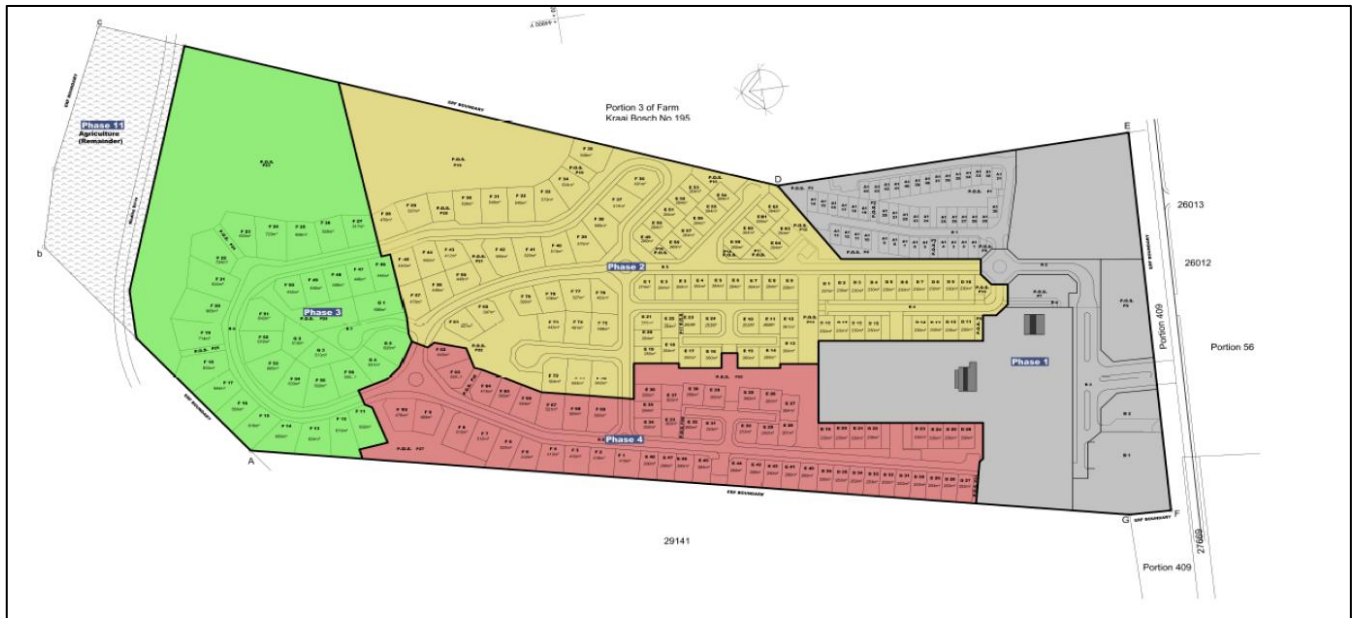


Figure 3: Development Phasing (Appendix B1.2)

PHASE 1

- A1 Town houses (2- and 3-bedroom units) 44
- Apartments/flats (1-,2- and 3-bedroom units) 84

Total number of dwelling units **128**

(Note: 10 x 1-bedroom suites in the historic precinct and the 9 x 2-bedroom flats in the commercial zone are not included in this total).

PHASE 2

- D and E Group housing (2- and 3-bedroom units) 58
- F Single residential stands 33

Total number of dwelling units **91**

PHASE 3

- F Single residential stands 28
- G Group housing (2- and 3-bedroom units) 5

Total number of dwelling units **33**

PHASE 4

- F Single residential stands 18
- D and E Group housing (2- and 3-bedroom units) 42

Total number of dwelling units **60**

TOTAL NUMBER OF UNITS INCLUDED IN ALL 4 PHASES 312

1. Water

Water demand for the proposed housing units with an average annual daily consumption of 800 l/unit/day for the 3-bedroom units, 560 l/unit/day for the 2-bedroom units, 400 l/unit/day for the 1- bedroom units and the flats at 400 l/unit/day is 170,58 kl/day. George Municipality have confirmed that they will have sufficient supply of treated potable water to provide this proposed development with an on-site connection, considering the implementation program of six years commencing in 2024 - letter attached in Appendix E16. The bulk and link service upgrades required is as per the GLS report, attached as Annexure A in Appendix L1. Final requirements will have to be recorded in a Services Agreement to be concluded between the developer and the Local Authority.

The developer will be responsible to connect to the existing municipal network which is in close proximity to the proposed development (to the south of the site).

2. Sewage disposal

The sewage master plan of the Local Authority does allow for this development in terms of bulk disposal and treatment of the sewage outfall. The Local Authority has confirmed the availability of this service - letter attached as Appendix E16. The bulk and link service upgrades required is as per the GLS report, attached as Annexure A in Appendix L1. Final requirements will have to be recorded in a Services Agreement to be concluded between the developer and the Local Authority.

The estimated sewerage effluent quantity produced for the development and based on the water demand will be 135,57 kl/day. This equates to a peak flow of 4,87 l/s. The developer will be responsible to deliver sewage by gravity or by pumping to an existing outfall sewer which is in close proximity to the proposed development (to the west and east of the site).

Two temporary pumpstations will be required to pump effluent from the east to the west side of the development – see attached Appendix L1's Annexure B - G5215BA-CE-101-A. These temporary measures will be constructed and maintained by the developer. Once the developments to the east have been implemented the temporary measures will be substituted by connecting the pump stations to the gravity system to the east - see attached Appendix L1's Annexure B - G5215BA-CE-102-A. This gravity system will be transferred to and maintained by the Local Authority.

3. Road Access

Road access will be provided via the existing roads network within the Kraaibosch development area. The development falls within the Kraaibosch Roads Cost Model area (C1736 Kraaibosch Cost Model Rev 5.2 20220413) and road contributions will be calculated/negotiated according to the model.

The development form part of the Kraaibosch Roads Cost Model and a revision of the TIA information has been done (Appendix O), considering the current usage and trip generations. This could/will affect the cost contribution for roads, of this development, but will not have major implications for access which will still be from Glenwood Avenue.

The width of internal roads will be 5,5 m average. The roads will have brick or asphalt as the final wearing surface with gravel layer works beneath.

4. Connection Services

The developer will install cable ducts and junction boxes to all properties. Erf connections will be installed by a service provider who will be appointed at a later stage.

5. Stormwater Disposal and Management Plan

Stormwater infrastructure is envisaged as per drawing G5215BA-CE- 102-A, G5215BA-CE-110-A and G5215BA-CE-111-A of Appendix L1 and the Stormwater Management Plan (Appendix P)

Design Philosophy

Stormwater management will be according to recommendations contained in the Red Book i.e., Guidelines for Human Settlement Planning and Design as compiled by the CSIR. The principals of SuDS will further be considered to minimise the amount and impact of stormwater leaving the site.

A dual drainage system will be adopted. Source control of the minor flood with 1:5 year or less recurrence intervals will be provided by the utilisation of roof water collection rainwater tanks to collect runoff from roofs for later use in irrigation of gardens etc. Local control will be facilitated by the use of catchment structures and will, where possible, be constructed per erf pockets as required. This will to some extent facilitate infiltration of water at source.

The major flood with 1:50 year recurrence interval will be carried in the streets and the formal system (as per Guidelines) and only where the above minor system's capacity is exceeded, then in overland open or piped channels to the natural watercourses.

During the detail design phase, storm runoff from catchment areas will be calculated and catchpit inlets will be positioned and sized to match runoff volumes. The capacity of road kerbs will also be checked against major runoff volumes. Stormwater servitudes will be provided between erven where necessary to accommodate overland open channels with sufficient capacity to carry major storm runoff from the edge of the road to the nearest natural watercourse.

Specific Considerations

Runoff from the land will increase because of the development, but this will be accommodated in the design of the minor and major stormwater system. The increased runoff will not affect any existing or proposed properties since all properties are well above the 1:100 year flood lines for the major natural watercourse (Swart River).

Increased overland flow velocities

Various measures will be incorporated to mitigate increased flow velocities like:

- Energy dissipaters and stilling basins at stormwater pipe outlets. Reno mattress aprons with stilling basins where appropriate will be provided at all culvert outlets. Large rocks will be effective as energy dissipaters and will contribute to the landscaping.
- Lining of open channels with grass (swales) and or stone pitching where required.
- Utilisation of invader tree logs to act as flow speed calming structures placed across flow paths and anchored properly.
- Utilisation of Gabion type structures to act as flow speed calming elements placed across flow paths and anchored properly.

Quality of water

Long term contamination of stormwater run-off is not a concern as the development consists mostly of commercial and housing development. In line with the SuDS principals pipe culvert outlets will be provided with Gabion and Reno mattress structures to facilitate slowing of minor storm flows and to provide infiltration areas to augment subsurface flow. Possible pollutants will be trapped in these structures and can be cleaned out as part of a regular maintenance schedule.

The site is most vulnerable during the construction phase, and it will be necessary to utilize silt screens and onion bags to trap silt before the run-off joins the natural watercourses. Once vegetation in all the disturbed areas of the development is well established and ground surfaces have consolidated, no further measures will be required. These measures will be the subject of the Environmental Management Plan (EMP) which will be issued to the contractor at construction stage. The Environmental Control Officer (ECO) will be responsible for enforcing the EMP.

Protection of slopes that occur on the property

Natural slopes that have been disturbed and where sheet flow occurs will be landscaped and revegetated. Where flow is concentrated, measures will be incorporated as proposed above.

Where stormwater is channelled towards the river and tributary streams, outlets have been spaced at intervals along the stream edge to avoid concentration of large flows. Stormwater will thus be fed into the streams and river system along a wide front allowing dissipated flow and seepage to all areas.

Watercourse/River Crossings

It is not anticipated at this stage to have any road river crossings constructed.

Preliminary High Level Flow Estimation

The figures provided below should be considered as estimated quantities only. Flow estimation has been done according to the Rational Method for the 1:5 years return period nl. stormwater accommodated in the underground piped system and stormwater accommodated as overland sheet flow per the existing topography. Flow is indicated for the east side contributing to the existing stream as follows.

Pre-development flows:

- 202,63 l/s

Post-development flows:

- 399,18 l/s

As can be seen the expected increase in flow is 196,55 l/s.

6. Solid Waste disposal

The Local Authority will dispose of the solid waste. Collection of the waste will be by mutual agreement between the Developer and the Local Authority. Please see Appendix E16 for the municipal confirmation letter.

ELECTRICAL RETICULATION BULK SERVICES

(Source: de Villiers & Moore Consulting Engineers, Appendix L2)

Supply Authority

The Development is situated in the electrical supply area of George Municipality.

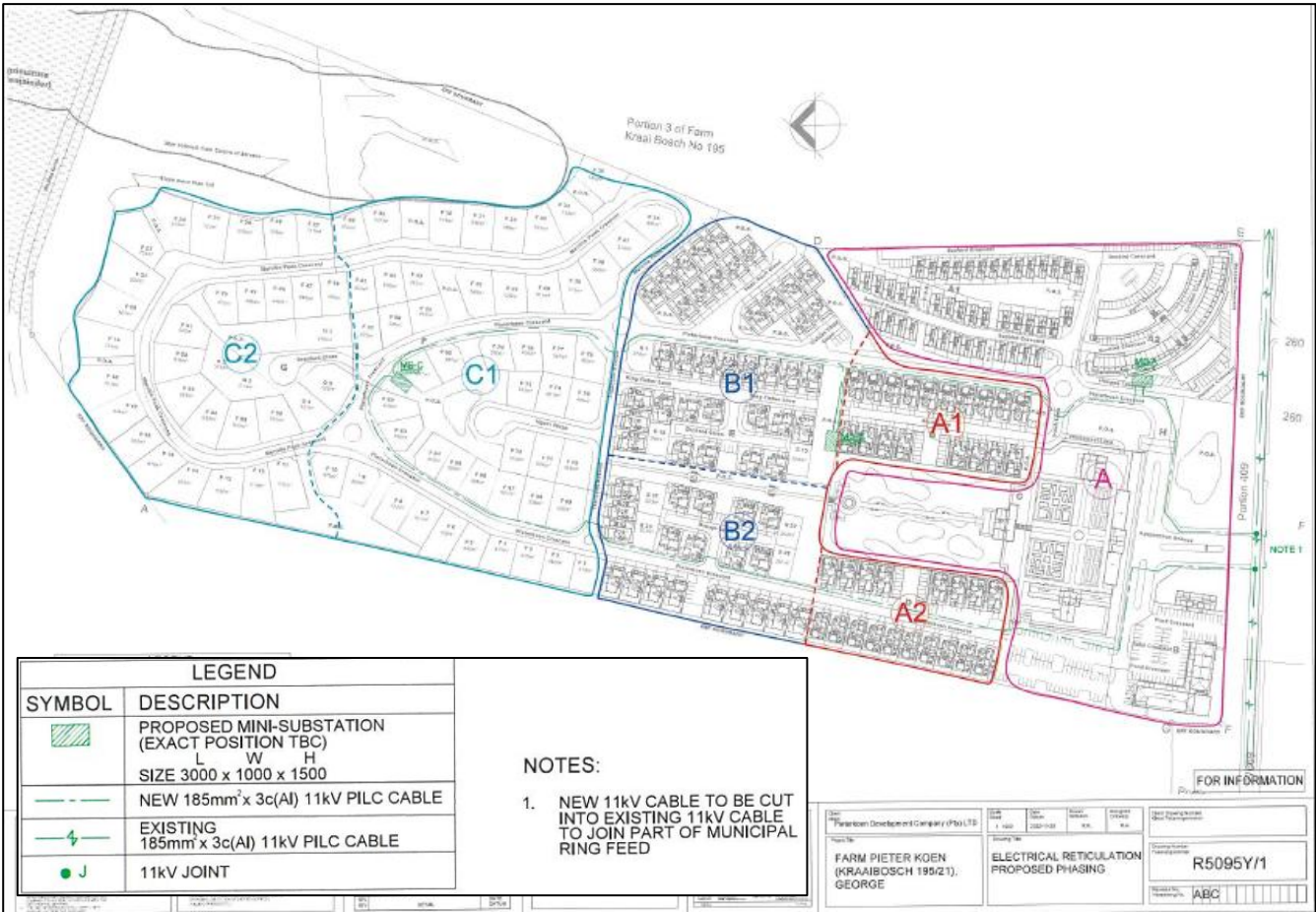


Figure 4: Drawing R5095Y/1_Rev C - the electrical connection point to the Development as well as the existing 11kV cables to the area.

Existing Electrical Distribution Network

There is an existing municipal 185 mm² x 3c (Al) 11 kV PILC cable along the southern access road which feeds from SS-Glenwood (66/11kV substation).

The Municipality confirmed during a meeting as well as by email (Appendix L3) that there is capacity on this cable to supply the required demand. Extract from email received from the George Municipal Electrical Planning department:

The development will connect on the 11 kV network.

A special contribution is payable towards the MV network in the area.

The capacity will be made available at the SS Glenwood SS, that is currently being upgraded to accommodate the development in the area.

Demand Requirements

The demand calculated for the Development is estimated in the load calculation table below and was taken into account when calculating the Development Charges as well as the capacity on the existing network.

Total Estimated Notified Electrical Demand Once Fully Developed = 887 kVA.

ESTIMATED LOAD CALCULATION FOR PLANNING PURPOSES					
Type		Number	Size (m ²)	ADMD	Total
Portion 1	Residential	44		3	132
Portion 2	Sectional Title	84		2,5	210
Portion 6	Business		1125	0,05	56
	Residential	9		3	27
Portion 7	Hotel		1480	0,05	74
Portion 8	Dwelling Houses	33		2,5	83
	Group Houses	58		1,5	87
Portion 9	Dwelling Houses	33		2,5	83
Portion 10	Dwelling Houses	18		2,5	45
	Group Houses	42		1,5	63
	Pumpstations	2		14	28
Total					887

Proposed Electrical MV Distribution Network

The medium voltage network currently in place is sufficient to supply the intended Development.

Point of Connection

A new 185 mm² x 3c (Al) 11 kV PILC cable will be cut into the existing 185 mm² x 3c (Al) 11kV PILC cable on the southern side of the Development.

The ring feed will thus be extended into the Development as indicated on drawing R5095P/1_Rev A (figure 4) which will in turn supply the mini-substations which are located at the load centres of the various areas.

Metering and Responsibility

On completion of the installation and after the one year guarantee period, the responsibilities will be as follows:

The George Municipality will be responsible for the maintenance of the mini-substation and the low voltage network including the low voltage cables, metering kiosks, service connections and earthing network.

Standard George metering to each individual erf will be applicable.

The street lighting network as well as the street lighting equipment will be the responsibility of the Developer/HOA. The street lights will be supplied and metered from a separate street lighting kiosk situated next to the mini-substation and the monthly cost will be for the Developer's/HOA's account.

Energy Saving Measures

The use of the following equipment will be mandatory:

- Water and sewage pumps to be supplied with energy efficient motors and vsd motor control.
- Water heating to be done using gas or heat pumps.
- Lighting to make use of LED lamps only.
- Use of motion sensor lighting control.
- Photovoltaic Systems will be encouraged.

Cost Estimate and Electrical development Charges

The Developer will be responsible for all costs associated with the supply and installation of the electrical infrastructure required to service the Development.

A detailed design of the proposed medium voltage, low voltage, street lighting and earthing will be submitted to the George Municipality for approval prior to construction commencing on site.

A detailed cost estimate will be submitted as part of a different process.

The estimated Electrical Development Contributions for the current financial year have been calculated using the current SDP and were obtained from the Electrical Department.

The Development Charges amount to R 2 750 312.03 + Vat (887 X R 3 100.69).

It must be noted that the Development also attracts a Special Electrical Contribution at the rate of R 3 100.00 + Vat per equivalent unit which amount to R 967 20.00 + Vat (312 EU X R 3 100.00).

It is noted that the amount is adjusted each year at the end of June.

Impact

1. Impact on Existing Consumers:

The development will have no detrimental effect on the quality of supply to the existing consumers due to the fact that the development will be supplied by its own substation which in turn will be supplied from the 11kV system.

2. Impact on Distribution Authority Operating Costs

The development will have no negative effect on the electrical costs of the distribution authority, due to the fact that the complete electrical infrastructure required for the development will be supplied and installed by the Developer.

3. Impact on the Environment:

Services will be located within the road reserves to prevent additional disturbances of vegetation.

The internal electrical infrastructure design will take into account energy saving technologies which may include load control, the use of energy efficient lighting, the use of alternative means of water heating and inverter type HVAC equipment.

TRAFFIC IMPACT ASSESSMENT

(Source: Traffic Impact Assessment, Pieterkoen Development, 195/21, Kraaibosch, 2023, prepared by SMEC, Appendix O).

The subject site measures approximately 17 hectares in extent and will comprise of 137 apartments and flats, 100 townhouses, 79 single dwelling units, a health and fitness centre, a preschool, offices, shopping centre and a restaurant. Taking into consideration the planned public transport initiatives for the Kraaibosch Development Area, and the route alignment of Go George Bus Service, the planned development is anticipated to generate 298 and 449 new vehicular trips during the Weekday AM and PM Peak Hours.



Figure 5: 2022 Kraaibosch Roads Master Plan.

It is planned for the development to be served by a single access along Road 2 ~180 metres downstream of Cape Estates Development Access and 250 metres upstream of Groenekloof Avenue (Road 4A). It is SMEC's submission that the proposed development access conforms to the WCG access spacing requirements.

It should however be noted that there are two existing sub-standard access spacings on the southern edge of Road 2 in the vicinity of the proposed development access, that of ERF 195/56 and ERF 26013. It is recommended that upon the development of ERF 195/56, the existing access along Road 2 should be relocated to a point directly opposite the proposed ERF 195/21 development access. The George Municipality should evaluate whether they want to impose any changes to the substandard access to ERF 26013.

It is concluded by SMEC that the planned intersection layout of Road 1 and Glenwood Avenue would not be able to accommodate the 2031 Background plus Development Traffic at an acceptable Level of Service. This is as a result of an increase in the development trip generation compared to what was included in 2022 Kraaibosch Cost Apportionment Model Report. In addition, more developments are taking access

off Road 2 than previously planned, which has led to increased demand and associated capacity requirements at the intersection of Road 1 and Glenwood Avenue.

Taking the above into consideration, one would ideally propose upgrades to this intersection however this is not achievable in this instance. It is therefore SMEC's submission that one of the following measures be taken to reduce the possibility for this intersection to become oversaturated:

- Developments to obtain access from Road 5 instead of Road 2
- Provide secondary access to the Kraaibosch Development Area, i.e. Road 5.1

It is concluded that 300 parking bays would need to be provided for the residential component of the development. 127 parking bays would need to be provided for the remaining components of the development, of which 3 parking bays would need to be accessible to the physically disabled. The school would also be required to provide a stop & drop facility.

Taking into consideration the planned floor area of the shopping centre land use, 2 loading bays would be required for a supermarket between 500 and 100 square meters GLA.

Considering the gated access control from a Class 3 Equivalent Minor Arterial Street, the minimum requirement for ingress throat lengths is 75 metres and egress throat lengths is 25 metres. It is our submission that the required throat lengths are accommodated on the site development plan.

The transport improvements defined within the latest Kraaibosch Cost Apportionment Model Report of April 2022 still apply. No further road capacity improvements would be required as part of the proposed development.

Taking the above into consideration, it is concluded that this development is supported from a traffic engineering perspective, provided that the site-specific requirements are implemented as per the applicable design standards.

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

Access onto the property is currently gained directly from Glenwood Avenue.



Figure 6: The property is accessed from Glenwood Avenue.

4.6.	SG Digit code(s) of the proposed site(s) for all alternatives:	C	0	2	7	0	0	0	0	0	0	0	0	1	9	5	0	0	0	2	1
4.7.	Coordinates of the proposed site(s) for all alternatives:																				
	Latitude (S)							33°				58'				17.80"					

	Longitude (E)	22°	30'	44.57"
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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
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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.
<ul style="list-style-type: none"> 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) Spatial Planning and Land Use Management Act, No. 16 of 2013 (SPLUMA) Western Cape Land Use Planning Act, (Act 3 of 2014) (LUPA) George Municipality: By-law on Municipal Land Use Planning (2015)

4. Policies

Explain which policies were considered and how the proposed activity or development complies and responds to these policies.
<p>Western Cape Provincial SDF (2014)</p> <p>The PSDF puts in place a coherent framework for the Province's urban and rural areas that:</p> <ul style="list-style-type: none"> Gives spatial expression to National and provincial development agendas. Serves as basis for coordinated and integrated planning alignment on National and Provincial Departmental Programmes. Supports municipalities to fulfil their mandates in line with national and provincial Agendas. Communicates government's spatial development agenda. <p>The proposed development is in line with the SDF's spatial goals that aim to take the Western Cape on a path towards:</p> <ul style="list-style-type: none"> Greater productivity, competitiveness and opportunities within the spatial economy. Strengthening resilience and sustainable development. <p>Eden Spatial Development Framework (2017)</p> <p>The Eden District Spatial Development Framework aims to establish a strong strategic direction and vision, towards increasing levels of detail in the spatial recommendations that are directive rather than prescriptive and providing guidance to local municipalities in the District regarding future spatial planning, strategic decision making and regional integration. The vision and strategic direction identify four key drivers of spatial change within the District. These four strategies lie at the heart of this SDF and the problem statement, spatial concept, spatial proposals and implementation are organised around these directives.</p>

George Municipality Integrated Development Plan (2017-2022)

The property is located within the urban edge of the George Municipality and has been earmarked for residential development.

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 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)
Guideline on Need and Desirability (2013)	Guideline considered during the assessment of the Need and Desirability of the proposed development project. See Appendix K
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 considered 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 considered during the assessment of the cumulative effect of the identified impacts.

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

GN 1150 PROCEDURES FOR THE ASSESSMENT AND MINIMUM CRITERIA FOR REPORTING ON IDENTIFIED ENVIRONMENTAL THEMES IN TERMS OF SECTIONS 24(5)(a) AND (h) AND 44 OF THE NATIONAL ENVIRONMENTAL MANAGEMENT ACT, 1998, WHEN APPLYING FOR ENVIRONMENTAL AUTHORISATION

The screening tool report identified the following specialist assessments to be conducted.

Landscape/Visual Impact Assessment	General Protocol
Archaeological and Cultural Heritage Impact Assessment	General Protocol
Palaeontology Impact Assessment	General Protocol
Terrestrial Biodiversity Impact Assessment	Terrestrial Biodiversity Assessment Protocol
Aquatic Biodiversity Impact Assessment	Aquatic Biodiversity Assessment Protocol
Socio-Economic Assessment	General Protocol
Plant Species Assessment	Plant Species Assessment Protocol
Animal Species Assessment	Animal Species Assessment Protocol

The property is zoned Agriculture I and was rated as "medium" sensitivity in the Screening Tool report. An Agricultural Compliance Statement has been compiled by a specialist.

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	<p>The development of—</p> <p>(i) dams or weirs, where the dam or weir, including infrastructure and water surface area, exceeds 100 square metres; or</p> <p>(ii) infrastructure or structures with a physical footprint of 100 square metres or more;</p> <p>where such development occurs—</p> <p>(a) within a watercourse;</p> <p>(b) in front of a development setback; or</p> <p>(c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse; —</p> <p>excluding—</p> <p>(aa) the development of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour;</p> <p>(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;</p> <p>(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;</p> <p>(dd) where such development occurs within an urban area;</p> <p>(ee) where such development occurs within existing roads, road reserves or railway line reserves; or</p> <p>(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.</p>	<p>The property is currently zoned as Agriculture Zone I and is within the urban edge of George. The property is not within the urban area as defined by DEA&DP.</p>
19	<p>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;</p> <p>but excluding where such infilling, depositing, dredging, excavation, removal or moving—</p> <p>(a) will occur behind a development setback;</p> <p>(b) is for maintenance purposes undertaken in accordance with a maintenance management plan;</p> <p>(c) falls within the ambit of activity 21 in this Notice, in which case that activity applies;</p>	<p>The property has a watercourse which will be affected during development. A pipeline is proposed to cross watercourse HGM1.</p>

	<p>(d) occurs within existing ports or harbours that will not increase the development footprint of the port or harbour; or</p> <p>(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.</p>	
24	<p>The development of a road—</p> <p>(i) for which an environmental authorisation was obtained for the route determination in terms of activity 5 in Government Notice 387 of 2006 or activity 18 in Government Notice 545 of 2010; or</p> <p>(ii) with a reserve wider than 13,5 meters, or where no reserve exists where the road is wider than 8 metres; but excluding a road—</p> <p>(a) which is identified and included in activity 27 in Listing Notice 2 of 2014;</p> <p>(b) where the entire road falls within an urban area; or</p> <p>(c) which is 1 kilometre or shorter.</p>	<p>The property is currently zoned as Agriculture Zone 1 and is within the urban edge of George. The property is not within the urban area as defined by DEA&DP.</p>
27	<p>The clearance of an area of 1 hectare or more, but less than 20 hectares of indigenous vegetation, except where such clearance of indigenous vegetation is required for—</p> <p>(i) the undertaking of a linear activity; or</p> <p>(ii) maintenance purposes undertaken in accordance with a maintenance management plan.</p>	<p>The area to be cleared will be more than 1 ha but less than 20 ha. Approx. 17 ha will be cleared.</p>
28	<p>Residential, mixed, retail, commercial, industrial or institutional developments where such land was used for agriculture, game farming, equestrian purposes or afforestation on or after 01 April 1998 and where such development:</p> <p>(i) will occur inside an urban area, where the total land to be developed is bigger than 5 hectares; or</p> <p>(ii) will occur outside an urban area, where the total land to be developed is bigger than 1 hectare;</p> <p>excluding where such land has already been developed for residential, mixed, retail, commercial, industrial or institutional purposes.</p>	<p>The total land to be developed will be more than 1 ha. Approx. 17 ha will be developed.</p>
Activity No(s):	<p>Provide the relevant Basic Assessment Activity(ies) as set out in Listing Notice 3</p>	<p>Describe the portion of the proposed development to which the applicable listed activity relates.</p>
4	<p>The development of a road wider than 4 meters with a reserve less than 13,5 meters.</p> <p>i. Western Cape</p> <p>i. Areas zoned for use as public open space or equivalent zoning;</p> <p>ii. Areas outside urban areas;</p> <p>(aa) Areas containing indigenous vegetation;</p> <p>(bb) Areas on the estuary side of the development setback line or in an estuarine functional zone where no such setback line has been determined; or</p> <p>iii. Inside urban areas:</p> <p>(aa) Areas zoned for conservation use; or</p>	<p>The width of internal roads will be 5,5m average.</p>

	(bb) Areas designated for conservation use in Spatial Development Frameworks adopted by the competent authority.	
6	<p>The development of resorts, lodges, hotels, tourism or hospitality facilities that sleeps 15 people or more.</p> <p>i. Western Cape</p> <p>i. Inside a protected area identified in terms of NEMPAA;</p> <p>ii. Outside urban areas;</p> <p>(aa) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans; or</p> <p>(bb) Within 5km from national parks, world heritage sites, areas identified in terms of NEMPAA or from the core area of a biosphere reserve; -</p> <p>excluding the conversion of existing buildings where the development footprint will not be increased.</p>	The 10 room hotel within 5km of the Garden Route National Park triggers this activity
12	<p>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.</p> <p>i. Western Cape</p> <p>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;</p> <p>ii. Within critical biodiversity areas identified in bioregional plans;</p> <p>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;</p> <p>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</p> <p>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.</p>	The property is mapped as Garden Route Shale Fynbos as well as Garden Route Granite Fynbos which are listed as Endangered and Critically Endangered Ecosystems, respectively.
14	<p>The development of—</p> <p>(i) dams or- weirs, where- the dam or weir, including infrastructure and water surface area exceeds 10 square metres; or</p> <p>(ii) infrastructure or structures with a physical footprint of 10 square metres or more;</p> <p>where such development occurs—</p> <p>(a) within a watercourse;</p> <p>(b) in front of a development setback; or</p>	The property is within 500 m of a protected area: the Katrivier Nature Reserve and the property is mapped as Garden Route Shale Fynbos as well as Garden Route Granite Fynbos which are listed as Endangered and Critically Endangered Ecosystems, respectively.

	<p>(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.</p> <p>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.</p>	
<p>Note:</p> <ul style="list-style-type: none"> 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.
<p>The preferred alternative is to develop a residential estate on Remainder of Portion 21 of Farm 195 Kraaibosch, George, Western Cape.</p> <p>The proposed development will consist of:</p> <ul style="list-style-type: none"> Single Residential II – Estate housing Flats - 84 Business Zone III – Neighbourhood shop with 9 flats Community Zone I – Day Care / Pre School Single Residential Zone II - Estate Housing, Hotel, 10 rooms 	

- Single Residential Zone II - Estate Housing, Town Housing, 44
- Single Residential Zone II - Estate Housing, Group housing, 105
- Single Residential Zone II - Estate Housing, Dwellings, 79
- Single Residential Zone II – private Open Space
- Transport Use Zone II – Public Street
- Single Residential Zone II – Private Road
- Agriculture – Remainder
- Including associated infrastructure

Please refer to Figures 1 and 2 for the proposed layout and Section B 4.4 for a detailed description of the preferred alternative.

