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

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

PRE-APPLICATION IMPACT REPORT

AMENDMENT OF ENVIRONMENTAL AUTHORISATION

FOR THE

THE PROPOSED DEVELOPMENT OF A RETIREMENT VILLAGE AND ASSOCIATED INFRASTRUCTURE ON PORTION 3 OF THE FARM KRAAIBOSCH 195, GEORGE, WESTERN CAPE

Report in terms of Section 32(1)(a) of Government Notice No. R.983 of 4 December 2014 (as amended)

PREPARED FOR: Groenkloof Ontwikkelings (Pty) Ltd
PO Box 1935
George
6530

DATE: June 2020

DEADP REF NO: EG12/2/4/1-D2/11-0010/11 &16/3/3/5/D2/19/005/16
SES REF NO: 40

PROJECT INFORMATION

Report Ref. No:	40
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COMPILATION		
Role:	**Name:**	**E-Mail Address:**
Owner:	Sharples Environmental Services cc	info@sescc.net
Author:	Ameesha Sanker	ameesha@sescc.net
Reviewer:	Betsy Ditcham	betsy@sescc.net

Expertise

Sharples Environmental Services cc (SES) is an independent environmental consultancy and has since 1998 been actively engaged in the fields of environmental planning, assessment and management. We advise private, corporate and public enterprises on a variety of differing land use applications ranging from large-scale PV and CPV renewable energy facilities, residential estates, resorts and golf courses to municipal service infrastructure installations and the planning of major arterials. SES has offices in George and in Cape Town.

Author of Report: Ameesha Sanker (Environmental Assessment Practitioner) – Ameesha obtained her BSc. Geological Science (Environmental and Engineering), from the University of KwaZulu-Natal and a BSc. (Hons) in Environmental Management from UNISA. Her experience extends to 7 years' in environmental management, assessments and compliance monitoring, predominantly in the infrastructure, water and sanitation industry.

Report Reviewer: BETSY DITCHAM (Managing Director and Cape Town Office Manager)
Betsy has 10 years' experience as an EAP and has worked for a number of environmental companies in a variety of roles. She holds a BSc double major in Zoology and Ecology from the University of Cape Town and a BSc Honours in Wildlife Management from the University of Pretoria. As a consultant, she has experience in managing, compiling and drafting reports for various environmental applications, such as EIA's and EMP's and liaising with State Departments and other stakeholders, as well as providing advice, guidance and information to clients regarding the different applicable environmental processes. Betsy is a co-owner of SES and is Registered with EAPASA (Reg No. 1480).

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Abbreviations:

BSA	Biodiversity Sensitivity Analysis
DEADP	Western Cape Government: Department of Environmental Affairs and Development Planning
EA	Environmental Authorisation
EIA	Environmental Impact Assessment
EIR	Environmental Impact Report
EMPr	Environmental Management Programme
GCFR	Greater Cape Floristic Region
GN	Government Notice
HoA	Home owners Association
SES	Sharples Environmental Services cc
TIA	Traffic Impact Assessment
VIS	Visual Impact Statement
ZVI	Zone of Visual Influence

1. INTRODUCTION AND BACKGROUND

Sharples Environmental Services cc (SES) was appointed by *Groenkloof Ontwikkelings (Pty) Ltd* (the proponent) to compile this impact report for the proposed amendment of the Record of Decision (Ref: EG12/2/4/1-D2/11-0010/11), dated 25 November 2011 (Appendix A.1). The original authorization was related to the establishment of a residential development with associated open spaces to the extent of 33.21Ha, including the development of 124 single Residential Units and 254 units of Group Housing (see Appendix C.1). Following this approval an amendment was undertaken to transfer the EA to *Groenkloof Ontwikkelings* (Pty) Ltd who purchased the property from the Adonai Shammah Trust, the previous owners, and to extend the validity period of the EA. A copy of the amended RoD can be found in Appendix A2 (16/3/3/5/D2/19/005/16). The current RoD is valid until the 21st of November 2021.

The latest RoD discussed the biophysical and socio-economic component of the project and states that the development can only occur on slopes less steep than 1:4 and should be restricted to the flat areas above the valley. The 1:5 slope was determined as reference to serve as setback for the development footprint from the 1:4 slope. This development setback line is visible on the new proposed layout (see Appendix C.2).

The original property is approximately 33.2127ha in size as per the deed of transfer. According to the amended proposal, approximately 26% of the property will be allotted for open space. The new proposed development of the property is as follows:

- 299 group housing erven for retirement resort purposes - General Res. Zone II. The sizes of these erven will vary from 210m² to 634m² to accommodate a variety of housing types that will be erected on these erven.

- 1 erf will be developed as assisted living flats and home-care facilities - Community Zone III. The size of this property is approximately 3,4753ha and it is proposed to make provision for 256 units (assisted living & home nursing) at a density of 77 units per ha in a double storey building with a coverage of 35%.

- 1 erf will be developed as a dining area, reception and administration as well as parking - Community Zone III. The property size will be 1,1842ha.

- 1 erf will be zoned as Business Zone II and the proposed size is 0,4624ha. The proposed entrance gate will be located on this Erf as indicated on the proposed lay-out plan.

- 2 erven as private open space - Open Space Zone II. The one erf will be used for purposes as mentioned before, relating to the provision for private open space, including the area exhibiting slopes steeper than 1:4 and falls in the valley that run from south to north through the property almost bisecting it. The other being an erf allocated to make provision to accept storm water from a future development on the adjacent property.

- The streets within the proposed development will all be private streets - Transport Zone III.

- One Erf for public street purpose - Transport Zone II. This erf is required for future widening of Glenwood Avenue.

The property will be developed in phases. At this stage the phasing has not been finalized and can therefore not be indicated on the plan.

The average proposed density of the development for the whole property including the assisted living flats, admin/dining facilities and business erf, will be 16,8 units per ha. However, if the private open space, which

consists of 8,6 ha of the property, is not included in the calculations for the above density (16,8), the density increases to 23.03 units per ha.

In terms of the development site there are some sensitivities on the site. To address these sensitivities a Freshwater Habitat Assessment has been completed which assess the impact of the layout on the receiving environment (See Appendix E.1).

2. LOCATION

The property is located approximately 4km east of the centre of George along Glenwood Avenue and approximately 1km north-east of the new Kraaibosch Residential Estate. The northern boundary of the property is adjacent to the existing Saasveld Road. The property is located opposite the Groenkloof Retirement Village, and along with the adjacent sites, such as Portion 62 to the East, is being earmarked for development. The property is located within the designated urban edge of George.

Figure 1: Location of the development site highlighted in red (Google Earth).

3. DESCRIPTION OF THE APPROVED DEVELOPMENT

The original RoD dated 25 November 2011 approved a development described in **Section G** of the document as follows (Refer to Appendix A1):

> *Departmentally approved development*
> *This entails the following:*
>
> ***3.1*** *A Maximum of 378 residential erven comprising of Residential I erven and group housing erven in appropriate density, may be established;*
>
> ***3.2*** *the development will be directly linked to municipal bulk services and will include the construction of associated infrastructure including an internal road network, storm water outlet structures, and reticulation infrastructure for water sewerage, stormwater structures and electricity;*
>
> ***3.3*** *the following instructions shall apply to the proposed development…:*

3.3.1 *the portion of Erf 131 which falls below the 184m contour line is excluded for residential use and must form part of the public open space area;*
3.3.2 *the development footprint shall be defined by the delineated open space/public areas on said layout plan, including the portion of erf 131 which falls below the 184m contour line.*
3.3.3 *buildings and structures on Erven 88,89,92,94 and 95 must be restricted to an overall maximum of 8 metres above natural ground level*

Since the approval of the abovementioned uses, the current holder of the EA, *Groenkloof Ontwikkelings (Pty) Ltd* is proposing a revised layout of the development that would essentially be of such an extent that the scope of the existing Environmental Authorisation is likely to change. The new development includes land uses such as an administrative building, a small business zone as well as assisted living units. A full description of the new proposed development follows in Section 4.