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 Property is zoned Agricultural Zone I (Agriculture) in terms of the George Integrated Zoning Scheme By-law (GIZS) following a zoning rectification in 2022. The Property is vacant and has not been used for intensive agricultural purposes for many years. The zoning and land use is proposed to change following this land use application.

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.

No conflict with existing approvals as the existing farm werf was established before the proclamation of the EIA regulations

4. Explain how the proposed development will be in line with the following?

4.1 The Provincial Spatial Development Framework.

Please also refer to the Town Planning Report (Appendix N)

According to the PSDF, higher densities and prevention of urban sprawl can be achieved through various development opportunities i.e., subdivision of properties, development of additional dwelling units including sectional title development, demolition and redevelopment, high density suburbs, flats, and infilling. These can be used as means to achieve higher density.

Due to previous deforestation activities, most vegetation and trees on The Property have already been cleared. The proposed rezoning and subdivision cannot negatively affect any coastal landscapes as it is located on the northern boundary of the George urban edge, far away from the coast.

Thus, this application is found not to be in conflict with the PSDF.

Spatial planning and development must conform to and apply the national directives in the Spatial Planning and Land Use Management Act, Act 16 of 2013, (SPLUMA). These principles were taken up in the Western Cape planning documents, i.e., the WC Provincial SDF and the WC Land Use Planning Act, Act 3 of 2014 (LUPA) as well.

The spatial principles have to provide the framework for decision-making. These are briefly listed below together with their applicability to the proposal concerned:

Principle	Criteria	Compliance
Spatial Justice	Historic segregation to be eliminated and uneven allocation of public resources to be rectified.	Not directly applicable to one site only, as the principle has to be applied on a town-wide scale to have an effect. The project will provide housing opportunities for a variety of income groups for which there is a demand.

Spatial Sustainability	Sustainable urban living patterns that do not damage the natural environment are promoted.	Sustainability will be ensured through the conditions imposed by the EA, Heritage Authorisation and rezoning approval.
Spatial Efficiency	Optimizing the use of existing resources, infrastructure and land is one of the objectives of spatial efficiency. Integrated cities form part of this strategy.	The proposed development seen in the context of the Kraaibosch residential area, contributes toward the optimum use of land and supplies in the market demand.
Spatial Resilience	Flexibility in spatial plans and land use management systems must ensure sustainable livelihood in communities most likely to suffer the impacts of economic and environmental shocks.	The proposal is in line with the GSDF and Zoning Bylaw and its resilience must be evaluated in the context of the neighbourhoods in this area.
Good Administration	The requirements of any law relating to land development and land use must be met timeously. All decision-making must be aligned with sound policies in terms of national, provincial and local policies.	The process prescribed by the municipal bylaws is followed for approval.
4.2 The Integrated Development Plan of the local municipality.		
The property is located within the urban edge of the George Municipality and has been earmarked for residential development.		
4.3. The Spatial Development Framework of the local municipality.		
Please also refer to the Town Planning Report (Appendix N)		
<p>The Property is not addressed specifically in the GSDF. The Property is situated just north of the Groenkloof Retirement Village and east of the neighbourhood of Glenwood. Rezoning and subdividing The Property to develop different housing and business erven adheres to the following policies in the MSDF:</p> <p>Policy C:</p> <p>Maintain a compact settlement form to achieve better efficiency in service delivery and resource use, and to facilitate inclusion and integration.</p> <p>Policy C2: Restructure settlement patterns through infill development of vacant and underutilised land in the settlements in the George Municipal Area.</p> <p>Policy D</p> <p>Manage the use of land in the Municipal area in a manner which protects natural ecosystem functioning and values ecosystem services, respecting that these are assets that underpin the economy and settlement and their resilience.</p> <p>Policy D1: Support and maintain the functionality of biodiversity areas.</p> <p>Policy D2: Manage development along the coastline and wetlands in a sustainable and precautionary manner, no further development should take place seaward of the Coastal Management Line (setback line) as demarcated in this MSDF and delineated by the Protected Areas, sensitive biodiversity in terms of the Western Cape Biodiversity Spatial Plan, 2017).</p> <p>New land use developments will be subject to ecological setbacks along the coast and around freshwater systems to maintain the economic and ecological functioning of marine and other aquatic ecosystems.</p> <p>Policy E</p>		

Safeguard the municipality's farming and forestry areas as productive landscapes, equal in value to urban land.

This land use application and the nature thereof is found to be consistent with the GMSDF as required in terms of Section 19 of the Land Use Planning Act, 2014 (LUPA).

4.4. The Environmental Management Framework applicable to the area.

N/A – No EMF has been adopted for George.

5. Explain how comments from the relevant authorities and/or specialist(s) with respect to biodiversity have influenced the proposed development.

Comment from the relevant authorities will be obtained during the public participation process and will 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.

The Western Cape Biodiversity Spatial Plan (WCBSP) identifies biodiversity priority areas, Critical Biodiversity Areas (CBAs) and Ecological Support Areas (ESAs), which, together with Protected Areas, are important for the persistence of a viable representative sample of all ecosystem types and species, as well as the long-term ecological functioning of the landscape as a whole. The primary purpose of a map of Critical Biodiversity Areas and Ecological Support Areas is to guide decision-making about where best to locate development. Critical Biodiversity Areas (CBA's) are required to meet biodiversity targets. According to the WCBSP, these areas have high biodiversity and ecological value and therefore must be kept in a natural state without further loss of habitat or species.

The far northern areas of the project area fall marginally within Critical Biodiversity Areas (CBA1: terrestrial, forest, river; and CBA2: terrestrial) (Figure 7), essentially associated with threatened vertebrate (Bontebok) and water resource protection. A small section of the north-eastern parts of the project area are classed as a CBA based on several factors: critically endangered vegetation (grassy fynbos), indigenous forest, river type, threatened vegetation type (Garden Route Shale Fynbos), threatened vertebrate (Bontebok), and water resource protection. The project area also bisects Ecological Areas of Support (ESA1 & ESA2) (Figure 7). These play an important role in supporting the functioning of CBAs and the aim is to maintain them in a functional, or near-natural state.

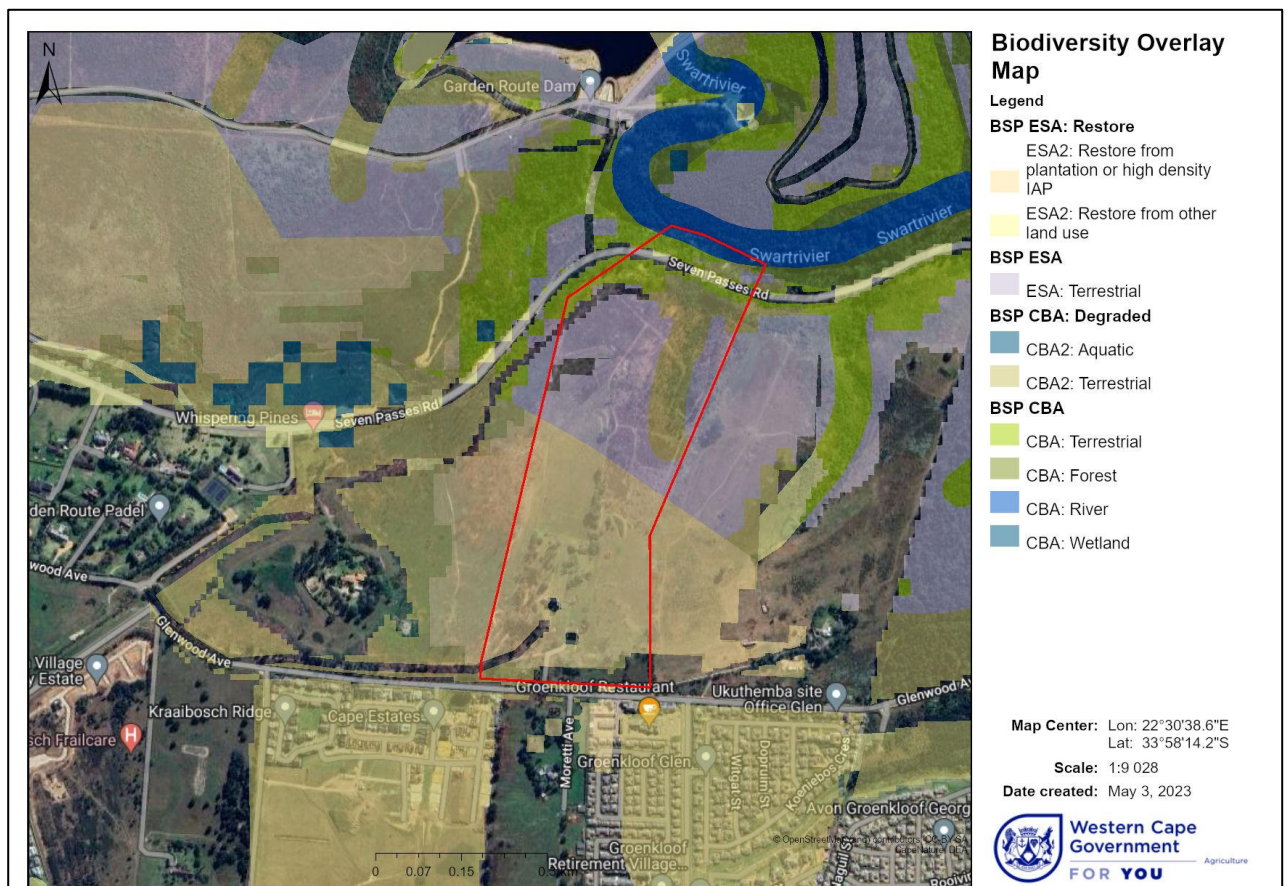


Figure 7: Critical Biodiversity Areas (CBAs) and Ecological Support Areas (ESAs) of the Western Cape Biodiversity Spatial Plan in which the property falls.

There are no aquatic CBA or ESA habitats within the development site. However, the Swart River in the north is classified as CBA1 river habitat and is thus a biodiversity priority area for conservation. According to the freshwater specialist, no endemic or conservation worthy aquatic species (Listed or Protected) were observed within the site. Due to either the ephemeral flow, and/or the highly modified condition of the area, it is likely that any aquatic species are disturbance-tolerant species with a low level of biodiversity.

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 report has not changed.

9. Explain how the proposed development will optimise vacant land available within an urban area.

The property is situated inside the urban edge of George as indicated by the blue dash line in figure 8, obtained from the George Municipality's GIS Public Viewer. The image also shows the already developed areas adjacent to the property.

The proposed land development will be in character with the surrounding area and will provide additional residential opportunities in a popular neighbourhood. The property is thus earmarked for development and urban expansion. The properties directly east, west and south of the property have approved development plans.

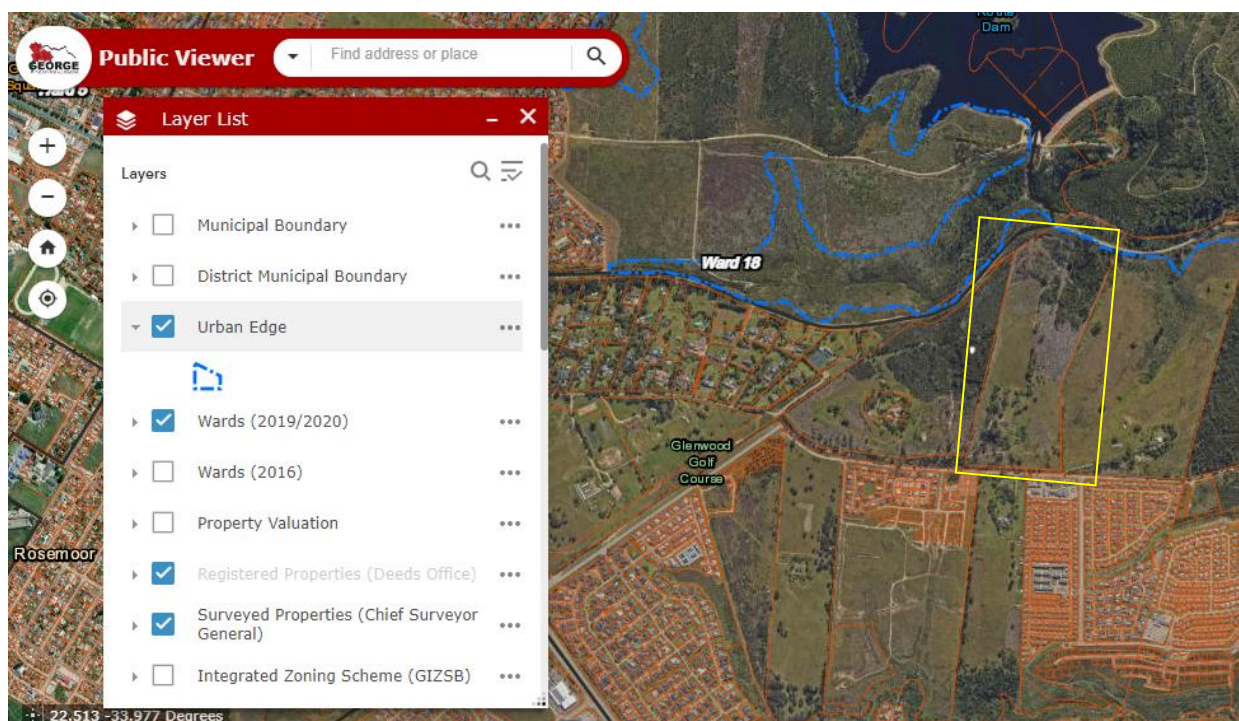


Figure 8: A screenshot taken from George Municipality's GIS public Viewer.

10. Explain how the proposed development will optimise the use of existing resources and infrastructure.

The existing infrastructure comprises of a colonial period homestead (heritage node) which will be converted into a clubhouse and communal facilities. There is also a barn/stable building south east of the existing homestead.

The GMSDF promotes high densities as an objective to achieve a compact and functional city. However, this site with its natural and heritage attributes, does not lend itself to very high densities for the whole site. High-density housing is therefore limited to the south eastern corner of the layout only.

<p>This general residential site will provide 84 units within buildings of three storeys.</p> <p>A business site is proposed in conjunction with the heritage node which would serve the wider community as explained above. The site (Portion 6) is 5224m² in extent and a preliminary design shows a building of 1106 m² which includes a shop of 900m² and a day care centre of 206m². Nine flats are envisaged on the first floor. Parking on the site can accommodate 72 bays and further parking is available on the adjacent parking area serving the heritage site.</p>	
11.	<p>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).</p> <p>The George Municipality confirms that the proposed development was taken into consideration in the current water and sanitation master plans as part of the Kraaibosch development area.</p> <p>Please refer to Appendix E16.</p>
12.	<p>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.</p>
<p>PLANNING AND DESIGN APPROACH</p> <p>The proposed site layout of the Pieterkoen housing development was informed by a range of site-specific constraints and the direct impacts of higher density housing developments in the greater Kraaibosch area.</p> <p>These can be highlighted as follows:</p> <ul style="list-style-type: none"> • Maintaining the rural character of Pieterkoen is no longer viable with housing developments approved and being developed along three of its boundaries. Only the narrow northern boundary along Saasveld Road will remain untouched. • The Pieterkoen Trust, as present owners of the property, wish to preserve the rich cultural history of the farm and honour the legacy of three generations of Branfords having lived there. Property developers have shown interest to purchase the property. According to the owner of the property, they have had an offer to purchase the property which they rejected. • In the light of these developments, the trustees decided to apply for the development rights themselves, based on their shared vision of development in harmony with preservation. Developers and investors will be approached to either purchase the entire property or individual precincts, the development of which will be rolled out in phases. • The George Municipality and Groenkloof Estate commissioned Ron Martin to prepare a socio-historic study on Pieter Koen. This was followed up by a heritage statement by Cathy Schultz in 2021. From Cathy Schultz's study the heritage value of the two buildings in its garden setting became clear. The initial heritage impact report by Lize Malan, the heritage consultant appointed by the trust, set clear guidelines on how best to integrate the historic precinct into the larger development. Refer to her report which is attached as Appendix G5. • The need for densification, as outlined in the George SDF, and access to and affordability of housing across a broader spectrum of potential buyers, is recognised. • The urban character of the greater Kraaibosch area within the urban edge, is being transformed rapidly. High density housing and gated estates are replacing what used to be rural smallholdings and small farms. The creation of some form of communal facilities on a neighbourhood scale, can provide welcome relief and urban focus for this conglomeration of inward facing estate dwellers in the immediate vicinity of Pieterkoen. • A redeveloped Pieterkoen historic precinct, with shared facilities accessible to both residents in the estate and to the public at large, will further enhance this sense of community and provide access to a destination with links to the founding years of George. <p>ECONOMIC IMPACT ANALYSIS</p>	

This section will provide a better understanding of the potential socio-economic impact of the proposed Pieterkoen Residential Development.

Economic impact refers to the effect on the level of economic activity in a given area because of some form of external intervention in the economy. In the case of this study, the local effects will be on the George Municipality economy. This economic impact is measured to determine the capital investment, which will be made, by both the developer and the capital investment by the private sector.

The analysis focuses on the changes that could be expected in the George Local Municipal economy and community.

There are various measures, which can determine the impact of such actions on the local George residents, and these include the following:

- Impact on employment numbers, i.e., the number of additional jobs created, or jobs lost because of the change in the economic growth of the local economy. This is the most popular measure of economic impact, because it is easier to comprehend than large, abstract Rand figures.
- Value Added (which is normally equivalent to GGP (Gross Geographical Product)) is a broader impact of the full income effect. This measure essentially reflects the sum of wage income and corporate profit generated in George.
- Impact on household incomes in George will increase as pay levels rise or additional workers are hired.
- The impact on Business Output (also referred to as revenue or sales volume) is the broadest measure of economic activity, as it generates the largest numbers. It includes the gross level of business revenue, which pays for the cost of materials and cost of labour, as well as generating net business income profits.
- Positive impact on the number of persons residing in George, including the marginalized community.
- The net economic impact is usually viewed as the expansion or contraction of an area's economy, resulting from changes in (i.e. opening, closing, expansion or contraction of) a facility, project, or program. In this instance the possible impact of introducing a new economic activity into the George economy, such as the various goods and services which will be rendered are measured.

The following impacts can usually be quantified:

- Direct impact: The direct impact is calculated from macro-economic aggregates occurring as a direct result of the project. The initial impact on GDP for example is taken from the financial information and equals the value added generated by a specific scenario.
- Indirect impact: Indirect impacts are calculated from the activities of suppliers through application of the model. For purposes of this study, indirect suppliers include those industries who deliver goods and services to the activity under discussion (first round suppliers) including suppliers who on their part deliver goods and services to the first mentioned indirect suppliers.
- Induced impacts: The impacts are on goods and services demanded due to the project. Examples include the income of employees and shareholders of the project as well as the income arising through the backward linkages of this spending in the economy. The impact is sometimes confused with the forward linkages of a project.

DEFINING ECONOMIC IMPACT

Economic impacts can be defined as the effects (positive or negative) on the level of economic activity in a given area.

Types of economic impact

The net economic impact of an exogenous change in the economy will be translated according to various direct and indirect economic effects, as are defined below:

Direct economic impacts are the changes in local business activity occurring as a direct consequence of public or private business decisions, or public programs and policies. Furthermore, increased user benefits lead to monetary benefits for some users and non-users (individuals and businesses) within the geographical area:

- For affected businesses, there may be economic efficiency benefits in terms of product cost, product quality or product availability, stemming from changes in labour market access, cost of obtaining production inputs and/or cost of supplying finished products to customers.
- For affected residents, benefits may include reduced costs for obtaining goods and services, increased income from selling goods and services to outsiders, and/or increased variety of work and recreational opportunities associated with greater location accessibility.

Indirect and induced impacts: Ultimately, the direct benefits to business and the residents of communities and regions may also have broader impacts, including:

- Indirect business impacts – business growth for suppliers to the directly- affected businesses
- Induced business impacts – business growth as the additional residents (created by direct and indirect economic impacts/effects) spend their income on food, clothing, shelter and other local goods and services. This business growth will also have implications for potential municipal income due to raised taxes and service levies.

MODELLING ECONOMIC IMPACT

These economic impacts have been derived using an understanding of economic cause-effect relationships. The principle of cause-effect is that for any economic action, there can be a multitude of different economic reactions (effects). For the purposes of this project, the main cause/action is the implementation of the Pieterkoen Residential Development. This then results in a number of direct potential/probable effects, which also have a range of indirect potential/probable effects.

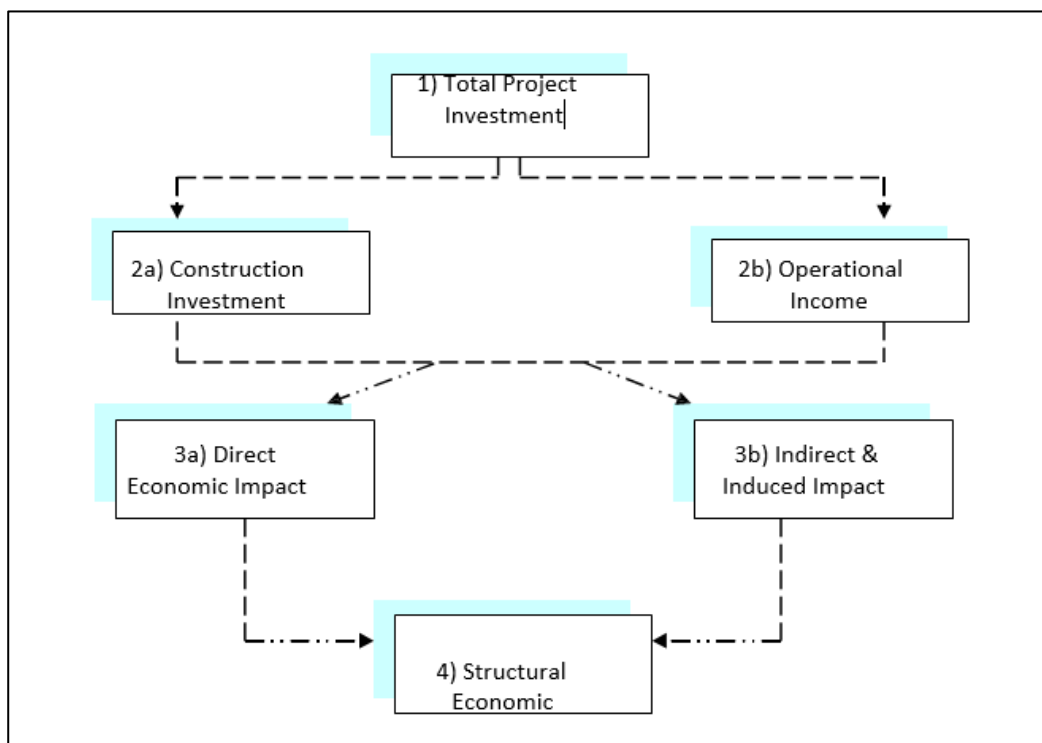


Figure 9: Cause-effect relationships resulting from the Pieterkoen Residential Development

The economic cause-effect relationships resulting from the Pieterkoen Residential Development are described according to points 1 to 3 below:

1. The investment related to the Residential Development results in the stimulation of:
 - Construction spending involved in the development.
 - The creation of operational income in the form of government revenue (e.g. Service charges, rates and taxes)
2. The stimulation of these economic activities will result in various direct and indirect economic impacts.
3. These direct and indirect economic impacts will result in economic structural changes in the regional economy.

QUANTIFYING DIRECT AND INDIRECT ECONOMIC IMPACTS

The subsequent paragraphs discuss the direct, indirect and induced impacts of the construction phase of the Pieterkoen Residential Development.

CAPITAL EXPENDITURE (CAPEX)

A capital injection (CAPEX) will be projected for each of the development activities. These include direct and indirect economic impacts. The construction of the Pieterkoen Residential Development will have the following estimated impacts on the economy in the study area:

- Additional new business sales
- Additional employment (direct and indirect)

The total capital turn-over in the construction phase of the Pieterkoen Residential Development is estimated at **R 924 000 000**.

Additional new business sales

The construction of the Pieterkoen Residential Development will lead to the expansion of business sales for existing business located within the area. For example, materials used in construction such as bricks, pipes, concrete, etc. will be purchased, as well as services such as engineers, plumbers, electricians etc. These changes will be measured in terms of new business sales, i.e., new sales that will be generated in the economy as a direct result of the capital investment in the development. Business sales will be generated because of capital investment by the developer for each of the development activities which is said to take place as mentioned above.

Additional Employment

Constructing the proposed Pieterkoen Residential Development will result in direct jobs being created for the construction of the various facilities. Indirect jobs are also created in industries that provide goods, materials and services. For example, an additional amount of goods used in the construction sector will be required from businesses and industries related to the construction sector. This could lead to an increased number of jobs being created in these businesses, i.e., in order to increase the output of these businesses.

The number of jobs created during the development phase, i.e., capital investment by the developers of the Pieterkoen Residential Development is: (See Economic Projection Schedule).

**TOTAL DIRECT JOBS CREATED BY CIVIL
CONSTRUCTION (OVER 12 MONTHS)**

204

No.

**Monthly
Total**

R

1 648 000

**TOTAL DIRECT JOBS CREATED BY HOUSING
CONSTRUCTION (OVER 48 MONTHS)**

204

No.

**Monthly
Total**

R

1 822 000

**TOTAL PERMANENT JOBS CREATED BY
RESTAURANT, DELI, GYM AND SPA OPERATIONS
(LONG TERM)**

36

No.

Monthly
Total

R 370 500

Refer to Appendix M for further detail.

SUMMARY OF ESTIMATED CAPITAL EXPENDITURE

CONSTRUCTION PHASE

This section provides a summary of the impact during the construction phase (capital expenditure) of the development.

TOTAL PROJECT DEVELOPMENT COST (INCLUDING VAT) R 924 000 000

1. Stand Development Turnover	R 234 000 000
2. Housing Development Turnover	R 660 000 000
3. Development of Commercial Node	R 30 000 000

TOTAL LOCAL MATERIAL AND LABOUR RESOURCES (INCLUDING VAT) R 535 920 000

Refer to Appendix M for further detail.

OPERATIONAL EXPENDITURES

It is generally known that after the construction of a development or facility, ongoing economic impacts (expenditure and output) will be experienced following the commencement of the economic activities on site. This expenditure expands the markets for goods and services, increases the labour market and services as impetus for new commercial development.

The economic impact is determined by the level of economic activity generated because of the increase in market demand in the affected sectors. It is estimated that the Pieterkoen Residential Development will generate this demand over a certain number of years. The demand will be operational and direct, indirect and induced.

The ongoing impacts can be measured according to new business output in the area (turnover), additional people employed and the resulting increase in GGP contribution.

The impact calculated will indicate the potential economic effect that ongoing, sustained economic activity in the study area can have on the total local economy.

Direct Employment Creation

Because of the new businesses, which will result as part of the commercialization, namely the residential units, the administrative offices, the maintenance unit, the restaurant, the deli, the gym, and the spa. It can be estimated that the study area will be able to eventually sustain a substantial number of new employment opportunities.

The employment opportunities, which will be generated will be permanent jobs in the following categories:

- Management
- Professional
- Recreational
- Sales and Marketing
- Production
- Technical
- Clerical
- Administrative

- Maintenance

Municipal Rates and Taxes

Municipalities are responsible for providing basic services to everyone living inside their jurisdiction. These services include:

- Supplying water
- Collecting and disposing of sewage
- Refuse removal
- Supplying electricity and gas
- Building and maintaining municipal roads
- Storm water drainage
- Street lighting
- Municipal parks and recreation

In order to provide these services, the Municipality charges residents service charges, rates, and levies. There are different kinds of rates, including:

- Property Rates
- Water
- Electricity
- Sewage
- Refuse removal

Water Usage

The water will be supplied by the Local Municipality. The Residential Development will have a main connection and therefore be responsible for the water account.

Electricity Usage

The electricity will be supplied by the Local Municipality. Each individual house will have a pre-paid meter installed.

Property rates

Property rates are:

- Taxes on the ownership of property (land and buildings)
- Based on the market value of the property
- Used to fund various services provided by municipalities.

Property rates are paid by owners of all kinds of real property, including commercial, industrial, residential, agricultural and government property. Property rates are based on the municipal value of a property. Property rates are set, collected, and used locally. This implies that the charges differ from area to area and that the money collected is spent in that municipal area.

The municipal value of property is calculated by considering the market value of property, which includes land and improvements. The Residential Development will increase the total rates and levies, which are paid to Local Municipality. Therefore, this will increase the direct income of the local government.

SUMMARY OF ESTIMATED OPERATING EXPENDITURE – OPERATIONAL PHASE

Potential Rates and Taxes per average household – **R 1 500/month:**

- 316 Units x R 1500 = **R 474 000** potential income per month injected into Municipal coffers.

Potential Services Charges (electricity, water, sewage, and refuse) per average household - **R 3 450/month:**

- 316 Units x R 3 450 = **R 1 090 200** potential income per month injected into Municipal coffers.

Average disposable income per new household – **R 20 000 / month** (Typical of these households)

- 316 new households x R 20 000 = **R 6 320 000** potential income per month injected into George economy.

Refer to Appendix M for further detail.

SPATIAL CONSIDERATIONS

The site is inside the urban edge of the George Spatial Development Framework (GSDF). Its subdivision for residential development furthermore complies with the applicable policies and policy guidelines in the GSDF.

The spatial principles providing the framework for decision making are briefly listed below together with their applicability to the proposal concerned duly classified under subheadings for principal compliance criteria.

- **Spatial Justice**

- Historic segregation to be eliminated and uneven allocation of public resources to be rectified.
- Not directly applicable to one site only, as the principle must be applied on a town-wide scale to have an effect. The project will provide housing opportunities for various income groups for which there is demand.

- **Spatial Sustainability**

- Sustainable urban living patterns that do not damage the natural environment are promoted.
- The application is supported by detailed Environmental and Historical Impact Assessments (EIA and HIA). The EIA includes detailed studies covering the following aspects: Agricultural, Aquatic, Archaeological, Bio terrestrial, Botanical, Faunal and Visual Impact. All findings and recommendations can and will be addressed during the course of developing this Residential Estate. The watercourse has been surveyed in detail and the prescribed distances from the water course are maintained.

- **Spatial Efficiency**

- Optimizing the use of existing resources, infrastructure and land is one of the objectives of spatial efficiency. Integrated cities form part of this strategy.
- The proposed development seen in the context of the Kraaibosch residential area, contributes toward the optimum use of land and supplies in the market demand.

- **Spatial Resilience**

- Flexibility in spatial plans and land use management systems must ensure sustainable livelihood in communities most likely to suffer the impacts of economic and environmental shocks.
- The proposal is in line with the GSDF and Zoning Bylaw and its resilience can be evaluated in the context of the neighbourhoods in this area.

- **Good Administration**

- The requirements of any law relating to land development and land use must be met timeously. All decision making must be aligned with sound policies in terms of national, provincial, and local policies.

- o The process prescribed by the municipal bylaws will be followed for approval.

THE RESIDENTIAL MARKET AND SUPPLY IN GEORGE

The George SDF (2023), together with a Housing Market Study (2022) conducted by the WC DEA&DP, contain several findings about the residential supply and demand in George. These findings give important guidance for decision-making in the residential market.

- The GSDF promotes a compact city with limited outward expansion. It encourages infill and take up of latent development rights to prevent urban sprawl and unutilized land within the city boundaries.
- Policy Guideline D1 states that all market segments must be catered for, including high-end and luxury markets to be accommodated on infill sites in mixed typologies.
- Policy Guideline D5 acknowledges functional property markets. The Housing Market Study reflects the preference for estate living within the luxury market.
- The George Municipality's population is projected to grow by 16% to 2035, that is, from 210 000 / 221 550 (lower/upper estimate) in 2021 to 245 8509 / 258 304 in 2035.
- In the past five to eight years there has been a significant increase in the erection of dwellings in the upper price bracket segment of the market and in particular in the estates – an indicator of the market trend and demand, supported by the trend of migration of the higher income group to the Southern Cape.
- Sufficient area is available in the City Area to absorb 82% - 90% of the formal demand for residential units (backlog and growth) over the next 10 years at graded densities that support a compact city.
- An analysis of the Deeds Office data shows that 27% of freehold properties transacted at over R 1,2 million of which 97% are in the estates.
- The rate of increase in the uptake of medium and higher income, bonded units is an indication of an increased demand, meaning investment from elsewhere.
- The above policies and market research data confirm that the proposed residential supply of residential erven and units will contribute towards the demand for these chosen market segments in the town. It is known from observations that the buyers of properties in some of these chosen market segments are significant economic contributors in the workforce, being professionals, business entrepreneurs, investors, and those in managerial positions.

In conclusion:

The economic impact assessment demonstrates that the Pieterkoen Residential Development will contribute to the local economy of George Municipality in the following ways:

- New money injection during the construction phase and an additional monthly injection during the commercialization phase of the proposed development.
- The Unemployment rate will decrease, as an additional **410 jobs** will be created during the construction phase (4-5 years) and during the commercialization phase, the development will create **36 job** opportunities.
- The job opportunities during the construction phase will be temporary but the job opportunities, which will be created during the commercialization phase, will be permanent.

In addition, the above assessment shows that the proposed residential development:

- Will have a positive impact on the property market in the chosen market segments;
- Complies with the planning principles of SPLUMA; and
- Will attract new residents to George with economic skills that will contribute to the local economy and job creation.

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.

Please refer to Appendix F for the PPP information

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

- Garden Route District Municipality
- WCG: Department of Agriculture
- Breede-Olifants Catchment Management Agency
- Cape Nature
- South African Civil Aviation Authority
- Heritage Western Cape
- SANParks
- George Municipality
- Department of Environmental Affairs and Development Planning

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

Only those relevant to the proposal were provided an opportunity to comment

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

- Garden Route District Municipality
- WCG: Department of Agriculture
- South African Civil Aviation Authority
- SANParks

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.

Please refer to Appendix F4: Comments and Responses Report

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.		
1.3.	Indicate above which aquifer your proposed development will be located and explain how this has influenced your proposed development.		
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.		

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 of Upstream Consulting. Appendix G2.1.		
2.3.	Explain how the presence of watercourse(s) and/or wetlands on the property(ies) has influenced your proposed development.		
<p>(Source: AQUATIC BIODIVERSITY IMPACT ASSESSMENT for the proposed DEVELOPMENT OF A RESIDENTIAL ESTATE ON REMAINDER OF PORTION 21 OF FARM 195 (PIETER KOEN TRUST), GEORGE, 3 February 2023, Prepared by Debbie Fordham – Upstream Consulting) Appendix G2.1</p> <p>A site assessment was conducted by Ms Fordham on the 30th of January 2023 to confirm desktop findings, gather additional information, and define the boundaries of the aquatic habitat. General observations were made with regards to the vegetation, fauna and current impacts. The identified aquatic ecosystems were classified in accordance with the 'National Wetland Classification System for Wetlands and other Aquatic Ecosystems in South Africa' (Ollis et al. 2013) and WET-Ecoservices (Kotze et al. 2009).</p>			

Infield delineation was undertaken with a hand-held GPS, for mapping of any potentially affected aquatic ecosystems, in alignment with standard field-based procedures in terms of the Department of Water and Sanitation (DWA 2008) Updated Manual for the Identification and Delineation of Wetlands and Riparian Areas. The delineation is based upon observations of the landscape setting, topography, vegetation and soil characteristics (using a hand held soil auger for wetland soils).

DRAINAGE NETWORK

The site falls within the Southern Coastal Belt Ecoregion which is described by Kleynhans et al. (2005) as an area of hills and mountains with moderate to high relief and surrounding plains varying in altitude from sea level to 700 MASL.

The site is located within the DWS Quaternary Catchment K30C and falls within the Coastal Gouritz Water Management Area (Figure 10). The catchment drains towards the Indian Ocean in the south. The largest river in this catchment is the Kaaimans River with the Swart River being the main tributary. Both rivers have been mapped by the NFEPA project, but it is only the Kaaimans River that has received FEPA status, and both are classified as Moderately Modified (PES='C').

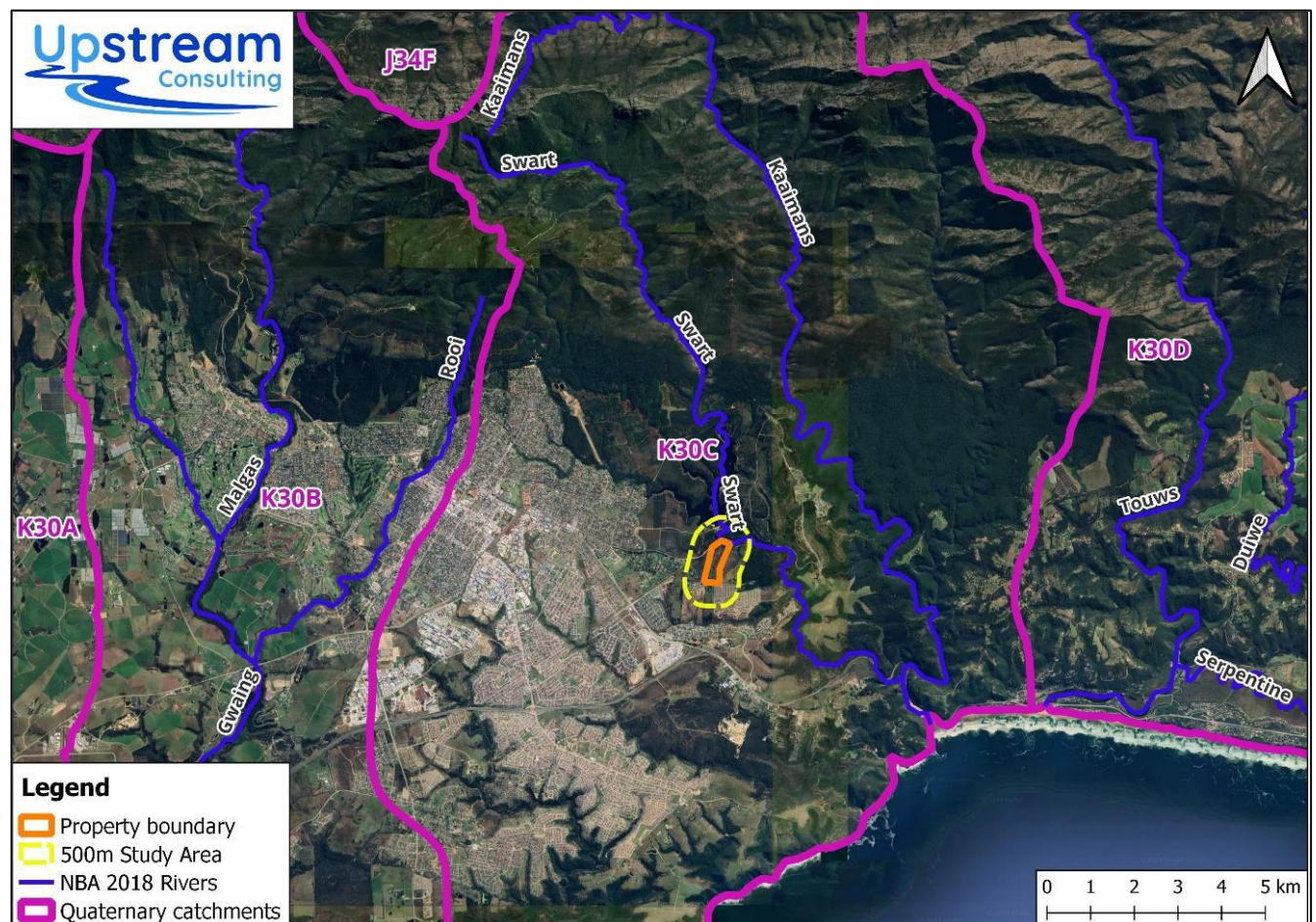


Figure 10: Map of the property in relation to the major rivers of quaternary catchment K30C.

The study area is located within the Outeniqua Strategic Water Source Area for Surface Water. The mountainous area north of the site is mapped as the George and Outeniqua Strategic Water Source Area for Groundwater.

The aquatic habitats within a 500 metre radius of the proposed development were identified and mapped on a desktop level utilising available data. In order to identify the wetland/river types, using Kotze *et al.* (2009) and Ollis *et al.* (2013), a characterisation of hydrogeomorphic (HGM) types was conducted. Following the desktop findings, the infield site assessment (conducted on the 30th of January 2023) confirmed the location and extent of these systems. Subsequent screening provided an indication of which of these systems may potentially be impacted upon by the project. The findings are detailed in this section below.

DELINEATION AND CLASSIFICATION

Following the contextualisation of the study area with the available desktop data, a site visit by the freshwater specialist was conducted to ground-truth the findings and delineate the aquatic habitat and map it within the 500 m radius of the development area. The additional information collected in the field allowed for the development of an improved baseline aquatic habitat delineation map (Figure 11).

Seven watercourses, and a number of dams, were identified and mapped within a 500 m radius of the proposed development. In order to identify the wetland types, using Kotze et al. (2009) and Ollis et al. (2013), a characterisation of hydrogeomorphic (HGM) types was conducted. For reference purposes, the identified HGM units were named as follows:

- HGM1 – tributary stream
- HGM2 – seep wetland
- HGM3 – tributary stream
- HGM4 – tributary stream
- HGM5 – seep wetland
- HGM6 – Swart River
- HGM7 – Klein Swart River

Figure 11 shows the above-listed watercourses in relation to the development and 500 m radius study area.

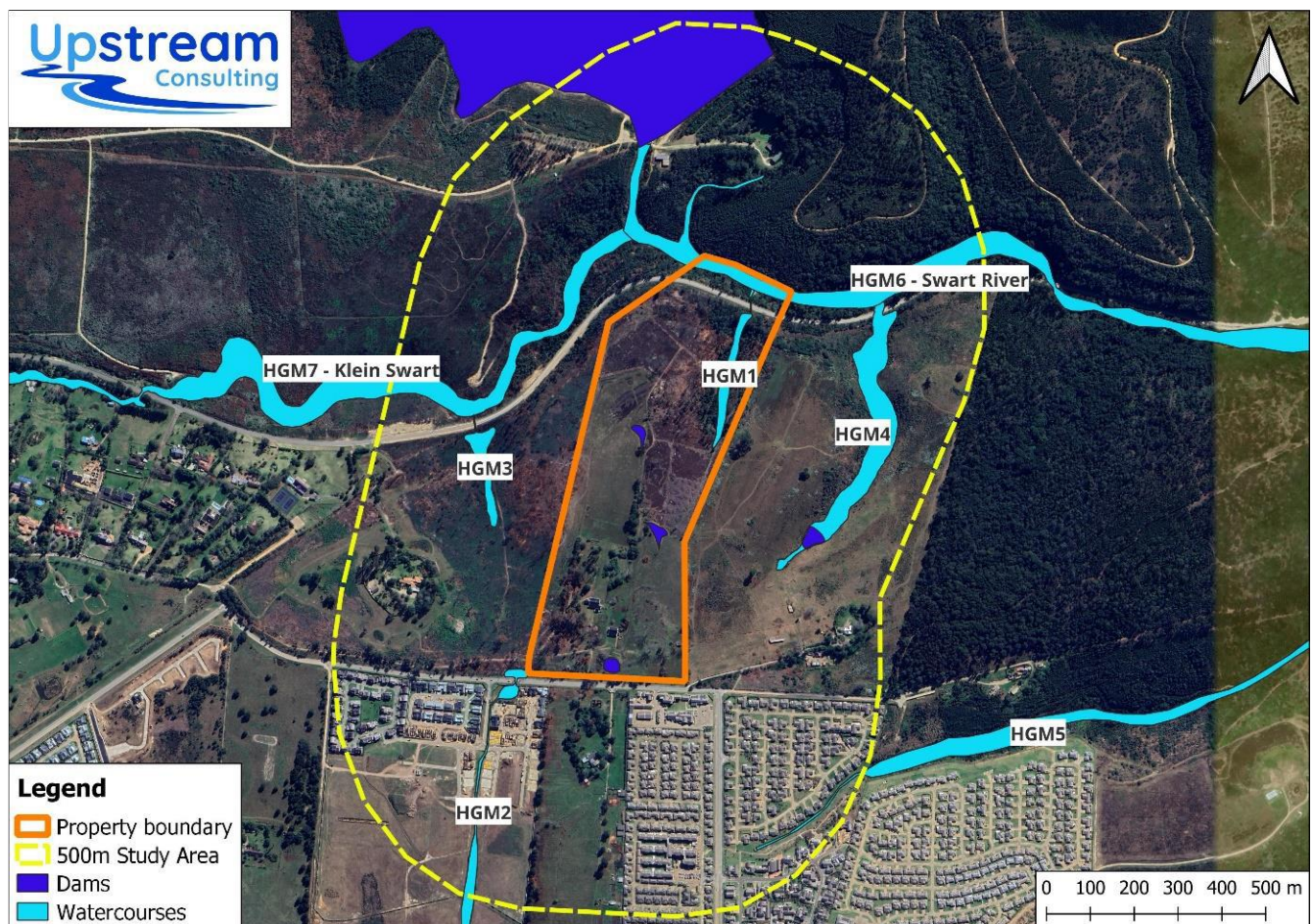


Figure 11: Map of the delineated aquatic habitat.

SCREENING

Subsequent screening provided an indication of which of these systems may potentially be impacted upon by the project and required further assessment. There are a number of factors which influence the level of impact, such as type of system, position of the system in relation to the project and position the system is located in the landscape. Due to the topography of the proposed site, and its location upon a hilltop, surface runoff will flow in all directions, with varying volumes, entering four different drainage areas.

The majority of the runoff is directed towards the HGM1 non-perennial stream within the property. However, there are development areas sloping towards HGM2 (south), HGM3 (west), and HGM4 (east). As HGM1 is a tributary of the Swart River (HGM6), the hydrological changes from the development may also impact upon the Swart River. HGM3 is a tributary drainage to the Klein Swart River (HGM7) which in turn also enters the Swart River. Therefore, all the identified watercourses, excepting HGM5 which does not receive runoff from the site, may potentially be impacted by the development (Figure 12).

Instream dams are assessed as part of the HGM unit within which they are situated. The Garden Route Dam is an instream impoundment on the Swart River, but it will not be impacted upon by the project. Only the downstream reach of the Swart River could potentially be indirectly impacted upon. There is also a small instream dam on the HGM4 system which may be indirectly impacted by the development. The other dams are located within the property and will be impacted upon (Figure 12); however, these systems are largely artificial in nature and are not connected to the broader drainage network.

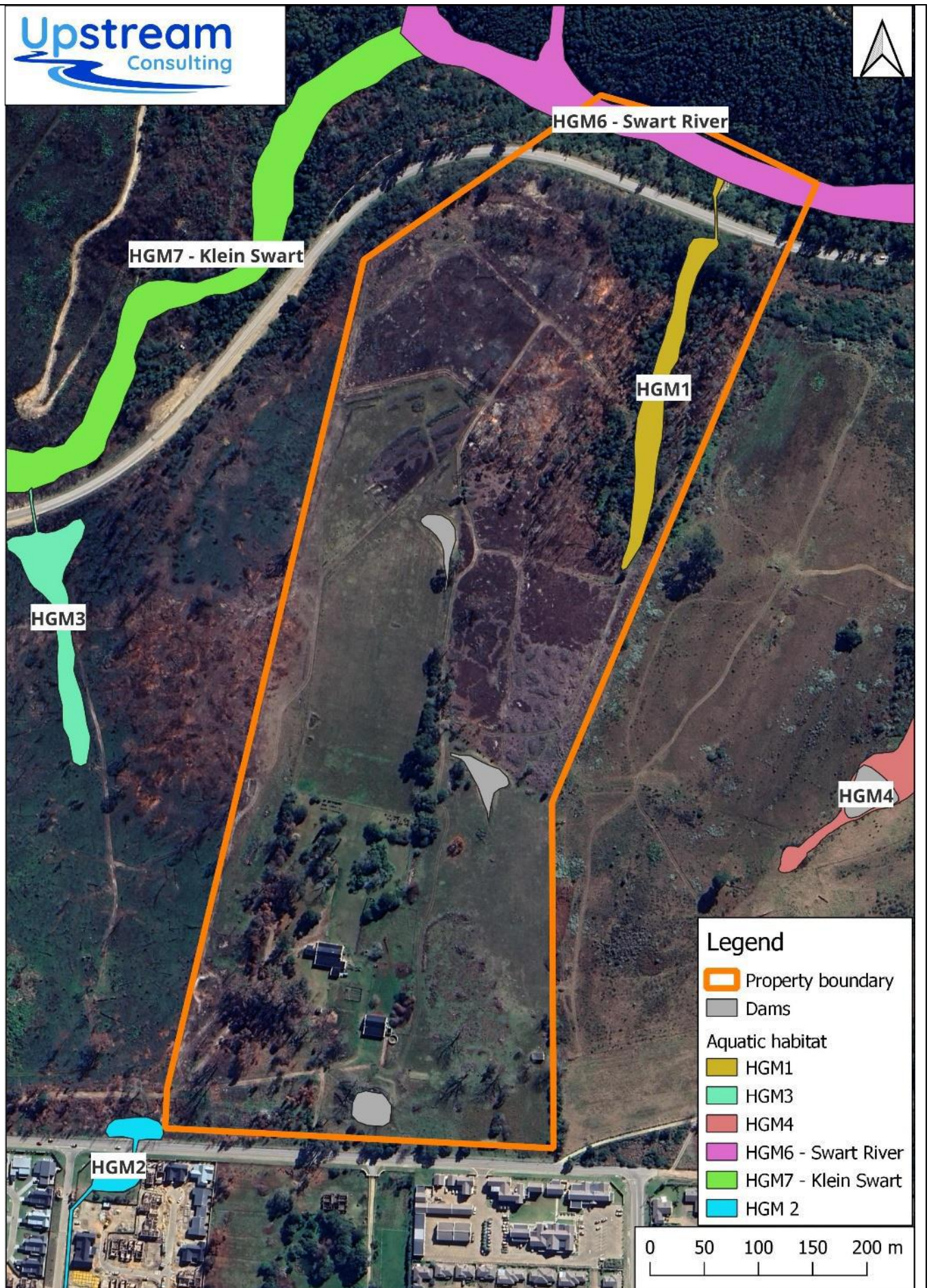


Figure 12: Map of the potentially affected HGM units and dams

DESCRIPTION OF AFFECTED AQUATIC HABITAT

Please refer to figure 13 below when reading the following.

The HGM1 watercourse is an ephemeral stream which flows uniformly from the development site, through a road culvert, and into the Swart River to the north (Figure 13). The lower reach flows steeply through remaining forest reach (top photograph). There are tall alien invasive trees (such as *Eucalyptus grandis* and *Acacia melanoxylon*) established within the indigenous canopy. The culvert is damaged and there is erosion at the outlet on the banks of the Swart River. There is illegal dumping into the channel taking place at the inlet alongside the road.

Upstream of the road there has been large-scale alien tree clearing, largely of the *Eucalyptus* species. As a result, there are areas of bare ground, eroded pathways into the drainage line, and felled tree trunks covering the channel. The channel is slightly incised (approximately 1 m) until mid-reach when the longitudinal gradient lessens, and the natural U-valley shape is clear. At the time of the site visit, there were shallow pools of water in the typically dry channel, following heavy rains on the previous day (Middle photograph in Figure 13). Although a significant number of alien trees have been felled, many more remain, as well as other invasive species such as *Solanum mauritianum* and *Bambusa* sp. in the riparian area.

In the upper reach the channel is broader and shallow. There is some indigenous fynbos vegetation evident, but it is clear from the clearing activities that this area was heavily infested with alien plants. Currently there are large areas of bare ground, disturbed soil, and tracks from clearing the trees (bottom photograph in Figure 13). The Present Ecological State (PES) or integrity of the stream HGM1 was determined as being Largely Modified.

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). As a result of the nature of the stream (episodic flows, uniform types, degraded etc.) it has limited EIS. The vast disturbances within the stream have resulted in the dominance of disturbance tolerant species and thus the species/taxon richness is not expected to be significant at any scale. The topography and substrate of the channel is largely uniform. It is not classified as a priority river system; it is not within a conservation area, and the current impacts have limited its contributions to ecological diversity. However, it does support the important larger downstream systems of the Swart and Kaaimans Rivers and provides habitat for biota in the lower reaches, if only to a moderate degree. **The overall EIS category of the stream was determined as being 'Low'.**

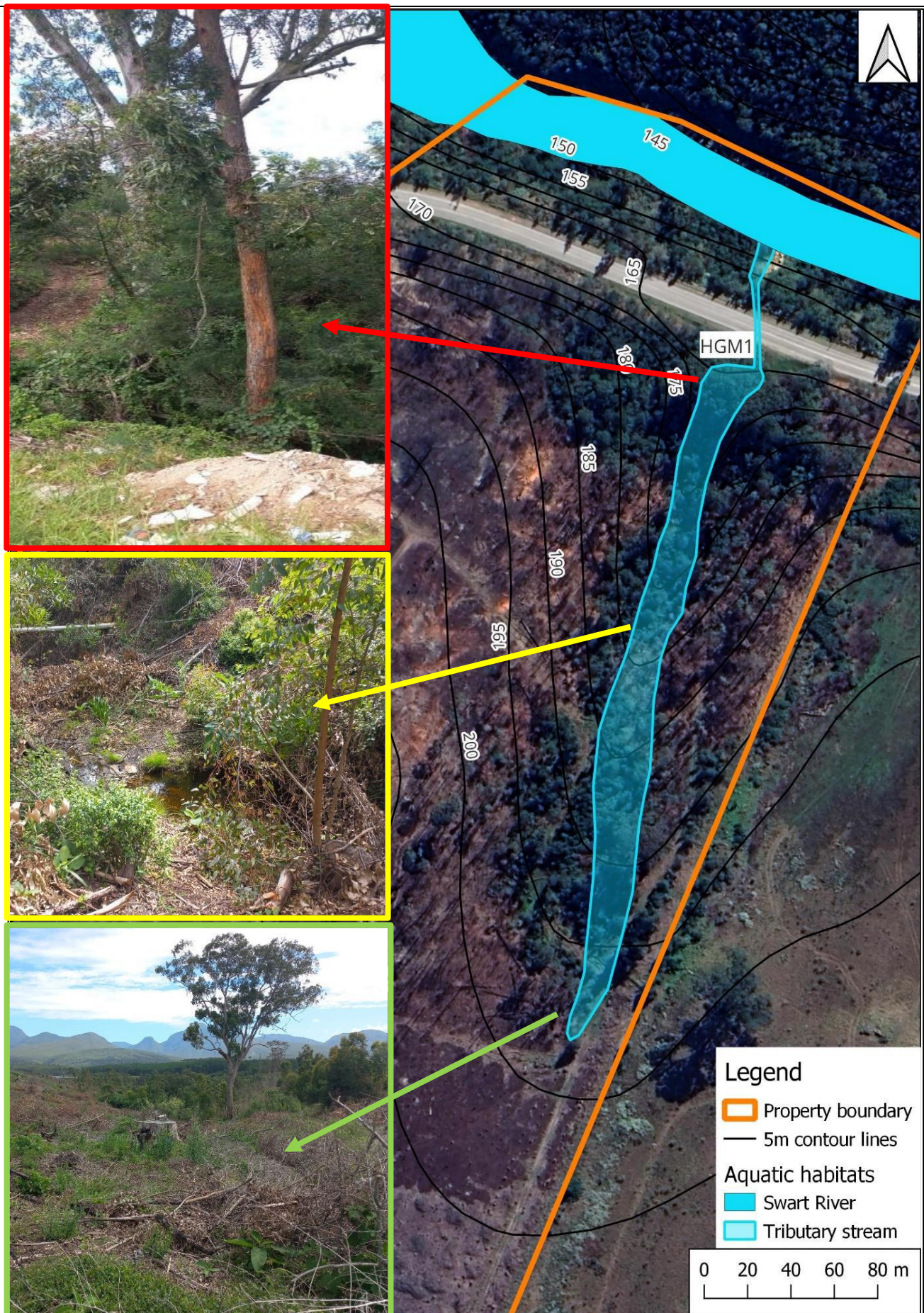


Figure 13: Map and photographs of the non-perennial tributary stream (HGM1) to the Swart River.

HGM2, which is now outside the property boundary, is a critically modified seep wetland which originates on the southern property boundary, alongside the road (PES = E). Under natural conditions, the seep

would flow in a diffuse manner towards the south and be vegetated with short sedges and fynbos plants. However, the Glenwood Avenue Road has been constructed through the head of the wetland, resulting in impoundment of water upslope of the road in a depression, prior to a culvert directing confined flow below the road into the neighbouring development. The depression is more permanently inundated than the reference state and contains *Juncus* species and reeds such as *Typha capensis*. The lower reaches have been completely lost to development and the seep no longer functions in a natural manner. The remaining wetland should be retained to regulate stormwater flows from the site, but overall, the seep has Very Low ecological importance and sensitivity (EIS).

HGM3 and HGM4 are both very similar ephemeral tributary streams to the HGM1 system on the property. They have been subjected to the same land use and cover changes over time. Additionally, both of these catchments are either under development or authorised for development similar to that of HGM1. These systems are at risk of receiving increased stormwater runoff and pollutants from urban development.

AQUATIC BUFFER ZONES

An aquatic impact buffer zone is defined as a zone of vegetated land designed and managed so that sediment and pollutant transport carried from source areas via diffuse surface runoff is reduced to acceptable levels (Macfarlane and Bredin, 2016). Aquatic buffer zones are designed to act as barriers between human activities and sensitive water resources in order to protect them from adverse negative impacts. Buffer zones associated with water resources have been shown to perform a wide range of functions and have therefore been adopted as a standard measure to protect water resources and associated biodiversity.

Currently there are no formalised riverine or wetland buffer distances provided by the provincial authorities and as such the buffer model as described Macfarlane & Bredin (2017) for wetlands and rivers was used. These buffer models are based on the condition of the waterbody, the state of the remainder of the site, coupled to the type of activity, as well as the proposed alteration of hydrological flows. Based then on the information known for the site, **a 30 m river buffer is recommended from the edge of the riparian habitat of HGM1, and a 12m buffer from the wetland edge of the HGM2 seep.** It is recommended that the dam nearest to Glenwood Avenue is retained as an aquatic feature, but the contour dams do not need to be conserved in any way.

Comment from an aquatic impact perspective on the civil engineering report and designs (provided in August 2023) for the proposed development, by the aquatic specialist. Appendix G2b.

The proposed development layout has considered the aquatic biodiversity sensitivities identified by the aquatic specialist. Since the pipeline crossing is required, it is recommended that comprehensive measures be designed and adopted to prevent erosion in the channel and riparian area from pipeline construction (including the compilation and pre-approval of a method statement). The stormwater infrastructure has included the concepts of SUDS and considered the recommendations of the aquatic report (such as preventing erosion and dissipation of flow entering the buffer). This objective can be added to with consideration to rehabilitation of indigenous vegetation cover in the buffer area and further 'green' infrastructure encouraged in the design (but outside of the buffer). Prior to the commencement of construction, it is recommended that an aquatic specialist approve the method statement and final layout/ stormwater designs.

Additional mitigation measures are provided relevant to the new information. Therefore, from an aquatic biodiversity perspective, the development can achieve low impact significance, with the stringent implementation of these plans, final approval from an aquatic specialist prior to construction, further 'greening' and rehabilitation measures, and monitoring.

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.		
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.		
3.4.	Explain how estuary management plans (if applicable) has influenced the proposed development.		
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.		
	<ul style="list-style-type: none"> Botanical Statement by Mark Berry from Mark Berry Botanical Surveys. Appendix G1. Terrestrial Biodiversity Compliance Statement by Jonathan Colville - Terrestrial Ecologist and Faunal Surveys, and Callan Cohen of Birding Africa. G3. Faunal Compliance Statement by Jonathan Colville - Terrestrial Ecologist and Faunal Surveys, and Callan Cohen of Birding Africa. Appendix G4. 		
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.		
	<p>Vegetation map: A product of The Vegetation of South Africa, Lesotho and Swaziland (VEGMAP) (Mucina & Rutherford, 2006). The South African National Biodiversity Institute (SANBI) has updated the VEGMAP (2018). These shapefiles were used. In addition, the National Web-based Environmental Screening Tool was applied to determine the Relative Plant Species Theme Sensitivity as is required of botanical specialists.</p> <p>The main vegetation types (SANBI, 2018; Skowno et al., 2019; and the November 2022 updates to the Red List of Ecosystem Status) found at the project site (Figure 14) are:</p> <ul style="list-style-type: none"> Garden Route Shale Fynbos (Endangered) Garden Route Granite Fynbos (Critically Endangered) <p>Only 37% natural habitat of Garden Route Shale Fynbos and 44% of Garden Route Granite Fynbos remain. The project area bisects small fragments of these natural remaining areas along its north-western boundary (Garden Route Shale Fynbos). Loss of natural habitat of most of the project area appears to have happened several decades ago (pre-1990; Figure 15).</p>		

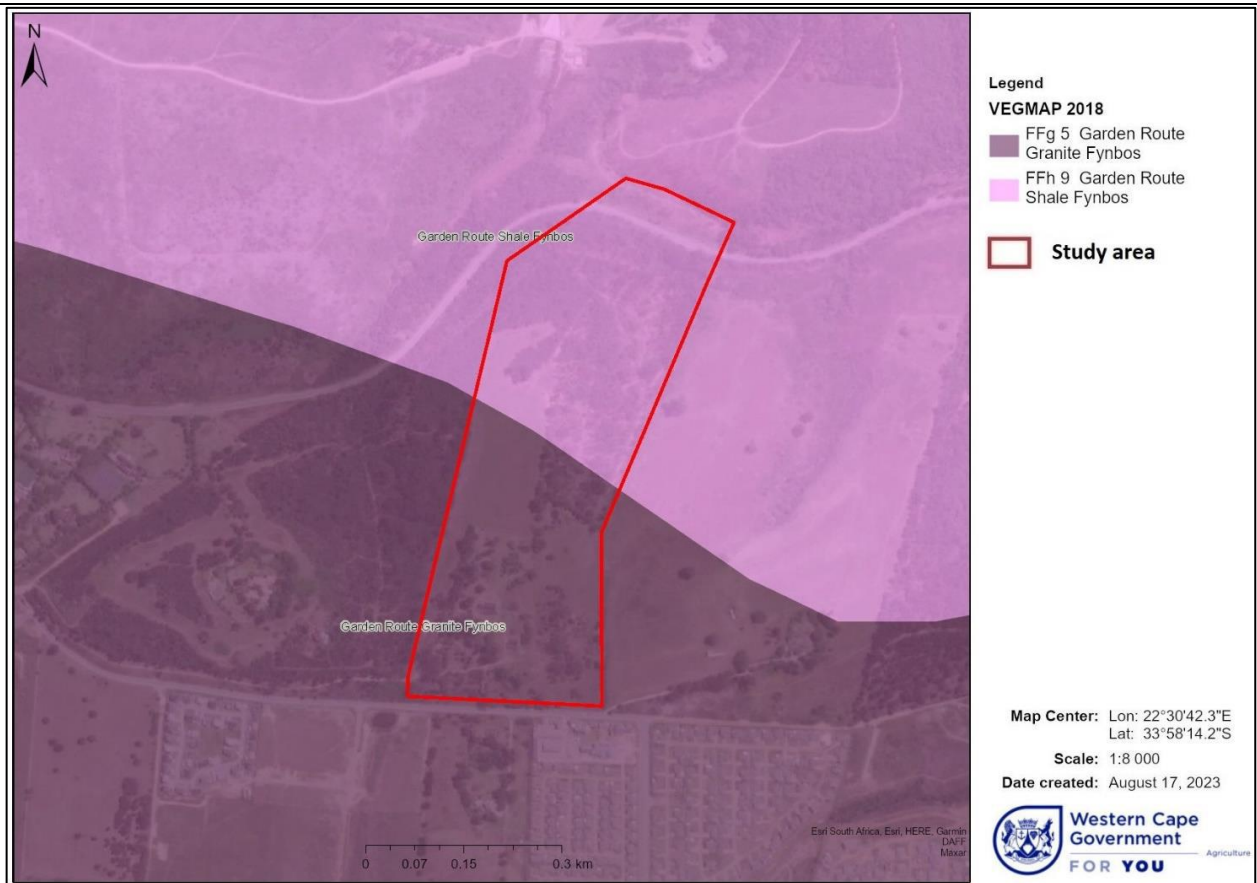


Figure 14: Vegetation Types.