4. DESCRIPTION OF PROPOSED NEW DEVELOPMENT

The new proposed development will be very similar to the current existing Groenkloof retirement village offering retirement units, varying in size from one bedroom to two bedrooms with varying designs. For the elderly needing continued medical attention there will also be assisted living units. To ensure that the development has a variety of uses, there is also a small business zone and an administrative building that will have a cafeteria, reception area and parking for visitors. The following pictures offer an indication of what the development could look like once completed:

Figure 2: Vision for new proposed development (based on the existing Groenkloof Village)

4.1 Land Use Description (New Development)

- **Retirement Units**
  - 299 group housing erven for retirement resort purposes, varying in sizes from 210m² to 634m².
- **Assisted Living Units**

- Approximately 3,4753ha is allocated to assisted living units and home nursing, consisting of 256 units, at a density of 77 units per ha in a double storey building with a coverage of 35%.

- **Open Space**
  - Approximately 8,6 ha of the property, will be allocated as private open space. Consisting of 2 erven as private open space - Open Space Zone II. The one erf for purposes as mentioned before and the other erf to make provision to accept storm water from a future development on the adjacent property.

- **Community Zone**
  - Approximately 1,1842ha of will be allocated for a dining area, reception and administration, as well as parking.

- **Business Zone**
  - 1 erf will be zoned as Business Zone II and the proposed size is 0,4624ha. This erf will be located partially inside and partially outside the proposed entrance gate as indicated on the proposed lay-out plan.

- **Roads and Accessibility**
  - As explained in the Town Planning report, to ensure the functionality of the proposed development, accessibility is key.
  - The streets inside the proposed development will all be private streets - Transport Zone III.
  - 1 erf will be allocated for public street purpose - Transport Zone II, which will be required for future widening of Glenwood Avenue.
  - At present, and in the future, access will be from the extended Glenwood Avenue past the Groenkloof development. A new road network is being developed for this section of Kraaibosch, to address the traffic generated by all existing and proposed developments for this area.

4.2 The Proposed Amendments

In this section the proposed amendments to the existing EA (EG12/2/2/4/2/D2/11/0002/11) are indicated. These amendments focus on aspects regarding the activities that have been previously approved, as well as conditions requiring amendments. The procedural aspects relating to the EA therefore remain unchanged, unless the competent authority decides to make any other changes to the existing EA.

4.2.1 Regulated activity amendments

The following table indicates the amendments necessary for the new development proposal to be compliant with the latest NEMA Regulations:

Table 1: Activity Related Amendments

Original Triggered Activity: Approved Development	Latest Relevant Activity Associated with Original Triggered Activities: New Development	Status of Change
Government Notice No 544 of 18 June 2010 ***Activity Number: 11*** *Activity Description:* *The Construction of:* *(i) Canals* *(ii) Channels* *(iii) Bridges* *(iv) Dams* *(v) Weirs* *(vi) Bulk stormwater outlet structures* *(vii) Marinas* *(viii) Jetties exceeding 50 square metres in size* *(ix) Slipways exceeding 50 square metres in size* *(x) Buildings exceeding 50 square metres in size; or* *(xi) Infrastructure or structures covering 50 square metres or more* where such construction occurs within a watercourse or within 32 metres of a watercourse, measured from the edge of a watercourse, excluding where such construction will occur behind the setback line.	**Government Notice Regulation 327 of 2017 (as amended)** ***Activity Number 12:*** ***Activity Description:*** *The development of—* *(i) dams or weirs, where the dam or weir, including infrastructure and water surface area, exceeds 100 square metres; or* *(ii) infrastructure or structures with a physical footprint of 100 square metres or more;* *where such development occurs—* *(a) within a watercourse;* *(b) in front of a development setback; or* *(c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse; —* *excluding—* *(aa) the development of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour;* *(bb) where such development activities are related to the development of a port or harbour, in which case activity 26 in Listing Notice 2 of 2014 applies;*	- Activity number and description change. - Relevant activities underlined. - The activities have been addressed in the original environmental authorization, therefore do not require reassessment.