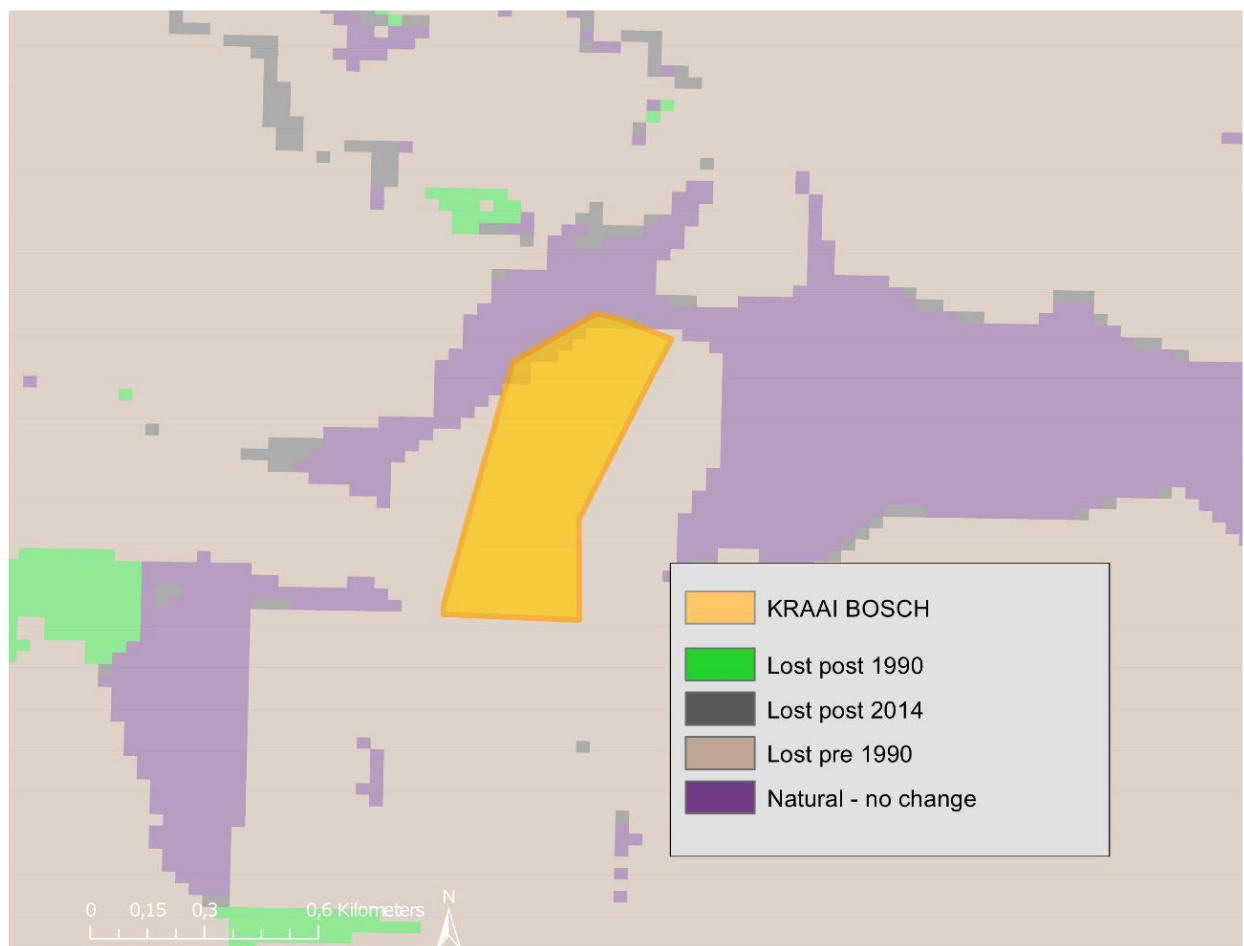


Figure 15: Land cover derived terrestrial habitat change layer showing that most of the natural habitat of the project area was altered pre-1990 (Skowno, 2020). (Appendix G3).

The vegetation of RE/21/195, as described by M. Berry (Appendix G1):

The property is covered mainly by pastures and an alien woodland (north-eastern corner, figure 16). The latter was severely damaged during a recent veld fire. Tree felling is also currently underway. All the recorded species are widespread and common*. Due to the time of the survey, spring flowering bulbs, especially members of the Iridaceae and Orchidaceae families, were not picked up. Floristic association with Garden Route Granite Fynbos is very poor with only one important taxon recorded, namely the grass *Eragrostis capensis*. Association with Garden Route Shale Fynbos is also poor with only a few important taxa recorded, including *Helichrysum cymosum*, *Searsia lucida*, *Selago corymbosa* and *Pteridium aquilinum*. This alone illustrates the transformed state of the site. Apart from the planted *Afrocarpus falcatus* (Outeniqua yellowwood), no SCC or protected tree species were recorded. There are also no known (iNaturalist) records of listed SCC within a 500 m radius from the site.

*Please refer to page 20 of botanical assessment report (Appendix G1) for the full list of plant species recorded by the botanist on site.

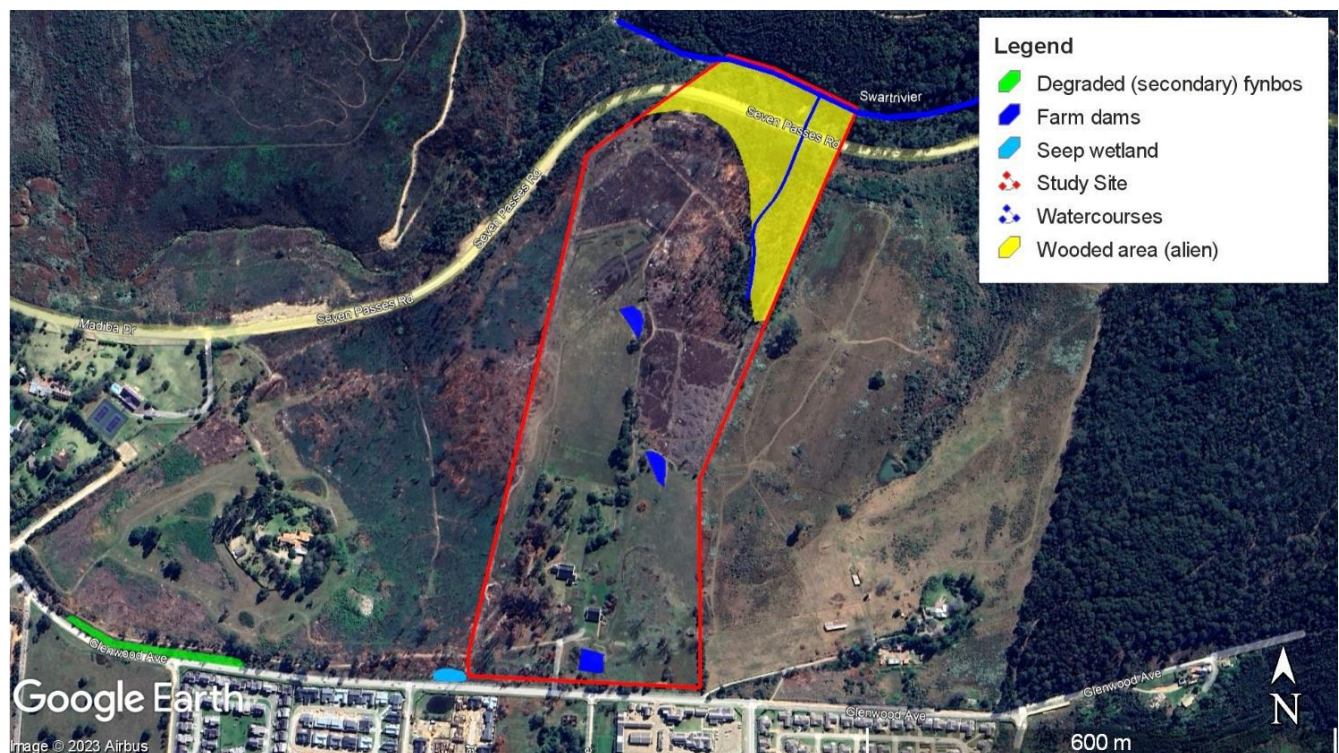


Figure 16: Botanical attributes of the site. The untuned areas are transformed.

Ecosystem threat status: Informed by (1) The National List of Threatened Terrestrial Ecosystems (Government Gazette, 2011), (2) The Western Cape State of Biodiversity 2017 Report (Turner, 2017), and (3) The National Biodiversity Assessment (2018) (SANBI, 2019).

According to The Western Cape State of Biodiversity 2017, the **Ecosystem Threat Statuses** are Critically Endangered (Garden Route Granite Fynbos) and Endangered (Garden Route Shale Fynbos).

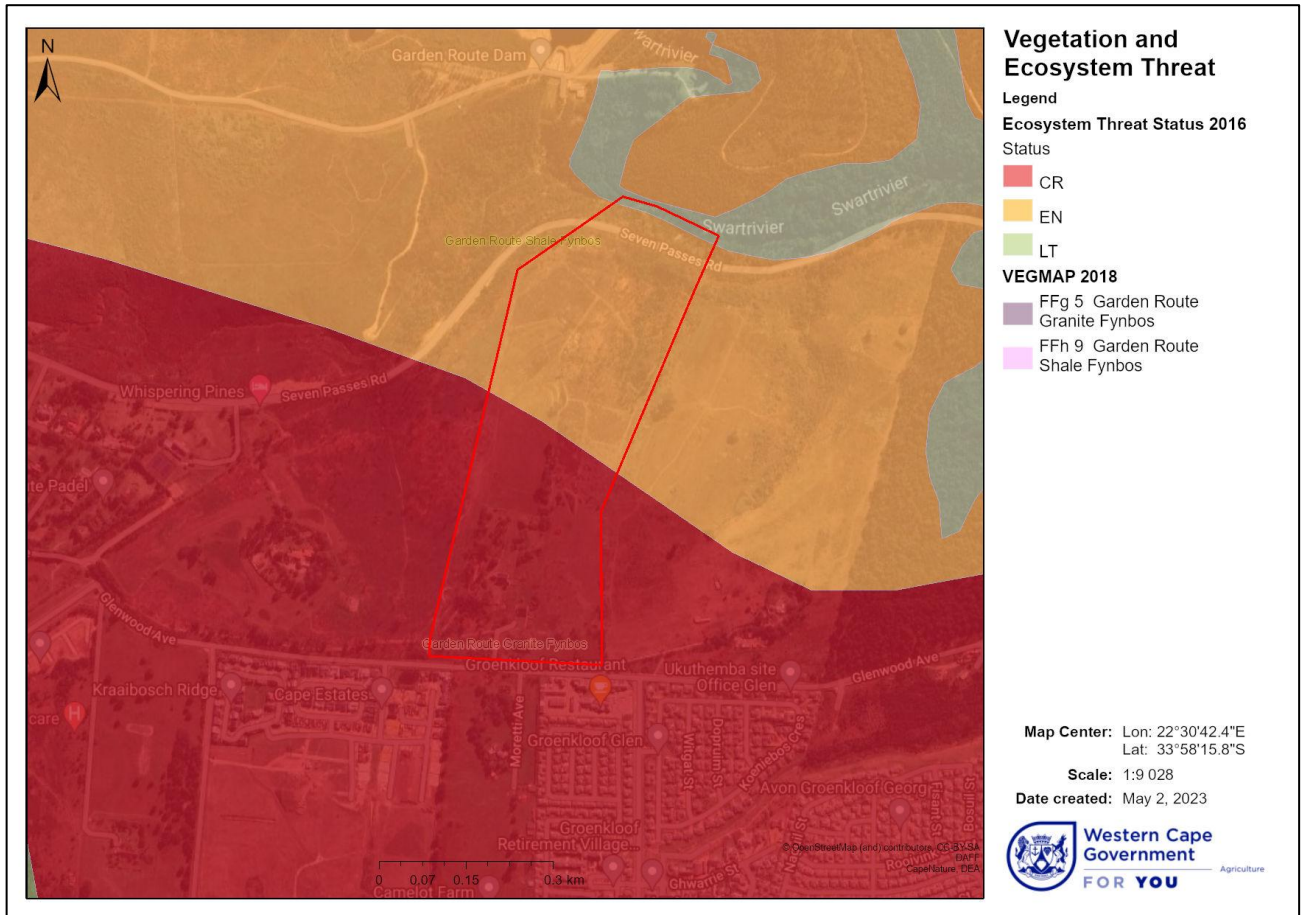


Figure 17: Ecosystem threat status.

Biodiversity planning: The 2017 Western Cape Biodiversity Spatial Plan (CapeNature, 2017) GIS (Geographical Information System) shapefiles for the George Municipality is important for determining the conservation importance of the designated habitat. Ground-truthing is an essential component in terms of determining the habitat condition.

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).

Site boundary: these and other resource layers were used to define the site boundary and to compile several maps. This information is available on the CapeFarmMapper website (Department of Agriculture: gis.elsenberg.com).

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

The 2017 WCBSP Handbook (Pool-Stanvliet et al., 2017) distinguishes between the various conservation planning categories. Critical Biodiversity Areas are habitats with high biodiversity and ecological value. Such areas include those that are likely to be in a natural condition (CBA 1) and those that are potentially degraded or represent secondary vegetation (CBA 2).

Ecological Support Areas are not essential for meeting biodiversity targets but play an important role in supporting the functioning of Protected Areas or CBAs and are often vital for delivering ecosystem services. A distinction is made between ESAs that are still likely to be functional (i.e., in a natural, near natural or moderately degraded condition; (ESA 1) and Ecological Support Areas that are severely degraded, or have no natural cover remaining, and therefore require restoration (ESA 2). Other Natural Area (ONA) sites are not currently identified as a priority but retain most of their natural character and perform a range of biodiversity and ecological infrastructure functions. Although not prioritised, they are still an important part of the natural ecosystem.

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 far northern areas of the project area fall marginally within Critical Biodiversity Areas (CBA1: terrestrial, forest, river; and CBA2: terrestrial) (Figure 18), essentially associated with threatened vertebrate (Bontebok) and water resource protection. A small section of the north-eastern parts of the project area are classed as a CBA based on several factors: critically endangered vegetation (grassy fynbos), indigenous forest, river type, threatened vegetation type (Garden Route Shale Fynbos), threatened vertebrate (Bontebok), and water resource protection. The project area also bisects Ecological Areas of Support (ESA1 & ESA2) (Figure 18). These play an important role in supporting the functioning of CBAs and the aim is to maintain them in a functional, or near-natural state.

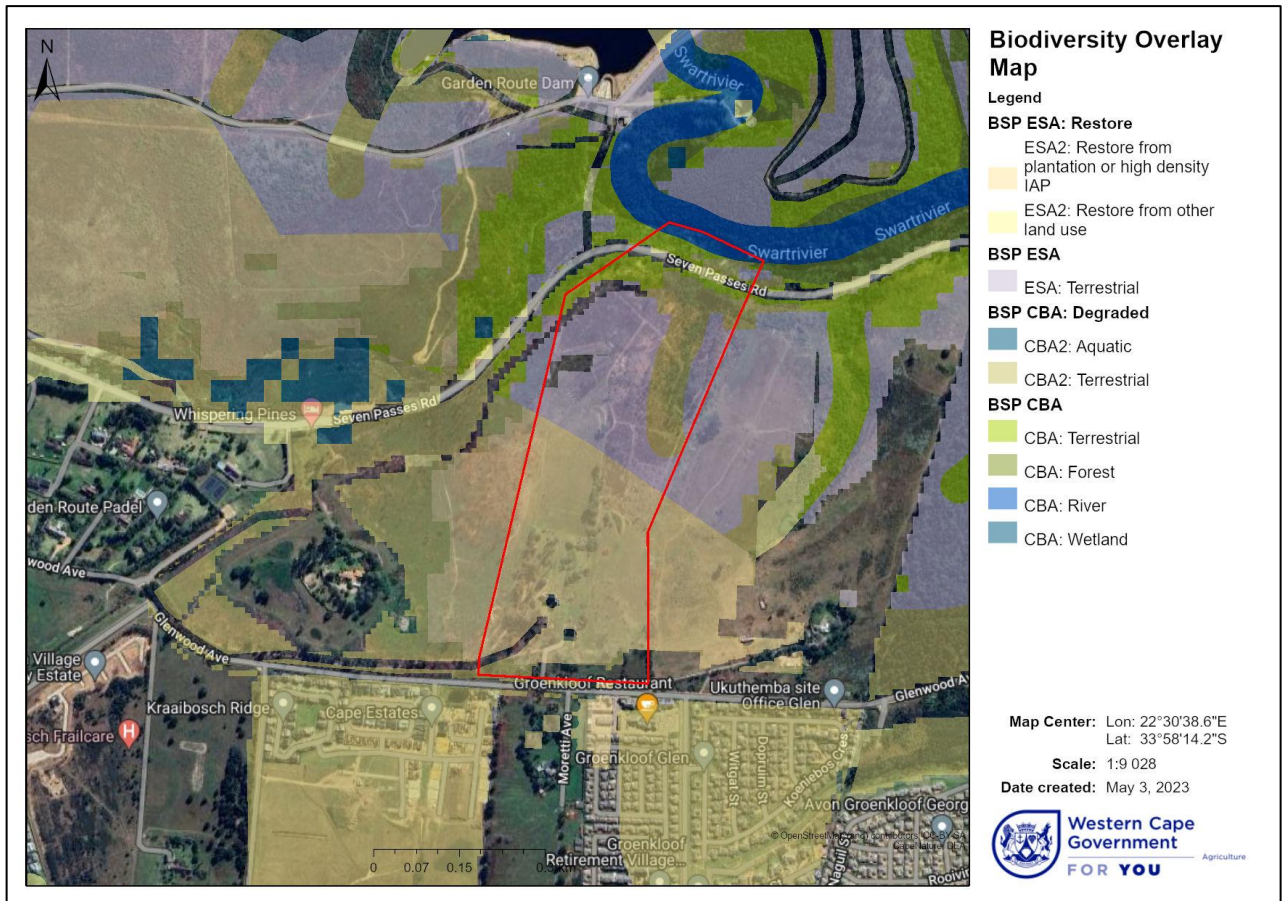


Figure 18: Critical Biodiversity Areas (CBAs) and Ecological Support Areas (ESAs) of the Western Cape Biodiversity Spatial Plan in which the property falls.

The proposed site development plan excludes the Terrestrial CBA areas mapped on the property.

There are no aquatic CBA or ESA habitats within the development site. However, the Swart River in the north is classified as CBA1 river habitat and is thus a biodiversity priority area for conservation. According to the freshwater specialist, no endemic or conservation worthy aquatic species (Listed or Protected) were observed within the site. Due to either the ephemeral flow, and/or the highly modified condition of the area, it is likely that any aquatic species are disturbance-tolerant species with a low level of biodiversity.

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.
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The project area falls across a broad Biosphere Reserve conservation area. It does not fall over any protected areas (PA); a PA falls close (~500 m) to the north of the project area. The northern boundary of the project area abuts a large 'priority focus area' identified by the national protected areas expansion strategy for South Africa (Balfour et al., 2018) (Figure 19).

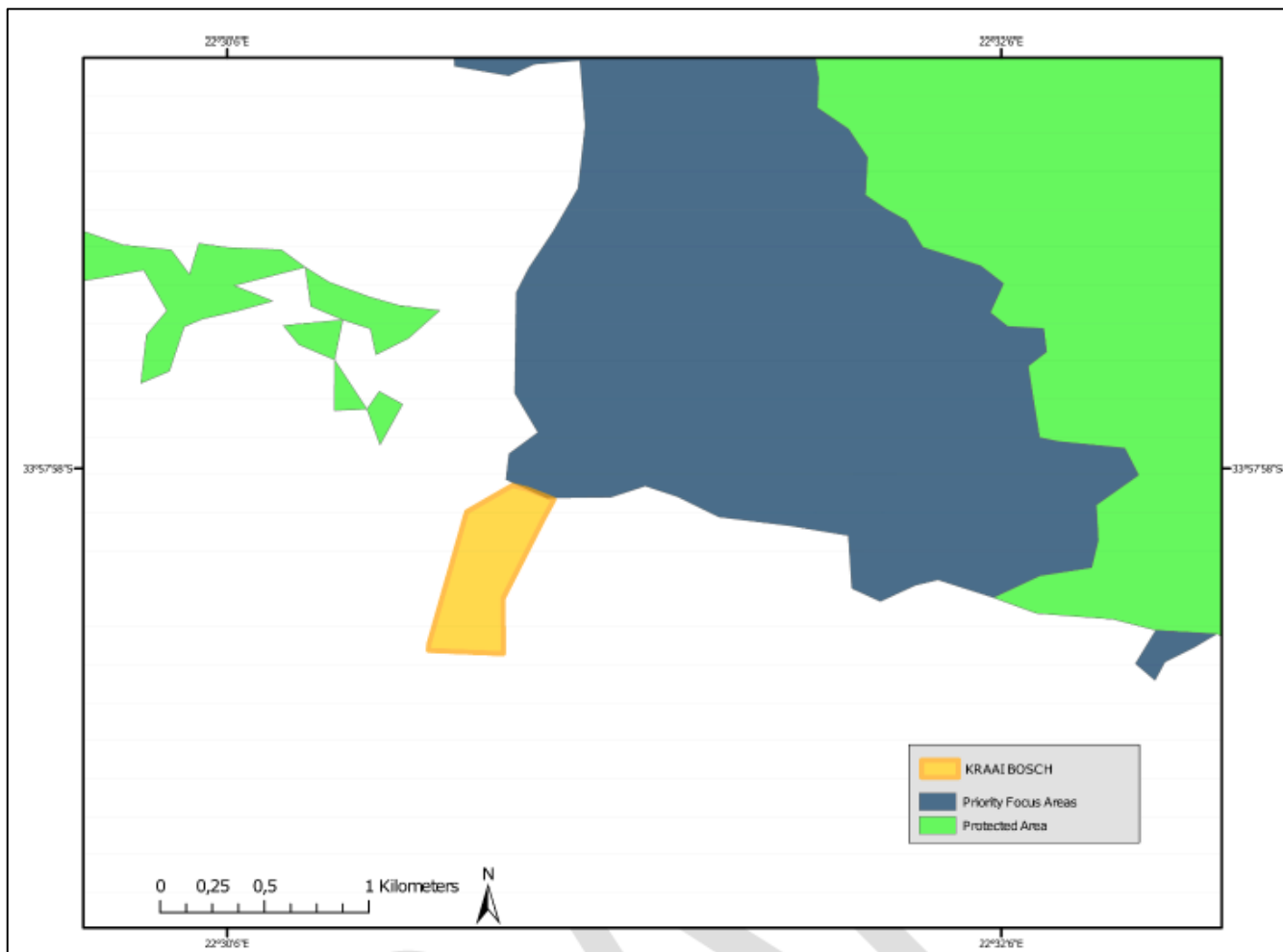


Figure 19: A priority focus area, identified by the national protected areas expansion strategy for South Africa, lies to the immediate north of the project area.

4.7.	Explain how the presence of fauna on and adjacent to the proposed development has influenced your proposed development.
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The screening tool indicated "High" to "Medium" sensitivity for the listed faunal SCC species. Given the mostly disturbed and transformed nature of the proposed development area and considering the known habitat preferences for the listed SCC species, it is the opinion of the specialists, that the site is of Low sensitivity for all the listed SCC species. The nature of the site and its suitability as habitat for the listed species is discussed in the Faunal Compliance Statement, Appendix G4.

5. Geographical Aspects

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

No geographical aspects will be affected.

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.		
Heritage Impact Assessment - Lize Malan and David Gibbs. Appendix G5a.			
Archaeological Impact Assessment - Dr. Peter Nilssen. Appendix G5b			

6.3. Explain how areas that contain sensitive heritage resources have influenced the proposed development.

(Source: Heritage Impact Assessment Remainder Portion 21 of Farm195, George PIETERKOEN, 2023, Prepared by Lize Malan & David Gibbs, Appendix G5a).

It is evident that the property and the werf has significant heritage value, related to the architectural significance of the historic werf buildings, the history of the site and the rarity of surviving farm werfs in the George area. With regard to contextual significance, the werf in its rural setting with front garden, would have been of significance as a rare remaining farm complex, but this context has already been compromised by the very intensive urban development to the south of the property, across from Glenwood Avenue (please refer to the Architectural Value described in point 7 below) and will in future be further impacted by development of the properties to the east and west of the property (refer to Section 6 of Appendix G5a). Figure 20 overleaf maps the heritage resources associated with the property.

Accordingly, the werf itself, including the homestead, barn buildings and front garden are graded as IIIA, whilst the remaining land is regarded as ungradable, given that it has already been earmarked for urban development.



Figure 20: Heritage resources associated with the property (Source: Google Earth)

HERITAGE INDICATORS

The preparation of heritage/design indicators for future development pre-supposes that such development is appropriate in principle. The appropriateness of developing the site is underpinned by the following factors:

- The property falls within an approved urban edge.
- The changing nature of the landscape, which is incrementally being transformed by current and impending urban development.
- The lack of archaeologically sensitive areas that would require mitigation.

For these reasons, the no-go option for developing the property is not regarded as realistic. Nevertheless, it has been demonstrated that the historic werf does have significant heritage value and thus, although it is accepted that urban development will have an impact on the werf and its sense of place, indicators should be primarily aimed at protecting and enhancing the werf as a distinct precinct with its particular character and spatial relationships, and for mitigating potential negative impacts.

Following on the analysis of the heritage significance of the property and its components, the potential impact of development on the historic werf and its setting is regarded as potentially the most significant impact on heritage resources. Thus, the indicators included extensive measures to control such impacts and in general the proposal has conformed to these indicators.

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.

A modest werf with a historic homestead and barn and some smaller outbuildings, are situated on the higher lying flatter southern portion of the site. The homestead has a large front garden, with swimming pool, enclosed by an informally planted treed boundary of mostly exotic trees. A recent fire has decimated a number of trees along the eastern boundary of the site.

There are remnants of the footings of what must have been farm workers houses and the semi-ruins of farmworker houses in the area to the southeast of the werf. There is small dam situated behind the homestead, one to the west of the werf and two small dams on the northern half of the property.

The heritage significance of a site is established by considering several aspects of potential heritage value. These are as follows, in no particular order:

1. Architectural Value

Both the homestead and the barn¹ are regarded as having significant heritage value. The buildings are similar in scale and style – both rectangular barn shaped buildings with holbol end gables and no front gables. Determining the age of the homestead and the barn, has proven difficult. Diagrams of the property and other archival sources have not rendered any concrete evidence. Although the homestead has seen many alterations and accretions over the years, elements such as the wide yellow wood floorboards and thickness of the walls in certain areas would suggest that it is has a historic core that could date to at least the mid-19th Century.

The possible mid-19th C date coincides with the acquisition of the property by merchant and property speculator, Michael O'Connell. Research undertaken by Schulz suggest that the buildings are very similar to the house and retail outlet of O'Connell in York Street which predates 1847.

According to Schulz, the curled plaster work at the gable ends is the identifying feature that links the gable style to that of the Peter Koen homesteads. The only conundrum with this theory is that the pitch of the roof and width of the gables accommodates a corrugated iron roof that would likely suggest a later date.

Schulz also speculates that the homestead and barn, or at least the gables, may date to circa 1920. Charles Henry Vintcent, then mayor of George, bought Peter Koen's Kraaibosch in 1920 and may have built the two homesteads on Peter Koen, fashioned in the style of the Michael O'Connell buildings in York Street, George. His business premises, Prince Vintcent & Co., was situated directly opposite the two O'Connell buildings during the early part of the twentieth century. During C.H. Vintcent's term as Mayor, Crown Prince Edward, Prince of Wales visited George while touring South Africa in 1925 and spent an afternoon at Pieterkoen, probably to recuperate from his tiring schedule before attending ball at the Town Hall in the evening. According to Schulz this demonstrates that the buildings present on the Peter Koen property in 1925 were 'fit to receive a Prince'.

It seems likely that at least the core of the homestead would date to the mid-19th century or earlier. And further in-situ work such as removal of plaster may help to establish the age of the buildings. Despite this uncertainty it is evident that the buildings have architectural significance, attributed to its well-proportioned gables with plaster details, remaining interior elements, such as the yellow wood floorboards in the homestead in particular and the setting and placement of the buildings. Although both the homestead and barn have seen alterations and accretions over the years, the essential architectural elements have been retained and the buildings could be restored and possibly repurposed whilst retaining its key historic features.

A comprehensive survey of heritage resources for the George Municipal area has not been completed to date, but various knowledgeable experts in the field have confirmed that the Pieterkoen werf buildings are rare surviving historic buildings in the George rural area.