Original Triggered Activity: Approved Development	Latest Relevant Activity Associated with Original Triggered Activities: New Development	Status of Change
	(cc) activities listed in activity 14 in Listing Notice 2 of 2014 or activity 14 in Listing Notice 3 of 2014, in which case that activity applies; *(dd) where such development occurs within an urban area; [or]* *(ee) where such development occurs within existing roads, [or] road reserves or railway line reserves; or* *(ff) the development of temporary infrastructure or structures where such infrastructure or structures will be removed within 6 weeks of the commencement of development and where indigenous vegetation will not be cleared.*	
Government Notice No 544 of 18 June 2010 ***Activity Number 22*** ***Activity Description:*** *The construction of a road, outside urban areas,* *i. with a reserve wider than 13.5 metres or,* ii. *where no reserve exists where the road is wider than 8 metres or 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 Notice 454 of 2010.*	**Government Notice Regulation 327 of 2017 (as amended)** ***Activity Number: 24*** ***Activity Description:*** *The development of a road—* *(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* *(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—* *(a) which [are] is identified and included in activity 27 in Listing Notice 2 of 2014* *(b) where the entire road falls within an urban area; or* *(c) Which is 1 kilometre or shorter*	- The internal road network widths have been reduced, from a maximum of 16m's wide to 13m's, inclusive of road reserve. - The Kraaibosch Farm 195/3 is located within the urban edge. - Therefore, the original activity is excluded - Activity 24 does not apply as the road would be

Original Triggered Activity: Approved Development	Latest Relevant Activity Associated with Original Triggered Activities: New Development	Status of Change
		less than 1km in length.
Government Notice No 544 of 18 June 2010 ***Activity Number: 23*** *Activity Description:* *The transformation of undeveloped, vacant or derelict land to-* i. Residential, retail, commercial, recreational, industrial or institutional use inside an urban area, and where the total area to be transformed is 5 hectares or more but less than 20 Hectares, or ii. Residential, retail, commercial, recreational, industrial or institutional use inside an urban area, and where the total area to be transformed is bigger than 1 hectare but less than 20 Hectares	**Government Notice Regulation 327 of 2017 (as amended)** ***Activity Number: 27 or 28*** *Activity Description:* *Activity No.27:* *The clearance of an area of 1 hectares or more, but less than 20 hectares of indigenous vegetation, except where such clearance of indigenous vegetation is required for—* *(i) the undertaking of a linear activity; or* *(ii) maintenance purposes undertaken in accordance with a maintenance management plan.* *Activity No.27:* *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:* *(i) will occur inside an urban area, where the total land to be developed is bigger than 5 hectares; or* *(ii) will occur outside an urban area, where the total land to be developed is bigger than 1 hectare; excluding where such land has already been developed for residential, mixed, retail, commercial, industrial or institutional purposes.*	- Activity number and description change. - Relevant activities underlined. - The activities have been addressed in the original environmental authorization, therefore do not require reassessment.
Government Notice No. 546 of 18 June 2010 ***Activity Number 4 (a)(ii)(gg):*** ***Activity Description According to RoD:***	**Government Notice Regulation 324 of 2017 (as amended)** ***Activity Number 4*** *Activity description:*	- Activity should remain as is in RoD.

Original Triggered Activity: Approved Development	Latest Relevant Activity Associated with Original Triggered Activities: New Development	Status of Change
The construction of a road wider than 4 metres with a reserve less than 13.5 metres, in the Western Cape, outside urban areas, in Areas within 10 kilometres from national parks or world heritage sites or 5 km from any other protected area identified in terms of NEMPAA or from the core areas of a biosphere reserve.	*The construction of a road wider than 4 metres with a reserve less than 13.5 metres.* (ii) Western Cape ii. Areas outside urban areas; ~~(aa) Areas containing indigenous vegetation;~~ ~~(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~~	- The current activity is not applicable, as the site has been transformed and there is no indigenous vegetation present within the proposed road development.
Government Notice No. 546 of 18 June 2010 ***Activity Number: 16*** *Activity description:* The construction of: *(i) jetties exceeding 10 square metres in size;* *(ii) slipways exceeding 10 square metres in size;* *(iii) buildings with a footprint exceeding 10 square metres in size; or* *(iv) infrastructure covering 10 square metres or more* *where such construction occurs within a watercourse or within 32 metres of a watercourse, measured from the edge of a watercourse, excluding where such construction will occur behind the development setback line* ***(d) Western Cape:*** *i. In an estuary;*	**Government Notice Regulation 324 of 2017 (as amended)** ***Activity Number 14:*** *Activity description:* *The development of-* (i) dams or weirs, where the dam or weir including infrastructure and water surface area exceeds 10 square metres; or (ii) infrastructure or structures with a physical footprint of 10 square metres or more; where such development occurs— (a) within a watercourse; (b) in front of a development setback; or (c) if no development setback has been adopted, within 32 metres of a watercourse, measured from the edge of a watercourse; excluding the development of infrastructure or structures within existing ports or harbours that will not increase the	- Activity number and description change. - The activities have been addressed in the original environmental authorization, therefore do not require reassessment.