The small wood store behind the homestead is historic but does not seem to be particularly significant and is also not integral to the loose werf arrangement as it is set at quite a distance from the homestead and the barn. As noted in the AIA, none of the other building remnants on the property are regarded as of heritage significance.

2. Historical Value

The historical value of the property and the werf is related to:

- The property forming part of one the very early land grants in the George area dating to the late 1700s (although not the site of the original homestead).
- Its association with important figures in the history of George, such as Michael O'Connell and Charles Henry Vincent.
- The visit of Crown Prince Edward, the Prince of Wales to the property in April 1925.

3. Spiritual, Linguistic & Scientific Value

There is no evidence to suggest that the property has spiritual or scientific value. However very interestingly, linguistic significance can be attributed to the property. The property was sold to Francis William Branford in 1938. His, son William, who inherited the property, was an academic in linguistics and English and married, Jean Gordon-Brown, who was a lexicographer and linguist. Jean published the first Dictionary of South African English in 1978, which is recognised as seminal work. The fourth and last edition of the dictionary was published in 1991.

4. Archaeological Value

The ROD in response to the NID submitted to HWC, required an archaeological impact assessment. A comprehensive foot survey of RE/21/195 yielded no pre-colonial archaeological resources. There are no caves or rock shelters on the property and no evidence for colonial period middens or graves were seen. The only identified archaeological resources reported were ruins and foundations of colonial period structures that are of low significance and not conservation worthy. Nilssen noted that as these are part of the built environment, these were dealt with in the HIA (Appendix G5a) and that the structures on the property that are of heritage value will be conserved as part of the proposed development. The complete AIA, prepared by Peter Nilssen, is attached as Appendix G5b.

8. Socio/Economic Aspects

8.1.	Describe the existing social and economic characteristics of the community in the vicinity of the proposed site.
<p>George Municipality's Economic Overview</p> <p>In 2019, the economy of George was valued at R18.556 billion (current prices) and employed 82 939 people. Historical trends between 2015 and 2019 indicate that the municipal area realised an average annual growth rate of 1.5 per cent, which can mostly be attributed to the tertiary sector that registered a positive annual growth rate of 2.1 per cent.</p> <p>Unemployment</p> <p>George (14.2 per cent) has the third lowest unemployment rate in the Garden Route District and is below the district (15.4 per cent) and Western Cape (18.9 per cent) unemployment rates. Unemployment has been volatile from 2010-2020. After jumping from 13.8 per cent in 2018 to 14.7 per cent per cent in 2019, it declined slightly to 14.2 per cent in 2020. This was largely due to an increase in the discouraged work seekers and not economically active population. Unfortunately, most job losses affected low and semi-skilled workers who are more vulnerable to living in poverty during times of economic decline.</p> <p>Please also refer to Appendix M1 – Socio-economic perspective report.</p> <p>The report concludes that the development will have positive socio-economic effects in the following ways:</p> <ul style="list-style-type: none"> • A supply of residential opportunities that will cater for the market demand. • New money injection during the construction phase and an additional monthly injection during the commercialization phase of the proposed development. • The unemployment rate will decrease, as an additional 410 jobs will be created during the construction phase (4-5 years) and during the commercialization phase, the development will create 36 job opportunities. • The job opportunities during the construction phase will be temporary but the job opportunities, that will be created during the commercialization phase, will be permanent. <p>In addition, the proposed residential development:</p> <ul style="list-style-type: none"> • will have a positive impact on the property market in the chosen market segments; • complies with the planning principles of SPLUMA; and • will attract new residents to George with economic skills that will contribute to the local economy and job creation. 	
8.2.	Explain the socio-economic value/contribution of the proposed development.
<p>The proposed development is likely to have positive socio-economic impacts:</p> <ul style="list-style-type: none"> • The total value of the development is currently estimated at just approx. R 924 000 000 to be invested in the local economy. This will include bulk infrastructure contribution in the order of R27 million to be paid to the Municipality. • The development will create significantly more jobs during the construction and operations phases than is currently offered by the property as a agriculture concern. • It will provide funds for the renovation of the historic homestead and barn at Pieterkoen. • It will create opportunities for visitors/tourists and will allow the public to experience the historic buildings at Pieterkoen. • It will create a range of housing opportunities for middle income groups in George, ranging from flats for first-time buyers to large erven for high value houses. • It will create access to services and goods in close proximity to residents in the Kraaibosch thus reducing the need for and cost of transport. 	
8.3.	Explain what social initiatives will be implemented by applicant to address the needs of the community and to uplift the area.

CAPITAL EXPENDITURE (CAPEX)

A capital injection (CAPEX) will be projected for each of the development activities. These include direct and indirect economic impacts. The construction of the Pieterkoen Residential Development will have the following estimated impacts on the economy in the study area:

- Additional new business sales
- Additional employment (direct and indirect)

The total capital turn-over in the construction phase of the Pieterkoen Residential Development is estimated at **R 924 000 000**.

Additional new business sales

The construction of the Pieterkoen Residential Development will lead to the expansion of business sales for existing business located within the area. For example, materials used in construction such as bricks, pipes, concrete, etc. will be purchased, as well as services such as engineers, plumbers, electricians etc. These changes will be measured in terms of new business sales, i.e., new sales that will be generated in the economy as a direct result of the capital investment in the development. Business sales will be generated because of capital investment by the developer for each of the development activities which is said to take place as mentioned above.

Additional Employment

Constructing the proposed Pieterkoen Residential Development will result in direct jobs being created for the construction of the various facilities. Indirect jobs are also created in industries that provide goods, materials and services. For example, an additional amount of goods used in the construction sector will be required from businesses and industries related to the construction sector. This could lead to an increased number of jobs being created in these businesses, i.e., in order to increase the output of these businesses.

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.
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The proposed development will not impact on people's well-being. Noise and dust may be generated during the construction phase, but it will be temporary and can be mitigated by implementing the EMPr.

Please also refer to the Visual Impact Assessment attached as Appendix G7,

The assessment concludes the following:

"The proposed Pieterkoen Residential Development in George, Western Cape Province, has been assessed for its potential visual impacts. The study area is characterized by a peri-urban landscape where natural vegetation and existing infrastructure contribute to a moderate VAC. This suggests that the proposed development can be integrated into the surrounding visual environment with the application of appropriate design and mitigation measures.

The VIA identified several key considerations. The site is situated in an area of moderate visual sensitivity, influenced by its location within a mixed-use landscape that includes residential areas as well as its proximity to scenic corridors such as the Seven Passes Road. During construction, temporary visual impacts such as dust, machinery movement, and earthworks are anticipated. These impacts are considered manageable through the implementation of standard mitigation measures. In the operational phase, the development will introduce permanent changes to the visual landscape, including residential structures and associated infrastructure.

The implementation of mitigation strategies such as retaining and enhancing existing vegetation, strategic landscaping, maintaining buffer zones near sensitive receptors, and incorporating careful architectural design are expected to reduce visual impacts to an acceptable level. Cumulative visual impacts from the development are anticipated to be minimal and align with broader spatial development patterns in the area.

The findings of the VIA indicate that the development does not present significant visual impacts, provided the recommended mitigation measures are effectively implemented. By integrating these measures into the EMP, the development can proceed while maintaining the visual integrity of the region. The project is therefore considered suitable for environmental authorization, subject to ongoing monitoring and adaptive management to address potential unforeseen visual 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.	
<p>The preferred and only property alternative is for the development of the Remainder of Portion 21 of Farm 195, George. The property is known as Pieterkoen, and is situated within the urban edge, on the eastern side of George, and accessed off Glenwood Avenue. The property is bordered by the Swart River, downstream of the Garden Route Dam to the north. The land use of the surrounding area, historically made up of small holdings and forestry plantations, is increasingly changing to residential developments (such as Kraaibosch Estate and Groenkloof Estate on the opposite side of Glenwood Avenue).</p> <p>The larger terrain is undulating with drainage lines creating small spurs in the landscape with Pieterkoen located on one such spur. As a result, the property slopes steeply downwards to its north-western, northern, and northern-eastern boundaries. The northern portion that slopes down to the Seven Passes Road is so steep that it is virtually inaccessible. As a result, the northwestern section of the property has not been included in the development plan and falls outside the site. Senior Town Planner of George Municipality has advised that the Remainder Portion will have to be transferred to WC: Department of Infrastructure and that this will be imposed as a condition of their approval of the application for subdivision and rezoning.</p>	
Provide a description of any other property and site alternatives investigated.	
N/A – No property or site alternatives were investigated. The proponent owns the Remainder of Portion 21 of Farm 195 and wishes to develop this property.	
Provide a motivation for the preferred property and site alternative including the outcome of the site selection matrix.	
<p>N/A – A site selection matrix was not used. The applicant wants to develop this site with particular emphasis on the historic and cultural value of the property.</p> <p>A number of layouts and ratios were developed including one which was too close to the drainage line. (Please see layout 2 in 1.3 below). After discussions with the aquatic assessor the development was "pulled back" from the watercourse and a new layout (layout 1) developed.</p>	
Provide a full description of the process followed to reach the preferred alternative within the site.	
<p>The proposed site layout of the Pieter Koen housing development was informed by a range of site-specific constraints and the direct impacts of higher density housing developments in the greater Kraaibosch area.</p> <p>These can be highlighted as follows:</p> <ul style="list-style-type: none"> • Maintaining the rural character of Pieterkoen is no longer viable with housing developments approved and being developed along three of its boundaries. The northern boundary along Saasveld Road will remain untouched. • The Pieterkoen Trust, as current owners of the property, wishes to preserve the rich cultural history of the farm and honour the legacy of three generations of Branfords having lived there. Property developers have shown interest to purchase the property. According to the owner of the property, they have had an offer to purchase the property which they rejected. • In the light of these developments, the trustees decided to apply for the development rights themselves, based on their shared vision of development in harmony with preservation. 	

Developers and investors will be approached to either purchase the entire property or individual precincts. The development of which will be rolled out in phases.

- The George Municipality approached Ron Martin to prepare a socio-historic study on Pieterkoen. This was followed up by a heritage statement by Cathy Schultz in 2021. From Cathy Schultz's study the heritage value of the two buildings in its garden setting became clear. The initial heritage impact report by Lize Malan, the heritage consultant appointed by the trust, set clear guidelines on how best to integrate the historic precinct into the larger development. Please refer to her report in Appendix G5a.
- The need for densification, as outlined in the George SDF, and access to and affordability of housing across a broader spectrum of potential buyers, is recognised.
- The urban character of the greater Kraaibosch area within the urban edge, is being transformed rapidly. High density housing and gated estates are replacing what used to be rural smallholdings and small farms. The creation of some form of communal facilities on a neighbourhood scale, can provide welcome relief and urban focus for this conglomeration of inward facing estate dwellers in the immediate vicinity of Pieterkoen.
- A redeveloped Pieterkoen historic precinct, with shared facilities accessible to both residents in the estate and to the public at large, will further enhance this sense of community and provide access to a destination with links to the founding years of George.
- The Site Development Plan was amended to take the above into account.

Watercourses on the property:

The aquatic specialist was provided with the original proposed site development plan before she undertook her site visit and study. The specialist delineated the watercourses on site and recommended that the layout of the site development plan be amended to include a 30 m river buffer is from the edge of the riparian habitat of HGM1 – please refer to Section G, point 2 of this report.

The site development plan was then amended to accommodate the recommended buffer.

DEVELOPMENT AND REFINING THE SITE DEVELOPMENT PLAN

SITE DEVELOPMENT PLAN NO 1

Block A with free-standing blocks of apartments, Werf layout not resolved, single residential erven set back from eastern boundary.

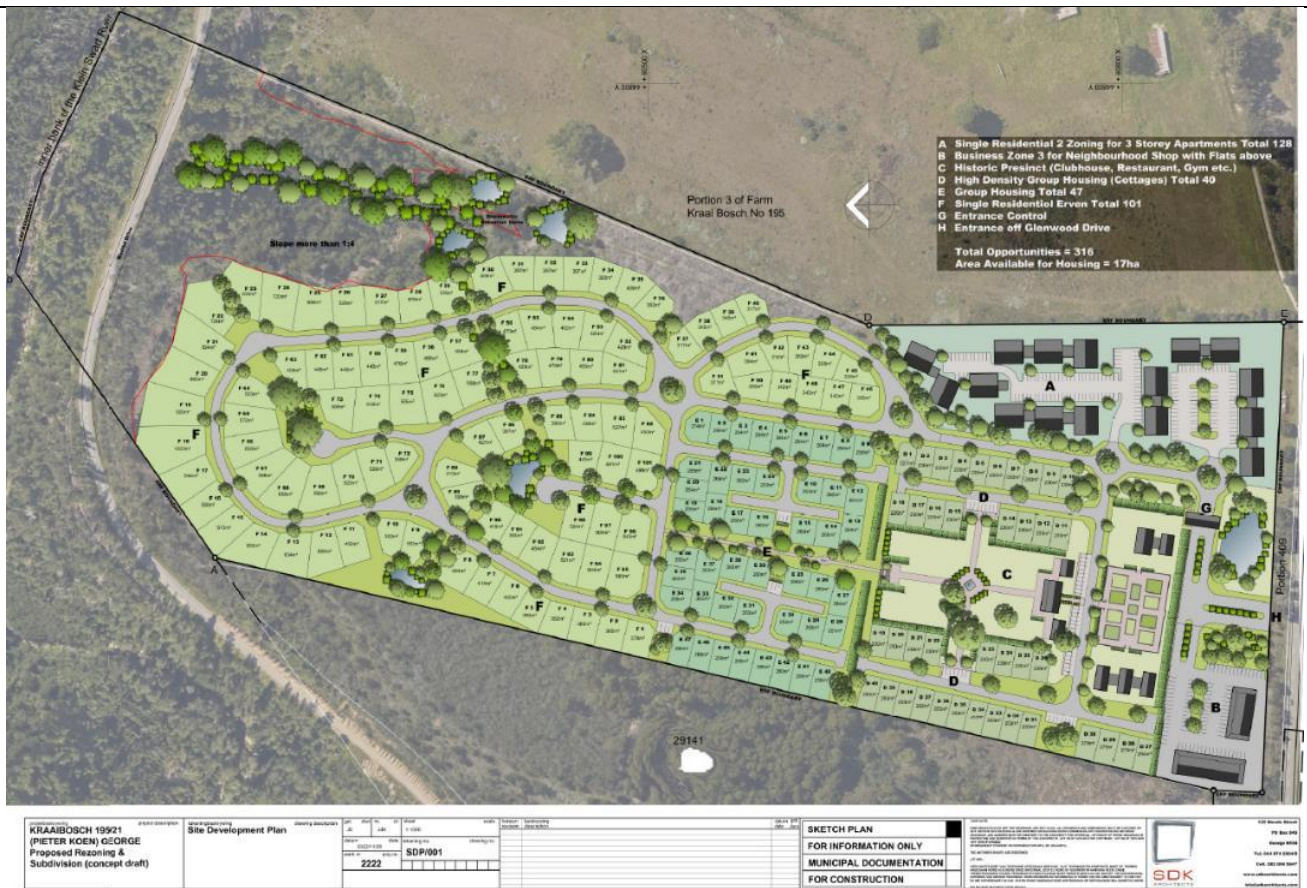


Figure 21: SDP 1

SITE DEVELOPMENT PLAN NO 2

Werf layout and commercial node resolved, single residential erven layout and road layout on the eastern boundary amended to allow for a 30m aquatic setback line.



Figure 22: SDP 2 – Layout 2 in the next section.

SITE DEVELOPMENT PLAN NO 3

Dividing Portion A into Portion A1 for the development of high density town houses in lieu of apartments.
Portion A2 with reduced number of free standing apartments blocks.



Figure 23: SDP 3.

SITE DEVELOPMENT PLAN NO 4 – FINAL

Revision of the Portion A2 apartment layout and footprint. Amendment to the single residential layout Portion F to include a small group housing Portion G for the development of 5 units.



Figure 24: SDP 4 – FINAL – Layout 1 in the next section.

Provide a detailed motivation if no property and site alternatives were considered.

The proponent owns this property and wishes to develop there.

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

Positive impacts:

- Some of the site is overgrown with alien invasive vegetation. Everything will be cleared to allow for the construction of the residential estate, in accordance with the EMPr. Some open spaces will be maintained with indigenous vegetation and alien species will be controlled and removed in these areas.
- once developed will enable more efficient and economical service delivery by the local authority.
- Transformation of an already disturbed and transformed area.
- Utilising vacant land within the George Urban Edge.
- Capital contributions to the municipality which contributes to the upkeep of George.
- Capital influx for service and municipal providers of the Construction and Operational Phases.
- Increased tax and levies income for municipality.
- Housing in an expanding city
- Local Labour and increase in job opportunities.

Negative impacts:

- Transformation of an undeveloped area to a developed area.
- Temporary negative construction phase impacts (noise, visual, potential dust, traffic).
- Additional minor pressure on bulk municipal services.

1.2.	Activity alternatives to avoid negative impacts, mitigate unavoidable negative impacts and maximise positive impacts.
Provide a description of the preferred activity alternative.	
It is proposed to develop a mixed use development which will include residential as well as business opportunities. The riverine areas and steep slopes were avoided to mitigate against impacting these areas. The Heritage opportunities and constraints were also taken into account to ensure a sustainable development in terms of heritage impacts.	
Provide a description of any other activity alternatives investigated.	
A variety of mixed use, housing/business Site Development Plans were investigated.	
Provide a motivation for the preferred activity alternative.	
<ul style="list-style-type: none"> • The site is included in the George Urban Edge and is therefore earmarked for residential development. • The site has nearby connection point for bulk services. • The site and proposal is in line with municipal planning and the surrounding character of the site. 	
Provide a detailed motivation if no activity alternatives exist.	
No other activity alternatives were considered as housing and business are considered suitable land use for this site.	
List the positive and negative impacts that the activity alternatives will have on the environment.	
<p>Positive impacts:</p> <ul style="list-style-type: none"> • The proposed development will optimise vacant land available within an urban area. • The proposed land development will be in character with the surrounding area and will provide additional residential opportunities in a popular neighbourhood. • Prevention of urban sprawl. • Provision of housing • Job creation <p>Negative impacts:</p> <ul style="list-style-type: none"> • Potential construction related nuisances (i.e., noise, visual disturbance, dust, heavy vehicles on the road). This will only be an issue during the construction phase. • Although alien invasive vegetation will be removed, the whole site will not be rehabilitated only the proposed open (green) spaces. 	
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 .	
<p>The preferred layout is illustrated in the site development plan below in figure 25. This layout was developed after taking a number of SDP proposals the recommended 30 m buffer from the edge of the riparian habitat of HGM1 into consideration.</p> <p>The heritage, aquatic, vegetation and terrestrial constraints as well as the practicality, financial and town planning requirements were taken into consideration in the final SDP.</p>	



Figure 25: The Preferred Site Layout – Layout 1

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

The original layout is illustrated in figure 26. As indicated in red, this layout had a smaller buffer area between the development and the tributary stream (HGM1).



Figure 26: The Original Site Layout – Layout 2

Provide a motivation for the preferred design or layout alternative.

the design is informed by the following factors:


- The natural site with its slopes, natural vegetation, watercourse and drainage lines. The freshwater specialist recommended a 30 m buffer from the edge of the riparian habitat of HGM1.
- The heritage background of the site and existing buildings which are retained.
- The guidelines of the George SDF for a compact city at higher densities.

<ul style="list-style-type: none"> - The surrounding residential developments which lack a neighbourhood centre which offers various services. - The market demand from various income groups in this neighbourhood. <p>The historical complex incorporating the existing buildings is in a fixed position with open space in front of the main house to create a vista and scale to the precinct. The neighbourhood centre is located on the main access road outside the estate to allow for public access.</p> <p>The undevelopable part of the site, due to the water course, vegetation and slopes, is preserved for nature conservation and is to be zoned Open Space III.</p> <p>The remainder of the site is earmarked for various residential components according to density and market demand.</p> <p>The nett density, after deducting the undevelopable portions, is 17,2 units per ha. It is considered the optimum density to achieve the desirable ambience and character of the neighbourhood within its natural and historical context.</p> <p>The street pattern allows for public access to the neighbourhood centre and the hotel facilities. The residential area will be managed as a private estate with controlled access.</p>	
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.	
Both layouts make provision for open spaces which will be cleared of alien invasive vegetation.	
<p>Positive impacts:</p> <ul style="list-style-type: none"> • Clearance of alien invasive vegetation and management of open spaces in Operational Phase. • Open Spaces (green spaces) <p>Negative impacts:</p> <ul style="list-style-type: none"> • Increased stormwater runoff from hardened surfaces. <p>Layout 1 (Preferred Alternative) will have a lesser impact on the watercourse HGM1.</p>	
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:	
<p><u>Energy Saving Measures</u></p> <p>The use of the following equipment will be mandatory:</p> <ul style="list-style-type: none"> • Water and sewage pumps to be supplied with energy efficient motors and vsd motor control. • Water heating to be done using gas or heat pumps. • Lighting to make use of LED lamps only. • Use of motion sensor lighting control. • Photovoltaic Systems will be encouraged. 	
Provide a description of any other technology alternatives investigated.	
Provide a motivation for the preferred technology alternative.	
Provide a detailed motivation if no alternatives exist.	
List the positive and negative impacts that the technology alternatives will have on the environment.	

1.5.	Operational alternatives to avoid negative impacts, mitigate unavoidable negative impacts and maximise positive impacts.
Provide a description of the preferred operational alternative.	
<p>Residential houses as per the proposed layout, Appendix B1.1, is the preferred operational alternative layout however both layout alternatives presented in this report have the same operational outcomes with the numbers of the housing units varying.</p> <p>The preferred alternative will provide more housing opportunities with greater variety. Additionally, the preferred alternative's greater costs to develop will benefit those involved in providing services, materials and labour. The preferred alternative, Appendix B1.1, will also mean that the potential impact on the watercourse lower than the initial proposal.</p>	
Provide a description of any other operational alternatives investigated.	
Provide a motivation for the preferred operational alternative.	
Provide a detailed motivation if no alternatives exist.	
List the positive and negative impacts that the operational alternatives will have on the environment.	
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.	
<p>The option of not implementing the activity means that the development will not be established and none of the impacts, positive or negative, associated with the construction and operation of the development will be experienced.</p> <p>Should the proposed development not take place and the site remain as is, the following disadvantages and advantages could be expected:</p> <p><u>Potential disadvantages:</u></p> <ul style="list-style-type: none"> • No construction phase employment opportunities would result. • Ineffective service delivery by local authority with undeveloped open space between multiple other developments. • Potential for undesirable activities impacting local authority and neighbouring residential developments. • Fire hazards. • No project related expenditure would take place; therefore, the anticipated capital investment would not result. • The property will not contribute to the increase in available housing units. • The site has already been completely transformed from its natural state. Also, it is unlikely that the ecological functioning of the property would improve substantially as a result of this alternative. <p><u>Potential advantages:</u></p> <ul style="list-style-type: none"> • No construction phase: therefore, no potential for any construction related nuisances (i.e., noise, visual disturbance, dust, heavy vehicles on the road, etc.). • The ecological functioning of the property could be improved, only if the site is rehabilitated (i.e., encouraged to re-vegetate with natural vegetation), all alien vegetation is removed on an ongoing basis and the natural areas are managed in the long term so that the indigenous plant species can return. However, the owner is not going to revegetate the farm with natural indigenous vegetation. <p>In light of the above, the No-Go Alternative is not considered favourable from a socio-economic point of view as no benefit would be gained for the local and district communities. It is unlikely that the developer or current landowner would rehabilitate and manage the site on an ongoing basis, without being able to generate any funds out of the property.</p> <p>It would also contribute to more land being developed elsewhere and eventually put more pressure on the urban edge.</p>	

1.7.	Provide an 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.
No other alternatives were investigated following the assessments of the specialists. The site is disturbed and transformed and according to the specialists, the development of the preferred layout will have a low impact on the natural environment of the site.	
1.8.	Provide a concluding statement indicating the preferred alternatives, including the preferred location of the activity.
The property is situated within the urban edge of George in a popular and growing neighbourhood. The property has no natural conservation value and the development of a residential estate with a heritage node will optimise the available vacant land within the urban edge of the City of George.	

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 No-Go Areas are indicated in figure 27 below. The yellow line indicates where the proposed pipeline will cross watercourse HGM1. It is very important that all proposed mitigation measures by the aquatic specialist be implemented to minimise any potential impacts on this area between the proposed no-go areas.	
All areas outside of the development footprint are considered no-go areas.	
 <p>Figure 27: Proposed No-Go Areas highlighted in red.</p>	

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 <i>Guideline on Impact Significance, Integrated Environmental Management Information Series 5</i> (Department of Environmental Affairs and Tourism (DEAT), 2002) and the <i>Guideline 5: Assessment of Alternatives and Impacts in Support of the Environmental Impact Assessment Regulations</i> (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.
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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

Please refer to the Freshwater Assessment (Appendix G2) for the detailed methodology used by the specialist.

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.

DEVELOPMENT/ CONSTRUCTION PHASE

Alternative:	Layout 1 (Preferred)	Layout 2	No-Go
CONSTRUCTION PHASE – DISTURBANCE OF AQUATIC HABITAT BIOTA *Please also refer to the impact tables in the Freshwater Assessment Report, pg 40 & 43 (Appendix G2.1)			
Potential impact and risk:	Construction of pipeline through watercourse, clearance of vegetation, earthworks on the riverbanks, and further invasive alien plant infestation.		
Nature of impact:	The disturbance or loss of aquatic vegetation and habitat refers to the direct physical destruction or disturbance which can result in further deterioration in freshwater ecosystem integrity, and a reduction in the supply of ecosystem services.		
Extent and duration of impact:	Site and Medium Term	Local and Medium Term	
Consequence of impact or risk:			
Probability of occurrence:	Highly Probable	Highly Probable	
Degree to which the impact may cause irreplaceable loss of resources:			
Degree to which the impact can be reversed:	Recoverable	Recoverable	
Indirect impacts:			
Cumulative impact prior to mitigation:			
Significance rating of impact prior to mitigation (e.g., Low, Medium, Medium-High, High, or Very-High)	Medium (-)	Medium (-)	
Degree to which the impact can be avoided:			
Degree to which the impact can be managed:			
Degree to which the impact can be mitigated:	Can be mitigated		
Proposed mitigation:	See below		
Residual impacts:			
Cumulative impact post mitigation:			
Significance rating of impact after mitigation (e.g., Low, Medium, Medium-High, High, or Very-High)	Low (-)	Low (-)	No Impact

Mitigation measures to reduce residual risk or enhance opportunities:

- A construction method statement must be compiled and available on site. It must consider the buffer zone and include methods to avoid unnecessary disturbance and prevent material being washed downslope into the river.
- The edges of the pipeline construction servitude, as well as the development area, relative to the aquatic habitat must be clearly staked-out and demarcated prior to construction commencing.
- Removal of vegetation must only be when essential for the continuation of the project. Do not allow any disturbance to the adjoining natural vegetation cover or soils.
- Access to and from the development area should be either via existing roads or within the construction servitude. Any contractor found working within No-Go areas must be fined as per fining schedule/system setup for the project.
- Following construction, it is important to stabilise any steep, bare areas on the slope and river banks via geotextiles and/or revegetation.
- It is the contractor's responsibility to continuously monitor the area for newly established alien species during the contract and establishment period, which if present must be removed. Removal of these species shall be undertaken in a way which prevents any damage to the remaining indigenous species and inhibits the re-infestation of the cleaned areas. Any use of herbicides in removing alien plant species is required to be investigated by the ECO before use.

- Where vegetation has been cleared in the buffer and open ground in the riparian area has resulted (i.e. where indigenous vegetation has been replaced by dense alien plant infestations or construction access routes), it is recommended that cover components be reinstated appropriately. Only indigenous species are to be considered.

Alternative:	Layout 1(Preferred)	Layout 2	No-Go
PLANNING, DESIGN AND DEVELOPMENT PHASE - CONSTRUCTION RELATED NUISANCES SUCH AS TRAFFIC, NOISE AND DUST:			
Potential impact and risk:	Typical construction phase impacts associated with the development are likely to be present, including increased traffic, elevated noise levels, dust and typical disturbances to the peace and quiet resulting from the site establishment activities and the presence of construction labourers. These nuisances would be of a temporary duration (i.e., for duration of the construction phase).		
Nature of impact:	Negative	No Impact	
Extent and duration of impact:	Local and Temporary		
Consequence of impact or risk:	Disturbance to surrounding landowners and general public		
Probability of occurrence:	Definite		
Degree to which the impact may cause irreplaceable loss of resources:	No loss of resources		
Degree to which the impact can be reversed:	Barely reversible		
Indirect impacts:	None		
Cumulative impact prior to mitigation:	Negligible- Impact only occurs during construction.		
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Medium		
Degree to which the impact can be avoided:	Unavoidable		
Degree to which the impact can be managed:	Medium		
Degree to which the impact can be mitigated:	Can be barely mitigated		
Proposed mitigation:	Dust <ul style="list-style-type: none">Dust suppression measures must be implemented when required.Exposed surfaces must be provided with suitable cover as soon as possible.Stockpiles must be protected from wind erosionVehicles travelling to/from the site must adhere to acceptable speed limits to prevent excessive generation of dust.Dust levels specified in the National Dust Control Regulations (GN 827 of November 2013) may not be exceeded (i.e., dust fall may not exceed 1200mg/m²/day). Noise <ul style="list-style-type: none">Construction should only be allowed during normal construction working hours.Workers moving to/from the site must be sensitised to keep noise to a minimum.Vehicles, machinery and other equipment must be kept in good working order.Loud music is not allowed on site.Construction workers must be educated on how to control noise generating activities that have the potential to become disturbances, particularly over an extended period of time.		

	<ul style="list-style-type: none"> Construction work must proceed efficiently, in a planned and well managed manner so as to limit the duration of the disturbance. Manual labour is preferred over the use of machinery. <p>Traffic</p> <ul style="list-style-type: none"> All construction vehicles need to adhere to traffic laws The speed of construction vehicles and other heavy vehicles must be strictly controlled to avoid dangerous conditions for other road users. As far as possible care must be taken to ensure that the local traffic flow pattern is not be too significantly disrupted and all vehicle operators therefore need to be educated in terms of "best-practice" operation to minimise unnecessary traffic congestion or dangers. <p>Adequate signage that is both informative and cautionary to passing traffic (motorists and pedestrians) warning them of the construction activities.</p>	
Residual impacts:	None	
Cumulative impact post mitigation:	Negligible	
Significance rating of impact after mitigation (e.g., Low, Medium, Medium-High, High, or Very-High)	Low	

Alternative:	Layout 1(Preferred)	Layout 2	No-Go
PLANNING, DESIGN AND DEVELOPMENT PHASE - CREATE TEMPORARY JOB OPPORTUNITIES			
Potential impact and risk:	A number of temporary job opportunities will be created during the construction phase of the development.		
Nature of impact:	Positive		No Impact- Unchanged economic situation of potential labourers
Extent and duration of impact:	Regional and Temporary		
Consequence of impact or risk:	Labourers which earn valuable income enabling them to provide food and other household necessities to their families.		
Probability of occurrence:	Definite		
Degree to which the impact may cause irreplaceable loss of resources:	No loss of resources		
Degree to which the impact can be reversed:	Irreversible		
Indirect impacts:	More spending by labourers within their community (e.g., spaza shops, etc.) will lead to economic growth in the local community.		
Cumulative impact prior to mitigation:	Medium		
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Medium-High (+)		
Degree to which the impact can be avoided:	N/A		
Degree to which the impact can be managed:			
Degree to which the impact can be mitigated:			
Proposed mitigation:			
Residual impacts:			
Cumulative impact post mitigation:			
Significance rating of impact after mitigation			

(e.g., Low, Medium, Medium-High, High, or Very-High)		
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Alternative:	Layout 1(Preferred)	Layout 2	No-Go
PLANNING, DESIGN AND DEVELOPMENT PHASE - CAPITAL EXPENDITURE			
Potential impact and risk:	Sourcing of building materials, supplies, contractors, and labourers will mainly be from the local and surrounding municipal areas. This will be to the benefit of the local businesses in the area.		
Nature of impact:	Positive	No Impact	
Extent and duration of impact:	Regional and Temporary		
Consequence of impact or risk:	Spending within the municipal area will lead to economic growth		
Probability of occurrence:	Definite		
Degree to which the impact may cause irreplaceable loss of resources:	No loss of resources		
Degree to which the impact can be reversed:	N/A		
Indirect impacts:	N/A		
Cumulative impact prior to mitigation:	N/A		
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Medium-High (+)		
Degree to which the impact can be avoided:	N/A		
Degree to which the impact can be managed:			
Degree to which the impact can be mitigated:			
Proposed mitigation:			
Residual impacts:			
Cumulative impact post mitigation:			
Significance rating of impact after mitigation (e.g., Low, Medium, Medium-High, High, or Very-High)			

Impact: Altered Landscape and Sense of Place during Construction		
Nature: The introduction of construction activities and infrastructure of the proposed project will temporarily alter the visual character of the landscape. The current landscape will be interspersed with construction materials and equipment. This could evoke feelings among local residents and visitors of a landscape in transition.		
	Before Mitigation	After Mitigation
Extent	Local (2)	Local (2)
Duration	Short-Term (2)	Short-Term (2)
Magnitude	Medium (6)	Low (4)
Probability	Definite (5)	Probable (3)
Significance	Medium (50)	Low (24)
Status: Negative - The construction phase will introduce temporary visual disturbances that could be perceived as out of harmony with the existing landscape.		
Reversibility:		

High - Post-construction, with proper landscaping and mitigation measures, the site can regain a semblance of its original character, although some permanent changes, will remain.
Irreplaceable loss of resources? No - While the landscape's visual character might be altered, with proper mitigation, there won't be an irreplaceable loss. However, care should be taken to ensure that no unique or endangered flora is affected during construction.
Can impacts be mitigated? – Yes
Mitigation Measures: <ul style="list-style-type: none"> • Use of Natural Colours and Materials: Use materials and colours that blend with the natural landscape for any temporary structures or construction materials. Mimic the texture and colours of the natural environment, where possible. • Vegetative Screens: At key points of sensitivity, indigenous vegetation around the construction site's perimeter may be planted to act as a natural screen, reducing the visual impact. • Localised Construction: Focus construction activities in smaller, localised areas rather than spreading out across the entire site simultaneously. This phased approach can reduce the overall visual disturbance at any given time. • Revegetation for Restoration: Post-construction, prioritise revegetation efforts, especially in areas where native grasslands were disturbed. This can help in restoring the site's original visual character. • Minimise Night-time Activities: Limit construction activities during the night to reduce light pollution, especially given the proximity to residential areas.
Cumulative Impact Medium - When combined with other existing infrastructure the cumulative visual impact during construction could be more pronounced. However, with mitigation measures in place, this can be managed.
Residual Risk Low - With the proposed mitigation measures, the residual visual impact during the construction phase is expected to be reduced. However, some temporary visual disturbances will be unavoidable.

Impact: Visibility of the Development for Residents during Construction		
Nature: Given the undulating terrain, construction activities can stand out prominently against the backdrop of the landscape. For residents, up to 1 km away, they would be watching a new residential development rise. The horizon might now be dotted with cranes, construction equipment, and the beginnings of the Pieterkoen Residential Development.		
	Before Mitigation	After Mitigation
Extent	Local (2)	Local (2)
Duration	Short-Term (2)	Short-Term (2)
Magnitude	Medium (6)	Low (4)
Probability	Definite (5)	Highly Probable (4)
Significance	Medium (50)	Medium (32)
Status: Negative - The visibility of construction activities could be perceived as a visual intrusion into the daily lives of nearby residents.		
Reversibility: Medium - While the construction activities are temporary, the mixed-use infrastructure, once erected, will be a permanent addition to the landscape. However, over time, residents might acclimatise to the new visual elements.		

<p>Irreplaceable loss of resources?</p> <p>No - The visual change does not result in the loss of any irreplaceable resources. However, the familiar visual character for residents might be altered.</p>
<p>Can impacts be mitigated? – Yes</p>
<p>Mitigation Measures</p> <ul style="list-style-type: none"> • Site Screening: Use natural topography, existing vegetation, or temporary screens to shield construction activities from viewers. Situate construction activities in lower-lying areas or behind hills. Use screens made of materials that blend with the natural environment. • Minimise Structure Heights: Keep temporary structure heights to a minimum to reduce their visibility, where possible. Use materials and colours that blend with the surrounding landscape. • Lighting Control: Minimise light pollution by directing lights downwards, using shields to prevent light spill, and turning off lights when not in use. • Strategic Placement: Where possible, prioritise the placement of taller construction equipment and initial construction materials in areas less visible to the majority of residents. • Vegetative Barriers: Enhance and fast-track the planting of native vegetation barriers, especially in areas facing major residential zones, to provide a natural screen. • Informational Signage: Erect informational signboards around the construction site, explaining the project's benefits and duration, to keep residents informed and manage perceptions. •
<p>Cumulative Impact</p> <p>Medium - The combined visual impact of the construction activities, along with existing structures could be more noticeable for residents. However, with mitigation measures, this cumulative impact can be managed.</p>
<p>Residual Risk</p> <p>Medium - Even with mitigation measures, the visibility of certain construction activities to residents will be evident. However, as the construction phase progresses and residents become more accustomed to the changes, the perceived impact would reduce.</p>

Impact: Dust and Noise Impact during Construction		
<p>Nature: The construction activities for the Pieterkoen Residential Development will inevitably disturb the soil, leading to potential dust generation. This dust can be carried by winds, affecting the immediate surroundings. Residents nearby might experience a temporary increase in dust levels. This could affect their daily activities, health, and overall quality of life. Additionally, the movement of construction vehicles, machinery operations, and groundwork can cause noise and vibrations, further adding to the disturbances experienced by nearby residents.</p>		
	Before Mitigation	After Mitigation
Extent	Local (2)	Site (1)
Duration	Short-Term (2)	Short-Term (2)
Magnitude	Medium (6)	Low (4)
Probability	Definite (5)	Highly Probable (4)
Significance	Medium (50)	Low (28)
Status:		

Negative - The dust and other disturbances from construction activities can be perceived as nuisances by nearby residents and can have potential health implications.
Reversibility: High - The dust and construction-related disturbances are temporary and will cease once construction is completed. The environment is expected to return to its pre-construction state in terms of dust levels.
Irreplaceable loss of resources? No - The dust and construction disturbances do not result in the loss of any irreplaceable resources. However, there might be a temporary decline in air quality and ambient noise levels.
Can impacts be mitigated? – Yes
Mitigation Measures <ul style="list-style-type: none"> • Dust Suppression: Regularly water down the construction site, especially during dry and windy conditions, to minimise dust generation. • Windbreaks: Install temporary windbreaks or barriers around the construction site to reduce the spread of dust, if required. • Vehicle Speed Limits: Implement strict speed limits for construction vehicles within the site to reduce dust kick-up. • Construction Scheduling: Schedule dust-generating activities for times when wind speeds are low or when wind direction is away from sensitive receptors, where possible. • Use of Dust Screens: Install dust screens or barriers around the construction site, particularly in areas close to sensitive receptors, to contain dust within the site, when required • Rehabilitation of Disturbed Areas: Promptly rehabilitate areas where construction activities have ceased. Re-vegetate with native species or suitable ground cover to stabilise the soil and reduce dust generation. • Regular Monitoring: Implement a monitoring program to assess the effectiveness of dust control measures. • Machinery Maintenance: Ensure construction machinery is well-maintained to minimise excessive noise and vibrations. • Work Hours: Restrict the noisiest construction activities to daytime hours and avoid work during early mornings, late evenings, or weekends when residents are more likely to be at home. •
Cumulative Impact Medium - The combined impact of dust, noise, and other construction-related disturbances, along with existing activities in the area, could be more noticeable for residents. However, with mitigation measures, this cumulative impact can be managed.
Residual Risk Low - With the proposed mitigation measures, the residual impact of dust and construction disturbances should be significantly reduced. However, occasional spikes in dust or noise might still be experienced during certain construction activities.

CONSTRUCTION AND OPERATIONAL PHASE

Alternative:	Layout 1 (Preferred)	Layout 2	No-Go
CONSTRUCTION AND OPERATION PHASE – CHANGES TO THE HYDROLOGICAL REGIME *Please also refer to the impact tables in the Freshwater Assessment Report, pg 41 & 43 (Appendix G2.1)			
Potential impact and risk:	Changes to the hydrological regime Any increase in hard surface areas and changes to the microtopography of the site, as a result of the development, will increase concentrated surface water runoff toward the streams and Swart River. Poor stormwater management could result in localised changes to flows (volume) that would result in form and function changes within aquatic habitat. The impact can result in further deterioration in freshwater ecosystem integrity, and a reduction in the supply of ecosystem services.		
Nature of impact:	Possible increase in surface water runoff/ patterns on form and function during the construction and into the operational phase, i.e., changes to the hydrological regime (Negative)		
Extent and duration of impact:	Local and Permanent	Local and Permanent	
Consequence of impact or risk:			
Probability of occurrence:	Probable	Highly Probable	
Degree to which the impact may cause irreplaceable loss of resources:			
Degree to which the impact can be reversed:	Recoverable	Irreversible	
Indirect impacts:			
Cumulative impact prior to mitigation:			
Significance rating of impact prior to mitigation (e.g., Low, Medium, Medium-High, High, or Very-High)	Medium (-)	Medium to High (-)	
Degree to which the impact can be avoided:			
Degree to which the impact can be managed:			
Degree to which the impact can be mitigated:	Can be mitigated		
Proposed mitigation:	See below		
Residual impacts:	Very low and acceptable, with adoption of mitigation measures and monitoring		
Cumulative impact post mitigation:			
Significance rating of impact after mitigation (e.g., Low, Medium, Medium-High, High, or Very-High)	Low (-)	Medium (-)	No Impact

Mitigation measures to reduce residual risk or enhance opportunities:

- Avoid multiple watercourse crossings and align pipeline crossings as close to each other as possible.
- Crossings must be constructed perpendicular to the natural direction of flow.
- Pipelines across watercourses should be buried at a sufficient depth below ground level such that the pipelines do not interfere with surface water movement or create obstructions where flows can cause erosion to initiate.
- A stormwater management plan must be developed in the preconstruction phase, detailing the stormwater structures and management interventions that must be installed to manage the changes to surface water flows.
- When developing a stormwater management plan for the site, it will be critical that due consideration is given to the collection and treatment of stormwater prior to discharge into the natural environment. It is therefore recommended that the stormwater management plan be developed with appropriate ecological input and be developed based on Sustainable Drainage Systems (SUDS). The SUDS systems

attempt to maintain or mimic the natural flow systems as well as prevent the wash-off of urban pollutants to receiving waters.

- Soft infrastructure must be considered where practical. For example, permeable surfaces can be done via permeable concrete block pavers (such as Amorflex), brick pavers, stone chip, and gravel and may contribute to slowing surface flows (especially if maintained). Baffles in the stormwater conduits are effective. Stormwater managed by the development could be discharged into porous channels / swales ('infiltration channels or basins') running near parallel or parallel to contours within and along the edge of the development. This will provide for some filtration and removal of urban pollutants (e.g. oils and hydrocarbons), provide some attenuation by increasing the time runoff takes to reach low points, and reduce the energy of storm water flows within the stormwater system through increased roughness when compared with pipes and concrete V-drains.
- The stormwater management infrastructure must be designed to ensure the runoff from the development is not highly contaminated or concentrated before entering the surrounding area. Any stormwater retention ponds or berms must be located outside of the buffer area.
- The adoption of the 30m aquatic buffer zone between the development infrastructure and HGM1.
- The volume and velocity of water must be reduced through discharging the surface flow at multiple locations surrounding the development.
- Effective stormwater management must include effective stabilisation (gabions and Reno mattresses) of exposed soil. Contingency plans must be in place for high rainfall events which may occur during construction.
- If flower/plant beds are to be established adjacent to hard surfaces, then these should be designed to receive storm water from hardened surfaces and should be planted with robust indigenous species that to contribute to storm water management objectives.
- Storm water should be harvested onsite from roofed surfaces thus reducing the quantity (volume) of water received by downstream water resources as surface flow.
- The project will need to comply with all regulations of the National Water Act (Act 36 of 1998), including the protection of downstream users, and minimise any potential ecological impacts upon water resources.

Alternative:	Layout 1(Preferred)	Layout 2	No-Go
CONSTRUCTION AND OPERATION PHASE – SEDIMENTATION AND EROSION			
*Please also refer to the impact tables in the Freshwater Assessment Report, pg 41 & 44 (Appendix G2.1)			
Potential impact and risk:	Concentrated stormwater flow paths and altered flow patterns causing increased erosion within the stream and sedimentation in the stream as the disturbed soils are carried by unmanaged surface runoff down slope. These impacts can result in the deterioration of aquatic ecosystem integrity and a reduction/loss of habitat for flora & fauna.		
Nature of impact:	Changes to hydrological regimes that could also lead to sedimentation and erosion, that could also occur in the operational phase		
Extent and duration of impact:	Regional and Permanent	Regional and Permanent	
Consequence of impact or risk:			
Probability of occurrence:	Highly probable	Highly Probable	
Degree to which the impact may cause irreplaceable loss of resources:			
Degree to which the impact can be reversed:	Recoverable	Recoverable	
Indirect impacts:			
Cumulative impact prior to mitigation:			
Significance rating of impact prior to mitigation (e.g., Low, Medium, Medium-High, High, or Very-High)	Medium (-)	Medium to High (-)	
Degree to which the impact can be avoided:			
Degree to which the impact can be managed:			

Degree to which the impact can be mitigated:	Can be mitigated		
Proposed mitigation:	See below		
Residual impacts:			
Cumulative impact post mitigation:			
Significance rating of impact after mitigation (e.g., Low, Medium, Medium-High, High, or Very-High)	Low (-)	Medium (-)	No Impact

Mitigation measures to reduce residual risk or enhance opportunities:

- A stormwater management plan must be developed in the preconstruction phase, detailing the stormwater structures and management interventions that must be installed to manage the increase of surface water flows directly into any natural systems. The stormwater management infrastructure must be designed to ensure the runoff from the development is not contaminated before entering the surrounding area. The volume and velocity of water must be reduced through discharging the surface flow at multiple locations surrounding the development. Effective stormwater management must include effective stabilisation of exposed soil.
- Sedimentation must be minimised with appropriate measures. Any construction causing bare slopes and surfaces to be exposed to the elements must include measures to protect against erosion using covers, silt fences, sandbags, earthen berms etc.
- 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. Even in the operational phase, measures to contain impacts caused during high rainfall events must be planned for and available for use.
- A rehabilitation plan must be compiled with the assistance of a botanist to ensure that the buffer area is revegetated with indigenous plant species in the correct manner. The area must be maintained through alien invasive plant species removal (which is the landowner's responsibility regardless of mitigation associated with this project) and the establishment of indigenous vegetation cover to filter run-off before it enters the aquatic habitat.
- Stormwater infrastructure must be inspected at least once every year (before the onset of rains) to ensure that it is working efficiently. Any evidence of erosion from this stormwater system must be rehabilitated and the volume/velocity of the water reduced through further structures and/or energy dissipaters.
- Construction of the pipeline should preferably be done during the drier months when the water quality impacts from the construction activities may impact on the downslope watercourses. Measures to contain impacts caused during high rainfall events (such as substantial sedimentation and/or erosion) must be planned for and available for use.
- Before any work commences, sediment control/silt capture measures (e.g. bidim/silt curtains) must be installed downstream/downslope of the active working areas. Silt fences/curtains must be regularly checked and maintained (de-silted to ensure continued capacity to trap silt) and repaired where necessary. When de-silting takes place the silt must not be returned to the watercourse.

Alternative:	Layout 1(Preferred)	Layout 2	No-Go
CONSTRUCTION AND OPERATION PHASE – CHANGES TO SURFACE WATER QUALITY			
*Please also refer to the impact tables in the Freshwater Assessment Report, pg 37 (Appendix G2.1)			
Potential impact and risk:	During all phases of the project there is potential for surface runoff to be contaminated and enter the watercourses, especially during flood events. During construction, earthworks will expose and mobilise earth materials, and a number of materials as well as chemicals will be imported and used on site and may end up in the surface water, including soaps, oils, grease and fuels, human wastes, cementitious wastes, paints and solvents, etc. In the operational phase, hydrocarbons and chemicals could potentially enter the watercourses. If not prevented, litter, and contaminants, including sand, silt, and dirt particles, will enter storm water runoff and pollute the watercourse.		

	Micro-litter such as cigarette butts may travel through certain stormwater grids and grids may not be regularly cleared. This can result in possible deterioration in aquatic ecosystem integrity and species diversity.		
Nature of impact:	Potential impact on localised surface water quality (indirect)		
Extent and duration of impact:	Regional and Long Term	Regional and Permanent	
Consequence of impact or risk:			
Probability of occurrence:	Probable	Highly Probable	
Degree to which the impact may cause irreplaceable loss of resources:			
Degree to which the impact can be reversed:	Recoverable	Recoverable	
Indirect impacts:			
Cumulative impact prior to mitigation:			
Significance rating of impact prior to mitigation (e.g., Low, Medium, Medium-High, High, or Very-High)	Medium (-)	Medium (-)	
Degree to which the impact can be avoided:			
Degree to which the impact can be managed:			
Degree to which the impact can be mitigated:	Can be mitigated		
Proposed mitigation:	See below		
Residual impacts:	Low risk and acceptable, with adoption of mitigation measures and monitoring		
Cumulative impact post mitigation:			
Significance rating of impact after mitigation (e.g., Low, Medium, Medium-High, High, or Very-High)	Low (-)	Low (-)	No Impact

Mitigation measures to reduce residual risk or enhance opportunities:

- A stormwater management plan must be developed for the site.
- The Department of Water regional office should be notified, as soon as possible, of any significant chemical spill or leakage to the environment where there is the potential to contaminate surface water or groundwater.
- Stormwater exit points must include a best management practice approach to trap any additional suspended solids and pollutants originating from the proposed development. Also include the placement of stormwater grates (or similar). The use of grease traps/oil separators to prevent pollutants from entering the environment from stormwater is recommended. To ensure the efficiency of these, they must be regularly maintained.
- Inlet protection measures to capture solid waste and debris entrained in storm water entering the storm water management system (inlet protection devices) will be incorporated into the design of the system and could include the use of either curb inlet/inlet drain grates and/or debris baskets/bags. It is also important to note that storm water infrastructure will likely require regular on-going maintenance in the form of silt, debris/litter clearing in order to ensure their optimal functioning.

Alternative:	Layout 1(Preferred)	Layout 2	No-Go
CUMULATIVE IMPACT ASSESSMENT FOR AQUATIC BIODIVERSITY			
*Please also refer to the impact tables in the Freshwater Assessment Report, pg 42 & 45 (Appendix G2.1)			
Description of Cumulative Impact:	Increased urban development is changing the hydrology of the catchment. However, this development in the context of the surrounding developments, is unlikely to change the overall outcome. Rehabilitation of the drainage areas as part of the development open space system could improve riparian habitats that are currently unmanaged and degraded. The mitigation proposed will ensure that the form and or function of downstream areas remain intact.		
Nature of impact:	Negative	Negative	
Extent and duration of impact:	Regional and Permanent	Regional and Permanent	
Consequence of impact or risk:			
Probability of occurrence:	Probable	Probable	
Degree to which the impact may cause irreplaceable loss of resources:			
Degree to which the impact can be reversed:	Recoverable	Irreversibility	
Indirect impacts:			
Cumulative impact prior to mitigation:			
Significance rating of impact prior to mitigation (e.g., Low, Medium, Medium-High, High, or Very-High)	Medium (-)	Medium (-)	
Degree to which the impact can be avoided:			
Degree to which the impact can be managed:			
Degree to which the impact can be mitigated:	N/A	N/A	
Proposed mitigation:			
Residual impacts:			
Cumulative impact post mitigation:			
Significance rating of impact after mitigation (e.g., Low, Medium, Medium-High, High, or Very-High)	Low (-)	Low (-)	No Impact

OPERATIONAL PHASE

Alternative	Layout 1(Preferred)	Layout 2	No-Go
OPERATIONAL PHASE - AVAILABILITY OF HOUSING WITHIN THE URBAN EDGE OF THE GEORGE MUNICIPALITY			
Potential impact and risk:	The proposed development will increase the amount of housing within the urban edge of the George Municipality. The property has been earmarked for residential development in the municipal SDF.		
Nature of impact:	Positive	Negative	
Extent and duration of impact:	Site Specific and Long Term	Regional and Long Term	
Consequence of impact or risk:	The available space within the urban edge is utilised.		
Probability of occurrence:	Definite		
Degree to which the impact may cause irreplaceable loss of resources:	No loss of resources	Marginal loss of resources	
Degree to which the impact can be reversed:	Irreversible	Irreversible	
Indirect impacts:			
Cumulative impact prior to mitigation:	High- The market offering of housing is expanded, which would in turn motivate spending within the municipality, due to increased resident's number.	High- Unplanned development outside of the urban edge, or within the adapted	

		urban edge can cause various problems such as urban fragmentation and service delivery issues.
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Medium	Medium-High (-)
Degree to which the impact can be avoided:	Unavoidable	
Degree to which the impact can be managed:	High	
Degree to which the impact can be mitigated:	Not able to mitigate	
Proposed mitigation:	Not applicable	Development should only be allowed and managed within the current urban edge.
Residual impacts:		
Cumulative impact post mitigation:		
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)		

Impact: Altered Landscape and Sense of Place during Operation		
Nature: The operational phase of the Pieterkoen Residential Development will introduce a new visual element to the landscape. The presence of this mixed-use infrastructure can alter the visual harmony and the intrinsic sense of place that residents and visitors associate with the area. The facility will become a permanent feature in the landscape, potentially influencing how the area is perceived and experienced.		
	Before Mitigation	After Mitigation
Extent	Local (2)	Local (2)
Duration	Long-Term (4)	Long-Term (4)
Magnitude	Medium (5)	Low (3)
Probability	Highly Probable (4)	Probable (3)
Significance	Medium (44)	Low (27)
Status: Negative - The transformation of the landscape due to the presence of residential infrastructure can be perceived as a visual intrusion by some, especially those who value the natural aesthetics of the region.		
Reversibility: Low - While the landscape alteration is long-term during the facility's operational phase, if it is decommissioned, there's potential for the land to be restored to a more natural state, albeit with some lasting changes.		
Irreplaceable loss of resources? No - The sense of place is subjective and can evolve over time. While the landscape's visual character changes, no tangible resources are irrevocably lost.		
Can impacts be mitigated? – Yes		
Mitigation Measures <ul style="list-style-type: none"> Vegetative Screening: Plant indigenous trees and shrubs intermittently along site boundaries, where required. Landscape Integration: Use materials, textures, and colours that reflect the local architectural styles to harmonise with the surrounding environment and maintain a sense of place. 		

<ul style="list-style-type: none"> Lighting Control: Employ downward-facing, low-glare lighting systems with motion sensors to minimise light pollution and preserve the area's nighttime character. Seasonal Landscaping Maintenance: Implement an ongoing maintenance program to ensure that the landscaped areas remain in good condition, reflecting seasonal changes and preventing visual degradation.
Cumulative Impact <p>Medium - The facility, in combination with other developments and infrastructure in the area, contributes to a changing landscape character. However, with mitigation measures, the cumulative visual impact can be managed.</p>
Residual Risk <p>Low - With the proposed mitigation measures, the residual impact on the landscape and sense of place would be reduced. However, the presence of the developments will still be a noticeable change in the landscape during its operational phase.</p>

Impact: Visibility of the Facility to Residents during Operation		
Nature: During the operational phase, the Pieterkoen Residential Development will become a prominent feature in the landscape. Residents of nearby areas will have varying degrees of visibility of the development. This increased visibility can influence residents' daily visual experience, potentially altering their sense of place and connection to the landscape.		
	Before Mitigation	After Mitigation
Extent	Local (2)	Local (2)
Duration	Long-Term (4)	Long-Term (4)
Magnitude	Medium (6)	Low (4)
Probability	Definite (5)	Probable (3)
Significance	High (60)	Medium (30)
Status: <p>Negative - For residents who value the landscape, the visibility of the development can be perceived as a visual intrusion.</p>		
Reversibility: <p>Low - The visual impact is persistent during the development's operational phase. However, if decommissioned, and if the land is restored, the visibility factor can be reversed to a large extent.</p>		
Irreplaceable loss of resources? <p>No - While the visual character of the area changes, there's no permanent loss of tangible resources. The sense of place, though altered, can evolve and adapt over time.</p>		
Can impacts be mitigated? – Yes		
Mitigation Measures <ul style="list-style-type: none"> Vegetative Buffers: Plant indigenous vegetation along site boundaries adjacent to residential areas to reduce direct visibility of infrastructure and enhance visual screening. Architectural Integration: Utilise materials and colours that complement the local landscape, minimising visual contrast and promoting architectural harmony. Lighting Control: Employ downward-facing, low-glare lighting systems with motion sensors to minimise light pollution and preserve the area's nighttime character. 		
Cumulative Impact <p>Medium - The facility's visibility, combined with other infrastructural elements in the area, contributes to a changing visual landscape. However, with mitigation measures in place, the cumulative visual impact can be moderated.</p>		

Residual Risk Medium - Implementing the proposed mitigation measures should reduce the facility's visibility impact on residents.		
<ul style="list-style-type: none"> • Impact: Potential Visual Impact of Operational, Lighting during Operation 		
<ul style="list-style-type: none"> • Nature: Operational lighting is essential for the Pieterkoen Residential Development to ensure safe and efficient operations, especially during nighttime hours. However, this lighting can introduce a new source of light in the area, potentially causing light pollution. 		
	Before Mitigation	After Mitigation
Extent	Local (2)	Local (2)
Duration	Long-Term (4)	Long-Term (4)
Magnitude	Moderate (6)	Low (4)
Probability	Highly Probable (4)	Probable (3)
Significance	Medium (48)	Medium (30)
Status: Negative - The introduction of artificial lighting can be perceived as a visual disturbance, especially if it contrasts starkly with the existing ambient light levels.		
Reversibility: Medium - The impact is directly tied to the operational phase. If the facility is decommissioned or lighting practices are modified, the impact can be reversed.		
Irreplaceable loss of resources? No - While the night-time visual character might change, there's no permanent loss of resources. However, the natural night sky, if significantly affected, can be considered a non-renewable resource in the context of the project's lifespan.		
Can impacts be mitigated? – Yes		
Mitigation Measures <ul style="list-style-type: none"> • Downward-facing Lights: Use fixtures that direct light downwards to minimise upward light spill, preserving the night sky. • Motion Sensors: Install motion sensors so that lights are only activated when necessary, reducing the duration of light emissions. • Low-intensity Lighting: Opt for low-intensity lighting that provides sufficient illumination for safety without being overly bright. • Shielding: Use shields on lights to direct illumination to the intended areas and prevent light spill into unintended areas. • Educate Staff: Ensure that staff are aware of the importance of minimising light pollution and are trained to use lighting efficiently. • Periodic Reviews: Conduct periodic reviews of lighting practices to identify and rectify any unnecessary light emissions. 		
Cumulative Impact Medium - The facility's lighting, when combined with other light sources in the area could contribute to an overall increase in light pollution. However, with effective mitigation, this cumulative impact can be managed.		
Residual Risk		

Low - With the proposed mitigation measures in place, the residual risk of significant light pollution from the facility should be reduced. Some localised light spill might still occur, but its impact should be limited.

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.

The table below summarises the potential Impacts associated with the proposed development post mitigation. Please refer to the Section I (2) for the proposed mitigation measures to ensure the corresponding rating post mitigation.

Impact	Layout 1(Preferred)	Layout 2	No-Go
Construction Phase			
Disturbance of aquatic habitat biota	Low (-)	Low (-)	No Impact
Construction related nuisances such as traffic, noise and dust	Low (-)	Low (-)	No Impact
Temporary job creation	Medium – High (+)	Medium – High (+)	No Impact
Capital Expenditure	Medium – High (+)	Medium – High (+)	No Impact
Altered Landscape and Sense of Place	Low (-)	Low (-)	No Impact
Visibility of the Development for Residents	Medium (-)	Medium (-)	No Impact
Construction and Operational Phase			
Changes to the hydrological regime	Low (-)	Medium (-)	No Impact
Sedimentation and Erosion	Low (-)	Medium (-)	No Impact
Changes to surface water quality	Low (-)	Low (-)	No Impact
Cumulative Impact - Aquatic	Low (-)	Low (-)	No Impact
Operational Phase			
Availability of housing within the urban edge of George Municipality	Medium (+)	Medium (+)	Medium – High (-)
Permanent jobs	Medium (+)	Medium (+)	Medium – High (-)
Provision of housing	Medium (+)	Medium (+)	Medium – High (-)
Altered Landscape and Sense of Place	Low (-)	Low (-)	No Impact
Visibility of the Development for Residents	Medium (-)	Medium (-)	No Impact

Botanical Assessment, Appendix G1:

It is the specialist's opinion that the site is significantly transformed/degraded, with the chance of rehabilitation slim.

Due to the highly transformed state of the site and a high presence of invasive aliens, the impact posed by the development on terrestrial biodiversity is expected to be of low significance. Although the proposed development encroaches significantly onto an ESA and ESA2, it is not expected to impact on the functionality of the biodiversity network for the reason(s) mentioned in the report. Obviously, the situation can be improved by clearing all the aliens and keeping it clear. This will be a challenging and expensive task given the alien seedbanks. The steeper (>1:4) slopes on the northern side and non-perennial watercourse in the north-eastern corner will not be developed. This may allow for the

establishment of suitable fynbos and Afrotemperate Forest species in this area once the aliens are cleared.

In the case of the site not being developed (no-go alternative), it will still need to be cleared of the invasive aliens which present a high fire risk, especially the black wattle, blackwood and gums. In addition, a firebreak (to be determined by a fire safety specialist) must be maintained around the property. This will aid in safeguarding the property and adjacent properties from wildfires. As stated earlier, it is a legal requirement for the landowner(s) to clear/control the invasive aliens on their land.

The impact on plant species, including potential SCC and protected tree species, is also expected to be of little significance or concern. All the recorded species are common and widespread. The only gap in the information provided above is the possible presence of spring flowering bulbs, which may include threatened or sensitive species. This can only be ascertained during a spring survey. *Afrocarpus falcatus*, a protected tree species, has been planted in the garden next to the dwellings, as well as few along the southern boundary. With careful design, these can be incorporated in the development. Since they were planted, it is uncertain if a permit is needed for their removal.

The trees were planted by the Branford family, and they wish to relocate the trees (where possible) to the group housing site (Portion G, figure 27) which they plan to develop for themselves. It is proposed to replant the yellow woods on Portion G prior to site works commencing.

The probability of SCC listed in the Screening Report to occur in the vicinity of the site is indicated in Table 1. Given their habitat preferences, only one species has a medium probability of occurring here, namely sensitive species 1081 (EN). It has been recorded in a similar habitat 500 m west of the site. Those with a low-medium probability to occur on site have been recorded in similar habitats elsewhere in the George area. However, there are no known (iNaturalist) records of these species within a 500 m radius from the site.

Table 1: Threatened plant species as listed in the Screening Report.

Sensitivity	Feature(s)	Habitat & probability of presence
Medium	<i>Lampranthus pauciflorus</i> (EN)	Rocky coastal slopes; Low
Medium	<i>Leucospermum glabrum</i> (EN)	Moist lower slopes; Low
Medium	<i>Selago burchellii</i> (VU)	Coastal slopes and flats; Low-med
Medium	Sensitive species 1081 (EN)	Clay soils; Med
Medium	Sensitive species 1032 (VU)	Dunes close to the shoreline; Low
Medium	Sensitive species 1024 (EN)	Dry to moist stony slopes; Low-med
Medium	Sensitive species 980 (EN)	Clay flats and low slopes; Low
Medium	Sensitive species 800 (VU)	Calcareous sands and limestone; Low
Medium	Sensitive species 763 (VU)	Coastal renosterveld and fynbos; Low-med
Medium	Sensitive species 500 (EN)	Recent sand; Low
Medium	Sensitive species 419 (VU)	Damp sandstone slopes in coastal fynbos; Low
Medium	<i>Diosma passerinoides</i> (VU)	Silcrete slopes; Low

The identified construction and operational phase impacts are as follows:

Construction Phase

➤ No significant impact identified.

Operational phase

➤ Increased alien infestation and fire risk, unless an alien clearance plan is drawn up and implemented.

The cumulative botanical impact of the project is expected to be equivalent to the impact on terrestrial biodiversity described above. In this instance, the loss of biodiversity and resultant cumulative impact is considered small (acceptable) due to the transformed state of the site.

Recommended Mitigation Measures

The following mitigation measures are required to ensure that the impact on terrestrial biodiversity and plant species is minimised:

- Draw up and implement an invasive plant clearance programme. As part of this plan, a fire break needs to be maintained around the site.
- As a duty of care measure, indigenous bulb species (if present) can be searched and rescued to be replanted in the allocated open space area in the north-eastern corner of site.

Freshwater Assessment, Appendix G2.1:

POTENTIAL IMPACTS

Aquatic ecosystems are particularly vulnerable to human activities and these activities can often result in irreversible damage or longer term, cumulative changes. The significance of an impact to the environment or ecosystem can only be assessed in terms of the change to ecosystem services, resources and biodiversity value associated with that system or component being assessed. The approach adopted is to identify and predict all potential direct and indirect impacts resulting from an activity from planning to rehabilitation. Thereafter, the impact significance is determined.

The direct and indirect impacts associated with the project are grouped into four encapsulating impact categories where associated or interlinked impacts are grouped. Therefore, the potential impacts assessed include:

- Impact 1: disturbance to aquatic habitat and biota during construction
- Impact 2: Increased surface water runoff and stormwater flow patterns on form and function during the construction and into the operational phase, i.e. changes to the hydrological regime
- Impact 3: Changes to hydrological regime that could also lead to sedimentation and erosion, which could also occur in the operational phase
- Impact 4: Potential impact on localised surface water quality
- Impact 5: Cumulative impacts on the aquatic resources of the area, such as the Swart River downstream

There are no impacts associated with the No Go Alternative. Adherence to a buffer area, and a stormwater management plan with SUDS, will protect aquatic habitat from the majority of potential impacts detailed below.

1. Aquatic habitat Disturbance

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. During construction the pipeline installation within the watercourse will necessitate the clearance of vegetation along the route, and earthworks on the riverbanks. Invasive alien plants will colonise any disturbed areas which are not rehabilitated and 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.

Mitigation measures to reduce residual risk:

- A construction method statement must be compiled and available on site. It must consider the buffer zone and include methods to avoid unnecessary disturbance and prevent material being washed downslope into the river.
- The edges of the pipeline construction servitude, as well as the development area, relative to the aquatic habitat must be clearly staked-out and demarcated prior to construction commencing.
- Removal of vegetation must only be when essential for the continuation of the project. Do not allow any disturbance to the adjoining natural vegetation cover or soils.
- Access to and from the development area should be either via existing roads or within the construction servitude. Any contractor found working within No-Go areas must be fined as per fining schedule/system setup for the project.
- Following construction, it is important to stabilise any steep, bare areas on the slope and river banks via geotextiles and/or revegetation.
- It is the contractor's responsibility to continuously monitor the area for newly established alien species during the contract and establishment period, which if present must be removed. Removal of these species shall be undertaken in a way which prevents any damage to the remaining indigenous species and inhibits the re-infestation of the cleaned areas. Any use of herbicides in removing alien plant species is required to be investigated by the ECO before use.
- Where vegetation has been cleared in the buffer and open ground in the riparian area has resulted (i.e. where indigenous vegetation has been replaced by dense alien plant infestations or construction access routes), it is recommended that cover components be reinstated appropriately. Only indigenous species are to be considered.

2. Hydrological Changes

The project can potentially result in changes in the quantity, timing and distribution of water inputs and flows within the downslope watercourses. Hardened/artificial infrastructure will alter the natural processes of rainwater infiltration and surface runoff, promoting increased volumes and velocities of storm water runoff, which can be detrimental to the rivers receiving concentrated flows from the area. According to the SANRAL (2006), urbanisation typically increases the runoff rate by 20 -50%, compared with natural conditions. Increased volumes and velocities of storm water draining from the development and discharging into down-slope watercourses can alter the natural ecology of the systems, increasing the risk of erosion and channel incision/scouring. Stormwater management during operation will be critical in ensuring that runoff characteristics mimic the natural scenario and do not lead to increased floodpeaks and flow velocities which could lead to increased erosion and sedimentation risks that could potentially affect the downstream system.

Mitigation measures to reduce residual risk:

- Avoid multiple watercourse crossings and align pipeline crossings as close to each other as possible.
- Crossings must be constructed perpendicular to the natural direction of flow.
- Pipelines across watercourses should be buried at a sufficient depth below ground level such that the pipelines do not interfere with surface water movement or create obstructions where flows can cause erosion to initiate.
- A stormwater management plan must be developed in the preconstruction phase, detailing the stormwater structures and management interventions that must be installed to manage the changes to surface water flows.
- When developing a stormwater management plan for the site, it will be critical that due consideration is given to the collection and treatment of stormwater prior to discharge into the natural environment. It is therefore recommended that the stormwater management plan be developed with appropriate ecological input and be developed based on Sustainable Drainage Systems (SUDS). The SUDS systems attempt to maintain or mimic the natural flow systems as well as prevent the wash-off of urban pollutants to receiving waters.
- Soft infrastructure must be considered where practical. For example, permeable surfaces can be done via permeable concrete block pavers (such as Amorflex), brick pavers, stone chip, and gravel and may contribute to slowing surface flows (especially if maintained). Baffles in the

stormwater conduits are effective. Stormwater managed by the development could be discharged into porous channels / swales ('infiltration channels or basins') running near parallel or parallel to contours within and along the edge of the development. This will provide for some filtration and removal of urban pollutants (e.g. oils and hydrocarbons), provide some attenuation by increasing the time runoff takes to reach low points, and reduce the energy of storm water flows within the stormwater system through increased roughness when compared with pipes and concrete V-drains.

- The stormwater management infrastructure must be designed to ensure the runoff from the development is not highly contaminated or concentrated before entering the surrounding area. Any stormwater retention ponds or berms must be located outside of the buffer area.
- The adoption of the 30m aquatic buffer zone between the development infrastructure and HGM1.
- The volume and velocity of water must be reduced through discharging the surface flow at multiple locations surrounding the development.
- Effective stormwater management must include effective stabilisation (gabions and Reno mattresses) of exposed soil. Contingency plans must be in place for high rainfall events which may occur during construction.
- If flower/plant beds are to be established adjacent to hard surfaces, then these should be designed to receive storm water from hardened surfaces and should be planted with robust indigenous species that to contribute to storm water management objectives.
- Storm water should be harvested onsite from roofed surfaces thus reducing the quantity (volume) of water received by downstream water resources as surface flow.
- Monitoring of the project activities is essential to ensure the mitigation measures are implemented. Compliance with the mitigation recommendations must be audited by a suitably qualified independent Environmental Control Officer with an appropriately timed audit report.

3. Erosion and Sedimentation

During construction, the project will require a large area of vegetation on the property to be cleared resulting in soil disturbance and cover changes in the catchment. Vegetation clearing and exposure of bare soils 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. Ineffective site stormwater management, particularly in periods of high runoff, can lead to soil erosion from confined flows. Formation of rills and gullies from increased concentrated runoff. 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 development project and continue to have a negative impact on downstream water resources in the study area.

The construction activities associated with burying the sewage and water pipelines through the watercourse can result in sedimentation downstream if not mitigated against. During operation, if the pipeline crossing is not stabilised and rehabilitated, a change in channel morphology can cause erosion directly downslope of the structure.

During the operational phase, the increase in hardened surface by the development can result in further erosion/sedimentation in the watercourses downslope. Surface runoff and velocities will be increased, and flows may be concentrated by stormwater infrastructure. The project may also promote the establishment of disturbance-tolerant biota, including colonization by invasive alien species, weeds and pioneer plants within the remaining habitat. Although this impact is initiated during the construction phase it is likely to persist into the operational phase.

Mitigation measures to reduce residual risk:

- A stormwater management plan must be developed in the preconstruction phase, detailing the stormwater structures and management interventions that must be installed to manage the increase of surface water flows directly into any natural systems. The stormwater management infrastructure must be designed to ensure the runoff from the development is not contaminated

before entering the surrounding area. The volume and velocity of water must be reduced through discharging the surface flow at multiple locations surrounding the development. Effective stormwater management must include effective stabilisation of exposed soil.

- Sedimentation must be minimised with appropriate measures. Any construction causing bare slopes and surfaces to be exposed to the elements must include measures to protect against erosion using covers, silt fences, sandbags, earthen berms etc.
- 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. Even in the operational phase, measures to contain impacts caused during high rainfall events must be planned for and available for use.
- A rehabilitation plan must be compiled with the assistance of a botanist to ensure that the buffer area is revegetated with indigenous plant species in the correct manner. The area must be maintained through alien invasive plant species removal (which is the landowner's responsibility regardless of mitigation associated with this project) and the establishment of indigenous vegetation cover to filter run-off before it enters the aquatic habitat.
- Stormwater infrastructure must be inspected at least once every year (before the onset of rains) to ensure that it is working efficiently. Any evidence of erosion from this stormwater system must be rehabilitated and the volume/velocity of the water reduced through further structures and/or energy dissipaters.
- Construction of the pipeline should preferably be done during the drier months when the water quality impacts from the construction activities may impact on the downslope watercourses. Measures to contain impacts caused during high rainfall events (such as substantial sedimentation and/or erosion) must be planned for and available for use.
- Before any work commences, sediment control/silt capture measures (e.g., bidim/silt curtains) must be installed downstream/downslope of the active working areas. Silt fences/curtains must be regularly checked and maintained (de-silted to ensure continued capacity to trap silt) and repaired where necessary. When de-silting takes place, the silt must not be returned to the watercourse.

4. Water Quality

During construction there are a number of potential pollution inputs into the aquatic systems (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. Hydrocarbons including petrol/diesel and oils/grease/lubricants associated with construction activities (machinery, maintenance, storage, handling) may potentially enter the nearby watercourse by means of surface runoff or through dumping by construction workers.

In the operational phase, stormwater runoff from developed surfaces may include nutrients, pollutants, raw sewage, and other domestic waste. The establishment of sewage infrastructure in close proximity to watercourses always poses a long-term threat to the water quality and ecological health of aquatic ecosystems due to the relatively high likelihood that surcharge events will occur at some point in the future. A complete shift in the structure and composition of aquatic biotic communities is the result, as well as a general degradation in water resource quality that could have negative impacts to human users. Over the lifetime of the development, surcharge events and/or pipe leakages will likely occur and as a result some pollution as a result of sewerage infrastructure is probable. Mitigation measures must be put in place to reduce the intensity of pollution events and ultimately reduce pollutant loads. If contaminated stormwater runoff or sewage enters the Swart River, it can lead to eutrophication, excess plant growth causing changes to community dynamics, hypoxia (oxygen depletion) as well as inhibit the growth of bacteria that play an important role in removing nitrogen from water. Additionally, if not prevented, litter, and contaminants, including sand, silt, and dirt particles, will enter storm water runoff and can pollute the downslope watercourses. Micro-litter such as cigarette butts may travel through certain stormwater grids and grids may not be regularly cleared.

Mitigation measures to reduce residual risk:

- A stormwater management plan must be developed for the site.
- Reasonable measures must be taken to provide back-up for mechanical, electrical, operational or process failure and malfunction at pump stations. At a minimum there should be an alarm system to warn of an electrical failure and sufficient standby equipment to provide for reasonable assurance that the infrastructure can be fully functional within at least 24 hours. Emergency power shall be provided that will prevent overflows from occurring during any power outage. Installing permanent generators at each station is strongly advised.
- Pump stations will need to be placed within a suitably lined, impermeable concrete bunded area with the capacity to hold untreated waste water in an emergency and provide for sufficient time for maintenance staff to address any faults/ problems. This is to limit the risk of untreated sewage overflowing in the event of any leakage or accidental spillage at the pump station.
- The Department of Water and Sanitation's regional office should be notified, as soon as possible, of any significant chemical spill or leakage to the environment where there is the potential to contaminate surface water or groundwater.
- Stormwater exit points must include a best management practice approach to trap any additional suspended solids and pollutants originating from the proposed development. Also include the placement of stormwater grates (or similar). The use of grease traps/oil separators to prevent pollutants from entering the environment from stormwater is recommended. To ensure the efficiency of these, they must be regularly maintained.
- Inlet protection measures to capture solid waste and debris entrained in storm water entering the storm water management system (inlet protection devices) will be incorporated into the design of the system and could include the use of either curb inlet/inlet drain grates and/or debris baskets/bags. It is also important to note that storm water infrastructure will likely require regular on-going maintenance in the form of silt, debris/litter clearing in order to ensure their optimal functioning.
- It is also important to note that storm water infrastructure will likely require regular on-going maintenance in the form of silt, debris/litter clearing in order to ensure their optimal functioning.

5. Cumulative Impacts

Cumulative impacts on the environment can result from broader, long-term changes and not only as a result of a single activity. They are rather from the combined effects of many activities overtime. In relation to an activity, cumulative impact means "the past, current and reasonably foreseeable future impact of an activity, considered together with the impact of activities associated with that activity, that in itself may not be significant, but may be significant when added to the existing and reasonably foreseeable impacts eventuating from similar or diverse activities" (NEMA EIA Reg GN R982 of 2014).

Rivers are longitudinal systems where different reaches interact in a continuum along the length of the river. Activities in the upper reaches influence the processes of the lower reaches and it must therefore be viewed as a whole. Watercourses are set apart from many other ecosystem types by the degree to which they integrate with and are influenced by the surrounding landscape, or catchment. The physical, chemical and biological characteristics of any river are determined almost entirely by the nature of its catchment and the activities, human and natural, that take place in it (Davies and Day 1998). Widespread land use conversion at a catchment scale can dramatically alter the flow rates, water quality and sediment regimes of watercourses.

The properties on the southern side of Glenwood Avenue are largely already developed into residential estates, such as that which is proposed. The undeveloped farms surrounding the area, as well as the Garden Route Dam property to the north, are all earmarked for similar urban development. Cumulatively the impact of these residential estates upon surface water has been significant. However, these properties are all within the urban edge and each development is responsible for managing stormwater runoff appropriately. Since all the surrounding properties are developed or authorised for development, the location of this development is logical and must be viewed within a strategic context. The cumulative impact of the project upon aquatic biodiversity is of medium significance but

following mitigation it can be decreased to acceptable levels. Adherence to a buffer area will protect aquatic habitat from the majority of potential impacts.

After mitigation is applied to manage stormwater appropriately, the project is not expected to have residual impacts upon the environment. It should not impact upon the desktop mapped Strategic Water Source Area. The development will not reduce the number of benefits gained by society from the water source area. The development will need to comply with all regulations of the National Water Act (Act 36 of 1998), including the protection of downstream users, and minimise any potential ecological impacts upon water resources. There is currently no legislation directly related to SWSAs but by adhering to the NWA legislation the SWSA will not be compromised. After mitigation and the rehabilitation of the riparian zone, the project will not reduce the ecological resilience of the river to future climate changes.

Terrestrial Biodiversity Assessment, Appendix G3:

Based on available ecosystem-level data for habitat and important biodiversity areas and the heavily transformed and disturbed nature of most parts of the project development area, it is considered that the project will be of overall low sensitivity for the terrestrial biodiversity theme.

The proposed development (preferred Alternative A) will most likely have a low to no impact on areas of low sensitivity (most of the project area), and a small negative impact on potential areas of high sensitivity.

A **low sensitivity** category was also given in specialists' reports for faunal, botanical, and aquatic themes.

Both the faunal and botanical reports did not record the listed SCC on the project site, and both reports indicated a generally **low probability** on any of the SCC occurring on site.

Within the proposed development, potential areas of terrestrial biodiversity sensitivity (Figure 25 of Appendix G3) are associated with:

- Small aquatic habitats (ponds). Although some appear to be artificial, they appear well-established and would likely offer habitat for the frog SCC and several other frog species, damselfly and dragonfly species, and other aquatic invertebrates. A ~15m proposed buffer line is recommended to prevent undue disturbance of these aquatic habitats. Should these need to be impacted, an offset to provide wetland habitat in a more suitable place on the site should be implemented with guidance from an aquatic specialist. This could be done to increase the likelihood of colonisation by *Africalus knysnae*. – **Please refer to the recommendations of the aquatic specialist.**
- The stream running on the eastern boundary is potentially an important faunal corridor with the Swartvlei and forest habitat, particularly for faunal Sensitive Species 8 and the Knysna Warbler.
- The stream also directly links the project northwards to a CBA1 (river) area, and the area around the stream is classed as a CBA2 (terrestrial).
- The project area on its northern, north-eastern, and eastern parts bisects/borders, or is very close (< 200m) to several key biodiversity areas of high sensitivity. For example: CBA1 (terrestrial, forest, river), CBA2 (terrestrial), a focus area as part of a protected areas expansion strategy, and an Important Bird Area.
- Several potential faunal corridors link the forested/wooded riparian stream habitat on the project area to other patches of forested areas (CBA1) to the north and east (Figures 25 of Appendix G3).
- The proposed buffer area of preferred Alternative A should alleviate the above concerns.
- Small stands of indigenous trees near the southern and central parts of the project area.

As mentioned earlier, the Branford family wishes to relocate some of the trees they planted to Portion G.

Recommended mitigation:

- Clearing invasive plants across the project area and implementing an alien plant management programme. The stream is currently clogged with several invasive plant species; several of these are Category 1b and 2 invaders and require mandatory removal and control. The stream habitat should be cleared of invasive alien plants, and the riparian habitat restored. An appropriate buffer (30 m) is recommended to prevent undue disturbance of the stream and riparian habitat. Although the far northern parts of the project area, those that bisect/borders CBA areas, fall outside the development, clearing of alien plants should also be focussed here considering that this area connects to important biodiversity areas to the north and east.
- From the conceptual layout (Appendix B), the stream habitat falls outside of the development footprint, and it appears that this area will be retained as 'natural vegetation'. Therefore, this offers an opportunity to restore this habitat which should increase the potential for faunal connectivity to the north and east of the project area. The buffer area proposed by preferred Alternative A should help with faunal connectivity as long as it is cleared of alien plants.
- No fencing plan was provided as part of the conceptual plans; however, a fencing plan will be required that does not unduly block faunal movement.
- All indigenous trees should ideally be retained if practical, especially the large Outeniqua yellowwoods (*Afrocarpus falcatus*); although, if these need to be removed, suitable offset indigenous species should be planted in the rehabilitated and any landscaped areas.

It is proposed to relocate these trees (where possible) to Portion G.

- If the above concerns can be accommodated, then this compliance statement of low sensitivity will hold.

Terrestrial Animal Assessment, Appendix G4:

Based on the available information on all SCCs' distributions, their known habitat preferences, the heavily transformed and disturbed habitat of most sections of the project development area, it is considered that the project (preferred Alternative A) will be of overall low sensitivity for the faunal SCC assessed.

The project area has historical occurrences of vegetation habitat that would support the Yellow-winged Agile Grasshopper (*Aneuryphymus montanus*). However, the habitat is heavily disturbed and transformed and **unlikely to support** viable populations of this SCC.

The far northern parts of the project area borders the Outeniqua Mountains Important Bird Area (Marnewick et al., 2015).

There is a **low likelihood** that the Knysna Warbler (*Bradypterus sylvaticus*) is found at the project site, although it should occur in the natural forest habitat to the north of the project area.

There is a **low likelihood** that the site is significant for Crowned Eagle (*Stephanoaetus coronatus*) due to the disturbed nature of the site. While it is possible that the bird might occasionally move through the site or adjacent areas, there is currently no indication that the bird breeds in the area or even that the site can support enough prey for this species.

There is a **very low likelihood** that the site is significant for the Knysna Leaf-folding Frog (*Afrixalus knysnae*). The small, artificial aquatic habitats (ponds) appear not to offer significant habitat for the frog.

There is a **low to medium likelihood** that Sensitive species 8 is found at the project site associated with the stream habitat. It is also considered that the **impact on this species will be low** due to the highly disturbed nature of the project area and that any indigenous suitable habitat has been replaced with gums and other invasive plants; the natural forested areas (Southern Afrotemperate Forest) north would offer preferred habitat for this SCC.

There is a low likelihood that Duthie's golden mole (*Chlorotalpa duthieae*) would occur at the project area. The highly disturbed and transformed habitat, including evidence of well-established dense gums and past ploughing and crop growing, would have most likely displaced this species from the project area.

o Within the proposed development, areas of faunal sensitivity are associated with:

- Small aquatic habitats (ponds). Although these appear to be artificial, they appear well-established and may offer habitat for several frog, damselfly and dragonfly species, and other aquatic invertebrates. A ~20m proposed buffer line is recommended to prevent undue disturbance of these aquatic habitats. – **please refer to the recommendations of the aquatic specialist. She recommends only a 30 m buffer line for HGM1.**
- The stream running on the western boundary is clogged with several invasive plant species. This habitat must be cleared of invasive alien plants, and the riparian habitat restored. Potentially the stream and associated small valley could form an important faunal corridor with the Swarts River and associated habitat, particularly for Sensitive Species 8 and the Knysna Warbler. At least a 30m buffer is recommended to prevent undue disturbance of the stream and riparian habitat once it has been restored. From the conceptual layout, the stream habitat and valley fall outside of the development footprint and will be retained as 'natural vegetation'. Therefore, this offers an opportunity to restore this habitat with indigenous vegetation, which will allow for faunal connectivity to the north and east of the project area (See Figure 25 in Colville and Cohen's (2023) Terrestrial Biodiversity Compliance Statement).
- No fencing plan was provided as part of the conceptual plans; however, a fencing plan will be required that does not unduly block faunal movement.
- If the above concerns can be accommodated, then this faunal compliance statement of low sensitivity will hold.

Heritage Assessment, Appendix G5:

Pieterkoen is certainly an interesting and historically important property in the larger George cultural landscape, and it is to some extent regrettable the surrounding urban development has in effect swallowed-up this property.

However, the authors of the HIA are of the opinion that the proponents of the development (including the current owner who has been actively involved in the planning) have gone to great lengths to retain and protect the historic werf from the impacts of urban development, whilst balancing the need to design a viable development concept, which they find commendable. The werf at Pieterkoen and its sense of place will be permanently altered by the development, but it is noted that the existing and proposed development on three sides of this relatively small/narrow property will in future inevitably erode this sense of place in any case.

In summary the overall potential impact of the proposal is assessed to be of MEDIUM to HIGH significance reducing to MEDIUM TO LOW if mitigation measures are imposed and as landscaping matures overtime.

It is therefore recommended that HWC endorses the development proposal (Alternative A) and this HIA in principle as has having met the requirements of Section 38(3) of the NHRA, on condition that:

- A landscaping plan that includes details of hard and soft landscaping, as well as fencing and security measures is prepared by a qualified landscape architect and is submitted to HWC for approval.
- Sketch plans of all new buildings within the historic precinct (i.e., around the proposed formal garden behind the homestead) to be submitted to HWC for approval. Such plans must include 3D images that reflect the scale and nature of the new buildings in relation to the historic buildings.
- A detailed analysis of the historic homestead and barn to be undertaken by a professional heritage specialist in order to determine the age and significance of the various components of the building, with a view to understanding what elements should be retained (and restored) and what

elements/accretions could be demolished/altered. This analysis is to be submitted to HWC for approval.

- Following on the above plans for alterations and additions to the historic buildings must be submitted to HWC for approval.

Agricultural Compliance Statement, Appendix G6:

The impact of the proposed development on the agricultural production capability of the site is assessed as being acceptable because the loss of agriculturally zoned land does not represent a significant loss of future agricultural production potential because of the limitations on the site's potential. From an agricultural impact point of view, it is recommended that the development be approved.

The protocol requirement of confirmation that all reasonable measures have been taken through micro siting to avoid or minimise fragmentation and disturbance of agricultural activities, is not relevant in this case because the whole site will be lost to future agricultural activities. For the same reason, there are also no Environmental Management Programme inputs required for the protection of agricultural potential on the site.

The conclusion of this assessment on the acceptability of the proposed development and the recommendation for its approval is not subject to any conditions. In completing this statement, no assumptions have been made and there are no uncertainties or gaps in knowledge or data that are relevant to it. No further agricultural assessment of any kind is required for this application.

Visual Impact Assessment, Appendix G7:

The proposed Pieterkoen Residential Development in George, Western Cape Province, has been assessed for its potential visual impacts. The study area is characterized by a peri-urban landscape where natural vegetation and existing infrastructure contribute to a moderate VAC. This suggests that the proposed development can be integrated into the surrounding visual environment with the application of appropriate design and mitigation measures.

The VIA identified several key considerations. The site is situated in an area of moderate visual sensitivity, influenced by its location within a mixed-use landscape that includes residential areas as well as its proximity to scenic corridors such as the Seven Passes Road. During construction, temporary visual impacts such as dust, machinery movement, and earthworks are anticipated. These impacts are considered manageable through the implementation of standard mitigation measures. In the operational phase, the development will introduce permanent changes to the visual landscape, including residential structures and associated infrastructure.

The implementation of mitigation strategies such as retaining and enhancing existing vegetation, strategic landscaping, maintaining buffer zones near sensitive receptors, and incorporating careful architectural design are expected to reduce visual impacts to an acceptable level. Cumulative visual impacts from the development are anticipated to be minimal and align with broader spatial development patterns in the area.

The findings of the VIA indicate that the development does not present significant visual impacts, provided the recommended mitigation measures are effectively implemented. By integrating these measures into the EMPr, the development can proceed while maintaining the visual integrity of the region. The project is therefore considered suitable for environmental authorization, subject to ongoing monitoring and adaptive management to address potential unforeseen visual impacts.

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

Mitigation measures recommended by the Botanical Specialist:

The following mitigation measures are required to ensure that the impact on terrestrial biodiversity and plant species is minimised:

- Draw up and implement an invasive plant clearance programme. As part of this plan, a fire break needs to be maintained around the site.

- As a duty of care measure, indigenous bulb species (if present) can be searched and rescued to be replanted in the allocated open space area in the north-eastern corner of site. Only introduce indigenous species once the area has been cleared of aliens.

Mitigation measures recommended by the Freshwater Specialist:

- A stormwater management plan must be developed in the preconstruction phase, detailing the stormwater structures and management interventions that must be installed to manage the changes to surface water flows directly into any natural systems. The stormwater management infrastructure must be designed to ensure the runoff from the development is not contaminated before entering the surrounding area. The volume and velocity of water must be reduced through discharging the surface flow at multiple locations surrounding the development. Effective stormwater management must include effective stabilisation of exposed soil.
- Reasonable measures must be taken to provide back-up for mechanical, electrical, operational or process failure and malfunction at pump stations. At a minimum there should be an alarm system to warn of an electrical failure and sufficient standby equipment to provide for reasonable assurance that the infrastructure can be fully functional within at least 24 hours. Emergency power shall be provided that will prevent overflows from occurring during any power outage. Installing permanent generators at each station is strongly advised.
- Pump stations will need to be placed within a suitably lined, impermeable concrete bunded area with the capacity to hold untreated wastewater in an emergency and provide for sufficient time for maintenance staff to address any faults/ problems. This is to limit the risk of untreated sewage overflowing in the event of any leakage or accidental spillage at the pump station.
- The Department of Water and Sanitation's regional office should be notified, as soon as possible, of any significant chemical spill or leakage to the environment where there is the potential to contaminate surface water or groundwater.
- Stormwater exit points must include a best management practice approach to trap any additional suspended solids and pollutants originating from the proposed development. Also include the placement of stormwater grates (or similar). The use of grease traps/oil separators to prevent pollutants from entering the environment from stormwater is recommended. To ensure the efficiency of these, they must be regularly maintained.
- Inlet protection measures to capture solid waste and debris entrained in storm water entering the storm water management system (inlet protection devices) will be incorporated into the design of the system and could include the use of either curb inlet/inlet drain grates and/or debris baskets/bags.
- It is also important to note that storm water infrastructure will likely require regular on-going maintenance in the form of silt, debris/litter clearing in order to ensure their optimal functioning.
- When developing a stormwater management plan for the site, it will be critical that due consideration is given to the collection and treatment of stormwater prior to discharge into the natural environment. It is therefore recommended that the stormwater management plan be developed with appropriate ecological input and be developed based on Sustainable Drainage Systems (SUDS). The SUDS systems attempt to maintain or mimic the natural flow systems as well as prevent the wash-off of urban pollutants to receiving waters.
- Soft infrastructure must be considered where practical. For example, permeable surfaces can be done via permeable concrete block pavers (such as Amorflex), brick pavers, stone chip, and gravel and may contribute to slowing surface flows (especially if maintained). Baffles in the stormwater conduits are effective. Stormwater managed by the development could be discharged into porous channels / swales ('infiltration channels or basins') running near parallel or parallel to contours within and along the edge of the development. This will provide for some filtration and removal of urban pollutants (e.g. oils and hydrocarbons), provide some attenuation by increasing the time runoff takes to reach low points, and reduce the energy of storm water flows within the stormwater system through increased roughness when compared with pipes and concrete V-drains.

- The stormwater management infrastructure must be designed to ensure the runoff from the development is not highly contaminated or concentrated before entering the surrounding area. Any stormwater retention ponds or berms must be located outside of the buffer area.
- The adoption of the 30 m aquatic buffer zone between the development infrastructure and HGM1.
- The volume and velocity of water must be reduced through discharging the surface flow at multiple locations surrounding the development.
- Effective stormwater management must include effective stabilisation (gabions and Reno mattresses) of exposed soil. Contingency plans must be in place for high rainfall events which may occur during construction.
- If flower/plant beds are to be established adjacent to hard surfaces, then these should be designed to receive storm water from hardened surfaces and should be planted with robust indigenous species that to contribute to storm water management objectives.
- Storm water should be harvested onsite from roofed surfaces thus reducing the quantity (volume) of water received by downstream water resources as surface flow.
- The project will need to comply with all regulations of the National Water Act (Act 36 of 1998), including the protection of downstream users, and minimise any potential ecological impacts upon water resources.
- Monitoring of the project activities is essential to ensure the mitigation measures are implemented. Compliance with the mitigation recommendations must be audited by a suitably qualified independent Environmental Control Officer with an appropriately timed audit report.
- Sedimentation must be minimised with appropriate measures. Any construction causing bare slopes and surfaces to be exposed to the elements must include measures to protect against erosion using covers, silt fences, sandbags, earthen berms etc.
- 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. Even in the operational phase, measures to contain impacts caused during high rainfall events must be planned for and available for use.
- A rehabilitation plan must be compiled with the assistance of a botanist to ensure that the buffer area is revegetated with indigenous plant species in the correct manner. The area must be maintained through alien invasive plant species removal (which is the landowner's responsibility regardless of mitigation associated with this project) and the establishment of indigenous vegetation cover to filter run-off before it enters the aquatic habitat.
- Stormwater infrastructure must be inspected at least once every year (before the onset of rains) to ensure that it is working efficiently. Any evidence of erosion from this stormwater system must be rehabilitated and the volume/velocity of the water reduced through further structures and/or energy dissipaters.
- Construction of the pipeline should preferably be done during the drier months when the water quality impacts from the construction activities may impact on the downslope watercourses. Measures to contain impacts caused during high rainfall events (such as substantial sedimentation and/or erosion) must be planned for and available for use.
- Before any work commences, sediment control/silt capture measures (e.g. bidim/silt curtains) must be installed downstream/downslope of the active working areas. Silt fences/curtains must be regularly checked and maintained (de-silted to ensure continued capacity to trap silt) and repaired where necessary. When de-silting takes place, the silt must not be returned to the watercourse.
- Stormwater exit points must include a best management practice approach to trap any additional suspended solids and pollutants originating from the proposed development. Also include the placement of stormwater grates (or similar). The use of grease traps/oil separators to prevent

pollutants from entering the environment from stormwater is recommended. To ensure the efficiency of these, they must be regularly maintained.

- Inlet protection measures to capture solid waste and debris entrained in storm water entering the storm water management system (inlet protection devices) will be incorporated into the design of the system and could include the use of either curb inlet/inlet drain grates and/or debris baskets/bags. It is also important to note that storm water infrastructure will likely require regular on-going maintenance in the form of silt, debris/litter clearing in order to ensure their optimal functioning.
- Avoid multiple watercourse crossings and align pipeline crossings as close to each other as possible.
- Crossings must be constructed perpendicular to the natural direction of flow.
- Pipelines across watercourses should be buried at a sufficient depth below ground level such that the pipelines do not interfere with surface water movement or create obstructions where flows can cause erosion to initiate.
- A construction method statement must be compiled and available on site. It must consider the buffer zone and include methods to avoid unnecessary disturbance and prevent material being washed downslope into the river.
- The edges of the pipeline construction servitude, as well as the development area, relative to the aquatic habitat must be clearly staked-out and demarcated prior to construction commencing.
- Removal of vegetation must only be when essential for the continuation of the project. Do not allow any disturbance to the adjoining natural vegetation cover or soils.
- Access to and from the development area should be either via existing roads or within the construction servitude. Any contractor found working within No-Go areas must be fined as per fining schedule/system setup for the project.
- Following construction, it is important to stabilise any steep, bare areas on the slope and river banks via geotextiles and/or revegetation.
- It is the contractor's responsibility to continuously monitor the area for newly established alien species during the contract and establishment period, which if present must be removed. Removal of these species shall be undertaken in a way which prevents any damage to the remaining indigenous species and inhibits the re-infestation of the cleaned areas. Any use of herbicides in removing alien plant species is required to be investigated by the ECO before use.
- Where vegetation has been cleared in the buffer and open ground in the riparian area has resulted (i.e., where indigenous vegetation has been replaced by dense alien plant infestations or construction access routes), it is recommended that cover components be reinstated appropriately. Only indigenous species are to be considered.

Mitigation measures recommended by the Terrestrial Biodiversity and Animal Specialist:

- Clearing invasive plants across the project area and implementing an alien plant management programme. The stream is currently clogged with several invasive plant species; several of these are Category 1b and 2 invaders and require mandatory removal and control. The stream habitat should be cleared of invasive alien plants, and the riparian habitat restored. An appropriate buffer (30 m) is recommended to prevent undue disturbance of the stream and riparian habitat. Although the far northern parts of the project area, those that bisect/borders CBA areas, fall outside the development, clearing of alien plants should also be focussed here considering that this area connects to important biodiversity areas to the north and east.
- From the conceptual layout, the stream habitat falls outside of the development footprint, and it appears that this area will be retained as 'natural vegetation'. Therefore, this offers an opportunity

to restore this habitat which should increase the potential for faunal connectivity to the north and east of the project area.

- No fencing plan was provided as part of the conceptual plans; however, a fencing plan will be required that does not unduly block faunal movement.

The proposed fencing/wall in the northeastern corner of the property will be designed to allow for small fauna to move between the property and the natural areas around it.

- All indigenous trees should ideally be retained if practical, especially the large Outeniqua yellowwoods (*Afrocarpus falcatus*); although, if these need to be removed, suitable offset indigenous species should be planted in the rehabilitated and any landscaped areas.

As mentioned before, it is planned to have these trees (where possible) relocated to Portion G.

- If the above concerns can be accommodated, then this compliance statement of low sensitivity will hold.

Mitigation measures recommended by the Terrestrial Biodiversity and Animal Specialist:

Construction Phase Mitigation:

- **Use of Natural Colours and Materials:** Use materials and colours that blend with the natural landscape for any temporary structures or construction materials. Mimic the texture and colours of the natural environment, where possible.
- **Vegetative Screens:** At key points of sensitivity, indigenous vegetation around the construction site's perimeter may be planted to act as a natural screen, reducing the visual impact.
- **Localised Construction:** Focus construction activities in smaller, localised areas rather than spreading out across the entire site simultaneously. This phased approach can reduce the overall visual disturbance at any given time.
- **Revegetation for Restoration:** Post-construction, prioritise revegetation efforts, especially in areas where native grasslands were disturbed. This can help in restoring the site's original visual character.
- **Minimise Night-time Activities:** Limit construction activities during the night to reduce light pollution, especially given the proximity to residential areas.
- **Site Screening:** Use natural topography, existing vegetation, or temporary screens to shield construction activities from viewers. Situate construction activities in lower-lying areas or behind hills. Use screens made of materials that blend with the natural environment.
- **Minimise Structure Heights:** Keep temporary structure heights to a minimum to reduce their visibility, where possible. Use materials and colours that blend with the surrounding landscape.
- **Lighting Control:** Minimise light pollution by directing lights downwards, using shields to prevent light spill, and turning off lights when not in use.
- **Strategic Placement:** Where possible, prioritise the placement of taller construction equipment and initial construction materials in areas less visible to the majority of residents.
- **Informational Signage:** Erect informational signboards around the construction site, explaining the project's benefits and duration, to keep residents informed and manage perceptions.
- **Dust Suppression:** Regularly water down the construction site, especially during dry and windy conditions, to minimise dust generation.
- **Windbreaks:** Install temporary windbreaks or barriers around the construction site to reduce the spread of dust, if required.
- **Vehicle Speed Limits:** Implement strict speed limits for construction vehicles within the site to reduce dust kick-up.
- **Construction Scheduling:** Schedule dust-generating activities for times when wind speeds are low or when wind direction is away from sensitive receptors, where possible.
- **Use of Dust Screens:** Install dust screens or barriers around the construction site, particularly in areas close to sensitive receptors, to contain dust within the site, when required

- **Rehabilitation of Disturbed Areas:** Promptly rehabilitate areas where construction activities have ceased. Re-vegetate with native species or suitable ground cover to stabilise the soil and reduce dust generation.
- **Regular Monitoring:** Implement a monitoring program to assess the effectiveness of dust control measures.
- **Machinery Maintenance:** Ensure construction machinery is well-maintained to minimise excessive noise and vibrations.
- **Work Hours:** Restrict the noisiest construction activities to daytime hours and avoid work during early mornings, late evenings, or weekends when residents are more likely to be at home.

Operational Phase Mitigation:

- **Vegetative Screening:** Plant indigenous trees and shrubs intermittently along site boundaries, where required. **Landscape Integration:** Use materials, textures, and colours that reflect the local architectural styles to harmonise with the surrounding environment and maintain a sense of place.
- **Lighting Control:** Employ downward-facing, low-glare lighting systems with motion sensors to minimise light pollution and preserve the area's nighttime character.
- **Seasonal Landscaping Maintenance:** Implement an ongoing maintenance program to ensure that the landscaped areas remain in good condition, reflecting seasonal changes and preventing visual degradation.
- **Vegetative Buffers:** Plant indigenous vegetation along site boundaries adjacent to residential areas to reduce direct visibility of infrastructure and enhance visual screening.
- **Architectural Integration:** Utilise materials and colours that complement the local landscape, minimising visual contrast and promoting architectural harmony.
- **Low-intensity Lighting:** Opt for low-intensity lighting that provides sufficient illumination for safety without being overly bright.
- **Shielding:** Use shields on lights to direct illumination to the intended areas and prevent light spill into unintended areas.
- **Educate Staff:** Ensure that staff are aware of the importance of minimising light pollution and are trained to use lighting efficiently.
- **Periodic Reviews:** Conduct periodic reviews of lighting practices to identify and rectify any unnecessary light emissions.

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.

The terrestrial biodiversity specialist wrote the following:

Although some of the ponds/dams on the property appear to be artificial, they appear well-established and would likely offer habitat for the frog SCC and several other frog species, damselfly and dragonfly species, and other aquatic invertebrates. A ~15m proposed buffer line is recommended to prevent undue disturbance of these aquatic habitats. Should these need to be impacted, an offset to provide wetland habitat in a more suitable place on the site should be implemented with guidance from an aquatic specialist.

The aquatic specialist only recommends that the dam nearest to Glenwood Avenue is retained as an aquatic feature, but the contour dams do not need to be conserved. She also recommends the adoption of the 30 m aquatic buffer zone between the development infrastructure and HGM1.

The terrestrial biodiversity specialist also recommends that: *All indigenous trees should ideally be retained if practical, especially the large Outeniqua yellowwoods (*Afrocarpus falcatus*); although, if these need to be removed, suitable offset indigenous species should be planted in the rehabilitated and any landscaped areas.*

It is proposed to relocate these trees to Portion G so they will be retained but moved to another location on the proposed development.

4.	Explain how the proposed development will impact the surrounding communities.
<p>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.</p> <p>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, garden maintenance, house cleaning, etc.</p> <p>Please refer to the Need and Desirability in Section E, point 12 for a more detailed description of the impact on socio-economic context of the proposed development.</p>	
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.
<p>Please refer to the preliminary Stormwater Disposal and Management Plan described in Section B, point 4.4 of this report.</p> <p>Stormwater management will be according to recommendations contained in the Red Book i.e., Guidelines for Human Settlement Planning and Design as compiled by the CSIR. The principals of SuDS will further be considered to minimise the amount and impact of stormwater leaving the site.</p> <p><i>Specific Considerations</i></p> <p>Runoff from the land will increase because of the development, but this will be accommodated in the design of the minor and major stormwater system. The increased runoff will not affect any existing or proposed properties, since all properties are well above the 1:100 year flood lines for the major natural watercourse (Swart River).</p> <p><u>Increased overland flow velocities</u></p> <p>Various measures will be incorporated to mitigate increased flow velocities like:</p> <ul style="list-style-type: none"> • Energy dissipaters and stilling basins at stormwater pipe outlets. Reno mattress aprons with stilling basins where appropriate will be provided at all culvert outlets. Large rocks will be effective as energy dissipaters and will contribute to the landscaping. • Lining of open channels with grass (swales) and or stone pitching where required. • Utilisation of invader tree logs to act as flow speed calming structures placed across flow paths and anchored properly. • Utilisation of Gabion type structures to act as flow speed calming elements placed across flow paths and anchored properly. <p>The proposed development will include approx. 27 Private Open Space erven which will be planted with vegetation.</p> <p>Materials and labour will be locally sourced as far as possible – minimising the use of long-distance importation of materials.</p>	
6.	Explain whether there are any conflicting recommendations between the specialists. If so, explain how these have been addressed and resolved.
<p>The terrestrial biodiversity specialist wrote the following:</p> <p><i>Although some of the ponds/dams on the property appear to be artificial, they appear well-established and would likely offer habitat for the frog SCC and several other frog species, damselfly and dragonfly species, and other aquatic invertebrates. A ~15m proposed buffer line is recommended to prevent undue disturbance of these aquatic habitats. Should these need to be impacted, an offset to provide wetland habitat in a more suitable place on the site should be implemented with guidance from an aquatic specialist.</i></p>	

The aquatic specialist only recommends that the dam nearest to Glenwood Avenue is retained as an aquatic feature, but the contour dams do not need to be conserved. She also recommends the adoption of the 30 m aquatic buffer zone between the development infrastructure and HGM1		
7.	Explain how the findings and recommendations of the different specialist studies have been integrated to inform the most appropriate mitigation measures that should be implemented to manage the potential impacts of the proposed activity or development.	
The recommendations of the specialists have been incorporated into the EMPr, and compliance will be monitored by the appointed ECO during the construction phase.		
8.	Explain how the mitigation hierarchy has been applied to arrive at the best practicable environmental option.	
1	AVOID IMPACTS	The development area has been set back from the steep slopes and sensitive aquatic habitat. The freshwater specialists prescribed no-go buffer areas around watercourse HGM1.
2	MINIMISE IMPACTS	The recommended mitigation measures of the specialists reports in addition to the compressive mitigation measures contained in the EMPr will minimise the impact of the development.
3	RECTIFY	The rehabilitation measures in the EMPr are provided to return the impacted areas, outside of the development footprint, back to a functional state and the developer will be responsible for rectifying any non-compliances with the conditions of the EA and EMPr.
4	REDUCE	The historic buildings will be conserved by developing a historic precinct. Buffers and setbacks around the watercourses have been proposed and will be implemented.
5	OFFSET	None necessary.

SECTION J: GENERAL

1. Environmental Impact Statement

1.1.	Provide a summary of the key findings of the EIA.
<p>Botanical Assessment, Appendix G1:</p> <p>Due to the highly transformed state of the site, the impact on both terrestrial biodiversity and plant species is expected to be of low significance. Despite the site's position inside the biodiversity network, it is highly compromised by past agricultural activities and invasive aliens. The chance of successful rehabilitation is slim. It is however recommended that the invasive aliens be eradicated with the aid of an alien clearance programme and the open spaces rehabilitated using locally indigenous species.</p> <p>It is therefore recommended that the proposed development be approved, subject to the consideration of the proposed mitigation measures.</p> <p>Freshwater Assessment, Appendix G2.1:</p> <p>The aquatic habitats within a 500 meter radius of the proposed development were identified and mapped on a desktop level utilising available data. Following the desktop findings, a site assessment was conducted to verify the location and extent of these systems. Two watercourses and three dams were identified within the property boundary. Five other watercourses and several dams are situated within a 500m radius.</p> <p>It was determined that the watercourses in the study area are no longer functioning in a natural manner and the riparian habitat has already been significantly altered. The systems have a Low EIS. It is recommended that basic rehabilitation of the riparian zone be undertaken, and that a formal alien invasive plant control plan be compiled and implemented (not only limited to the Eucalyptus and Wattle trees).</p> <p>The direct and indirect impacts associated with the project were assessed as:</p> <ul style="list-style-type: none"> • <u>Impact 1:</u> Disturbance of aquatic habitat and biota during pipeline construction and site development 	

- Impact 2: Increased surface water runoff and stormwater flow patterns on form and function during the construction and into the operational phase, i.e. changes to the hydrological regime
- Impact 3: Changes to hydrological regime that could also lead to sedimentation and erosion, which could also occur in the operational phase
- Impact 4: Potential impact on localised surface water quality
- Impact 5: Cumulative impacts on the aquatic resources of the area, such as the Swart River downstream

It was determined that, after mitigation, the overall impacts associated with the latest project layout (Layout 1 – Preferred Alternative) are of Low negative significance to aquatic biodiversity, while Layout 2 (which encroaches into the buffer zone) will have Medium to Low impact significance. Therefore, **Layout 1 is the preferred development proposal from an aquatic perspective, but there are no high impacts associated with either proposal.** The No-Go Alternative was determined to have no new impacts upon aquatic biodiversity.

The HGM1 stream is in a largely modified condition and the project activities, after mitigation, will not cause further deterioration of any water resources. A rehabilitation and stormwater management plan should be compiled to prevent further erosion and sedimentation within the watercourses, as well as prevent contaminated water from entering the surrounding environment. Adherence to buffer zones, and a stormwater management plan incorporating SUDS, will protect aquatic habitat from the majority of potential impacts. The development is unlikely to impact upon the desktop mapped Strategic Water Source Area. The proposed development requires a Water Use License (WUL) in terms of Chapter 4 and Section 21 (c) and (i) of the National Water Act No. 36 of 1998 and this must be secured prior to the commencement of construction.

In conclusion, from a purely aquatic perspective, there are no fatal flaws associated with development, provided all the mitigation measures are strictly adopted.

Terrestrial Biodiversity & Terrestrial Animal Species, Appendices G3 & G4:

The north-eastern parts of the site are heavily infested with Eucalyptus that is currently being removed. As these areas fall across, or border CBA1 and CBA2 areas of terrestrial and aquatic importance, removal of alien plants and restoration of the small stream would be required.

The majority of the project area has been heavily transformed through a long period of land change associated with activities such as forestry. Most of the project area is considered as Low Sensitivity from a terrestrial biodiversity perspective.

Several (planted) well-established and new-growth indigenous trees (e.g. Outeniqua yellowwood) are found near the central western parts of the project site and these should be protected and retained.

As mentioned, it is proposed to relocate these trees to Portion G.

Heritage Impact Assessment, Appendix G5:

Final Comment from Western Cape Heritage to be submitted with the Final BAR.

Agricultural Compliance Statement, Appendix G6:

No further agricultural assessment of any kind is required for this application.

Visual Impact Assessment, Appendix G7:

The findings of the VIA indicate that the development does not present significant visual impacts, provided the recommended mitigation measures are effectively implemented. By integrating these measures into the EMP, the development can proceed while maintaining the visual integrity of the region. The project is therefore considered suitable for environmental authorization, subject to ongoing monitoring and adaptive management to address potential unforeseen visual impacts.

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)
Appendix B2	

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.		
	Alternative	Positive	Negative
	Site Layout 1 (Preferred)	<ul style="list-style-type: none"> • a lesser potential impact on the watercourse HGM1. • Some of the site is overgrown with alien invasive vegetation. Everything will be cleared to allow for the construction of the residential estate, in accordance with the EMPr. Some open spaces will be maintained with indigenous vegetation and alien species will be controlled and removed in these areas. • Transformation of an already disturbed and transformed area. • Utilising vacant land within the George Urban Edge. 	<ul style="list-style-type: none"> • Transformation of an undeveloped area to a developed area. • Temporary negative construction phase impacts (noise, visual, potential dust). • Additional minor pressure on bulk municipal services. • Will not improve service efficiency of service delivery by local authority.
	Site Layout 2	<ul style="list-style-type: none"> • Improving efficiency of service delivery by local authority. • Capital contributions to the municipality which contributes to the upkeep of George. • Capital influx for service and municipal providers of the Construction and Operational Phases. • Increased tax and levies income for municipality. • Housing in an expanding city • Local Labour • The proposed land development will be in character with the surrounding area and will provide additional residential opportunities in a popular neighbourhood. • Prevention of urban sprawl. • Social security • Provision of houses to the market 	
	Alternative	Positive	Negative
	No-Go Alternative	<ul style="list-style-type: none"> • No construction phase: therefore, no potential for any construction related nuisances (i.e., noise, visual disturbance, dust, heavy vehicles on the road, etc.). • The ecological functioning of the property could be improved, only if 	<ul style="list-style-type: none"> • No construction phase employment opportunities would result. • No project related expenditure would take place; therefore, the anticipated capital investment would not result.

	<p>the site is rehabilitated (i.e., encouraged to re-vegetate with natural vegetation), all alien vegetation is removed on an ongoing basis and the natural areas are managed in the long term so that the indigenous plant species can return.</p>	<ul style="list-style-type: none"> • The property will not contribute to the increase in available housing units. • The site has already been transformed from its natural state. Also, it is unlikely that the ecological functioning of the property would improve substantially as a result of this alternative. • Potential for undesirable activities impacting local authority and residents of neighbouring developments. • Impeded serviced delivery by local authority. • Will not improve service efficiency of service delivery by local authority.
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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
<p>Potential impacts were assessed and mitigation measures to minimise the negative impacts were explored in greater depth Section G of this BAR.</p> <p>Within the Environmental Management Programme (attached as Appendix H) the Environmental Impact Management has been separated into 4 sections, Planning and design phase, Pre-construction Phase, Construction Phase and Post Construction Rehabilitation Phase.</p>	
Table 2: Impact management objectives and impact management outcomes included in the EMPr.	
IMPACT MANAGEMENT OBJECTIVES	
IMPACT MANAGEMENT OUTCOMES	
PLANNING AND DESIGN PHASE	
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.
To compile a detailed design and site layout plan that adheres to the conditions of the Environmental Authorisation	Good environmental management is promoted on site
IMPACT MANAGEMENT OBJECTIVES	
IMPACT MANAGEMENT OUTCOMES	
PRE-CONSTRUCTION PHASE	
Identify and demarcate no-go areas, 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 pre-construction and construction phases. Site facilities are appropriately located on site.

	Construction workers receive environmental awareness training before commencing work on site.
IMPACT MANAGEMENT OBJECTIVES	IMPACT MANAGEMENT OUTCOMES
CONSTRUCTION PHASE	
To prevent soil disturbance and loss on site	Soil erosion is kept to a minimum
To prevent altered runoff patterns, leading to increased erosion and sedimentation of the watercourse.	No altered runoff patterns established.
To prevent the dispersal of alien invasive plant seeds into the watercourse.	Alien invasive plant programme is applied.
To create habitat free of alien vegetation	The level of alien infestation decreases over time.
To prevent avoidable noise and dust impacts	Avoidable noise and dust impacts are managed efficiently.
Reduce Visual Impacts	Avoidable visual impacts are managed
To create employment opportunities with potential for skills transfer, for members of the local community	The local community benefits from the employment opportunities created during the construction phase.
Capital influx for supporting service and goods providers	The local community benefits
IMPACT MANAGEMENT OBJECTIVES	IMPACT MANAGEMENT OUTCOMES
POST CONSTRUCTION REHABILITATION PHASE	
To rehabilitate all areas disturbed by construction activities in an environmentally sensitive manner	The site is neat and tidy, and all exposed surfaces are suitably covered/ stabilised. There is no construction-related waste or pollution remaining on site.
Discharge of stormwater runoff into the watercourses	No altered runoff patterns established on site.
<p>In order to obtain/reach the impact management objects the corresponding mitigation measures prescribed in the BAR and EMPr must be implemented.</p> <p>The Impact monitoring will be undertaken by an appointed and independent ECO.</p> <p>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 development was undertaken with no significant or avoidable impacts to the environment.</p>	
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.
<p>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 will be conditions of the environmental authorisation.</p>	
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.
<p>The Preferred Layout 1 should be authorised for development as it optimises the available area within the property to be developed.</p> <p>Condition of Authorisation:</p> <ul style="list-style-type: none"> • The EMPr must be implemented. • An ECO must be appointed to monitor compliance with the EMPr. • Rehabilitation plan must be compiled – the aquatic specialist is busy compiling this report. 	
2.4.	Provide a description of any assumptions, uncertainties and gaps in knowledge that relate to the assessment and mitigation measures proposed.

It is assumed that the proposed mitigation measures as listed in this report and the EMPr (Appendix H) will be implemented and adhered to as the significance of impacts ratings are conditional on implementation of the mitigation measures.

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 services will be provided in four phases from south to north. The area of each phase is shown on Plan PH/001. The EA will be required for at least 10 years to implement from commencement and a validity period before commencement of 5 years should be provided.

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 supplied by the municipality during construction.

Water demand for the proposed housing units with an average annual daily consumption of 800 l/unit/day for the 3-bedroom units, 560 l/unit/day for the 2-bedroom units, 400 l/unit/day for the 1-bedroom units and the flats at 400 l/unit/day is 170,58 kl/day. George Municipality have confirmed that they will have sufficient supply of treated potable water to provide this proposed development with an on-site connection, considering the implementation program of six years commencing in 2024 - letter attached in Appendix E16. The bulk and link service upgrades required is as per the GLS report, attached as Annexure A in Appendix L1. Final requirements will have to be recorded in a Services Agreement to be concluded between the developer and the Local Authority.

The developer will be responsible to connect to the existing municipal network which is in close proximity to the proposed development (to the south of the site).

4. Waste

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

The Local Authority will dispose of the solid waste. Collection of the waste will be by mutual agreement between the Developer and the Local Authority.

5. Energy Efficiency

8.1. Explain what design measures have been taken to ensure that the development proposal will be energy efficient.

Proposed Electrical MV Distribution Network

The medium voltage network currently in place is sufficient to supply the intended Development.

Point of Connection

A new 185 mm² x 3c (Al) 11 kV PILC cable will be cut into the existing 185 mm² x 3c (Al) 11kV PILC cable on the southern side of the Development.

The ring feed will thus be extended into the Development as indicated on drawing R5095P/1_Rev A which will in turn supply the mini-substations which are located at the load centres of the various areas.

Metering and Responsibility

On completion of the installation and after the one-year guarantee period, the responsibilities will be as follows:

The George Municipality will be responsible for the maintenance of the mini-substation and the low voltage network including the low voltage cables, metering kiosks, service connections and earthing network.

Standard George metering to each individual erf will be applicable.

The street lighting network as well as the street lighting equipment will be the responsibility of the Developer/HOA. The street lights will be supplied and metered from a separate street lighting kiosk situated next to the mini-substation and the monthly cost will be for the Developer's/HOA's account.

Energy Saving Measures

The use of the following equipment will be mandatory:

- Water and sewage pumps to be supplied with energy efficient motors and vsd motor control.
- Water heating to be done using gas or heat pumps.
- Lighting to make use of LED lamps only.
- Use of motion sensor lighting control.
- Photovoltaic Systems will be encouraged.

Cost Estimate and Electrical development Charges

The Developer will be responsible for all costs associated with the supply and installation of the electrical infrastructure required to service the Development.

A detailed design of the proposed medium voltage, low voltage, street lighting and earthing will be submitted to the George Municipality for approval prior to construction commencing on site.

A detailed cost estimate will be submitted as part of a different process.

The estimated Electrical Development Contributions for the current financial year have been calculated using the current SDP and were obtained from the Electrical Department.

The Development Charges amount to R 2 750 312.03 + Vat (887 X R 3 100.69).

It must be noted that the Development also attracts a Special Electrical Contribution at the rate of R 3 100.00 + Vat per equivalent unit which amount to R 967 20.00 + Vat (312 EU X R 3 100.00).

It is noted that the amount is adjusted each year at the end of June.

IMPACT

1. Impact on Existing Consumers:

The development will have no detrimental effect on the quality of supply to the existing consumers due to the fact that the development will be supplied by its own substation which in turn will be supplied from the 11kV system.

2. Impact on Distribution Authority Operating Costs

The development will have no negative effect on the electrical costs of the distribution authority, due to the fact that the complete electrical infrastructure required for the development will be supplied and installed by the Developer.

3. Impact on the Environment:

Services will be located within the road reserves to prevent additional disturbances of vegetation.

The internal electrical infrastructure design will take into account energy saving technologies which may include load control, the use of energy efficient lighting, the use of alternative means of water heating and inverter type HVAC equipment.

SECTION K: DECLARATIONS


DECLARATION OF THE APPLICANT

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

I.....Justin William Acton Branford..... ID number 610215 5185 083.....~~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.


Signature of the Applicant:

7/2/2025
Date:

Pieterkoen Development Company (Pty) Limited
Name of company (if applicable):

PIETERKOEN DEVELOPMENT COMPANY (PTY) LIMITED

(Incorporated in South Africa under registration number **2022 / 749109 / 07**
("the Company")

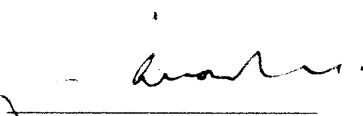
**RESOLUTION AUTHORISING SIGNING OF DECLARATION MADE TO DEPARTMENT
ENVIRONMENTAL AFFAIRS AND DEVELOPMENT PLANNING**

The Directors of PIETERKOEN DEVELOPMENT COMPANY (PTY) LIMITED passed the following resolution:

RESOLVED THAT:

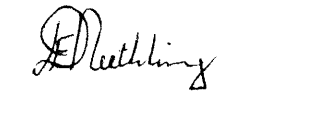
Justin William Acton Branford be and is hereby authorised to sign the declaration by Pieterkoen Development Company (Pty) Limited in relation to its application for Environmental Authorisation.

Signed by:



Jacobus Daniel De Kock

07/02/2025
Date



Ernest DeVilliers Neethling

7/2/2025
Date



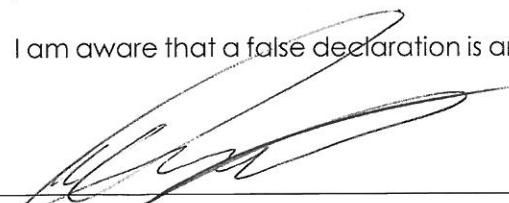
Justin William Acton Branford

7/2/2025
Date

DECLARATION OF THE ENVIRONMENTAL ASSESSMENT PRACTITIONER ("EAP")

IMichael Bennett....., EAPASA Registration number2021/3163..... 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:

7 February 2025
Date:

Sharpley Environmental Services cc
Name of company (if applicable):