Original Triggered Activity: Approved Development	Latest Relevant Activity Associated with Original Triggered Activities: New Development	Status of Change
ii. Outside urban areas, in: *(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 identified 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;* *(hh) <u>Areas within 10 kilometres from national parks or world heritage sites or 5 kilometres from any other protected area identified in terms of NEMPAA or from the core area of a biosphere reserve;</u>* *(ii) Areas seawards of the development setback line or within 1 kilometre from the high-water mark of the sea if no such development setback line is determined.* *iii. Inside urban areas:* *(aa) Areas zoned for use as public open space;* *(bb) Areas designated for conservation use in Spatial Development Frameworks adopted by the competent authority or zoned for a conservation purpose;*	development footprint of the port or harbour. **i. Western Cape** i. Outside urban areas: *(aa) A protected area identified in terms of NEMPAA, excluding conservancies;* *(bb) National Protected Area Expansion Strategy Focus areas;* *(cc) World Heritage Sites;* *(dd) Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as adopted by the competent authority;* *(ee) Sites or areas listed in terms of an international convention;* *(ff) Critical biodiversity areas or ecosystem service areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans;* *(gg) Core areas in biosphere* reserves; or *(hh) Areas on the estuary side of the development setback line or in an estuarine functional zone where no such setback line has been determined.*	

Original Triggered Activity: Approved Development	Latest Relevant Activity Associated with Original Triggered Activities: New Development	Status of Change
(cc) Areas seawards of the development setback line or within 100 metres of the high-water mark where no setback line occurs.		

The following activities were found to be applicable to the proposed development amendment, in terms of the National Environmental Management Act, 1998 (Act 107 of 1998), Environmental Impact Assessment Regulations, 2014 (as amended on 07th April 2017).

Table 2: Listed Activity – Not Authorized in Original EA

Applicable Activity	Relevance to Proposed Development as per Amendment	EAP Recommendation
Government Notice Regulation 327 of 2017 (as amended in April 2017), Listing Notice 1 ***Activity Number: 19*** ***Activity Description:*** *The infilling or depositing of any material of more than [5] 10 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than [5] 10 cubic metres from* *[—(i)] a watercourse;* *but excluding where such infilling, depositing, dredging, excavation, removal or moving—*	The new proposed development will entail the construction of a 200mm diameter uPVC, gravity sewer pipeline. A portion of this pipeline will fall within the aquatic habitat, and will cross the identified watercourse (Appendix D2). This pipeline does form a part of the municipal master plan, it would be located just north of the proposed housing infrastructure. Traversing the site from the western border, through the aquatic habitat and watercourse, to tie into the proposed sewer pump station located along the eastern border of the site.	Following the Part 2 amendment investigations, the following was established: • The aquatic habitat and watercourse, related to this impact has been assessed by the specialist, and has been included in the Freshwater Impact Assessment report (Appendix E1.1), completed by Debbie Fordham. • The relevant impact on this aquatic habitat and watercourse, has been addressed by the Freshwater Specialist, (Debbie Fordham). A statement as has been issued, by the specialist (Appendix E1.2), on the 17th of January 2020, to be combined with the formal report (Appendix E1.1), addressing the watercourse crossing. • As per the aforementioned statement, the Specialist has made the following comments: - *Pg.1. Pnt 2: Although it is ideal to keep all infrastructure outside of freshwater habitat, the crossing will not have a detrimental impact*

a) will occur behind a development setback; *b) is for maintenance purposes undertaken in accordance with a maintenance management plan; [or]* *c) falls within the ambit of activity 21 in this Notice, in which case that activity applies;* *d) occurs within existing ports or harbours that will not increase the development footprint of the port or harbour; or* *e) where such development is related to the development of a port or harbour, in which case activity 26 in Listing Notice 2 of 2014 applies.*		*since only a small portion of the watercourse will be affected and the duration of disturbance is limited.* - *Pg.2. The development is deemed acceptable from a freshwater perspective since no detrimental impact should occur if the mitigation measures, contained in the Freshwater report and this statement, are adhered to.* While it is acknowledged that the activity is applicable to the new development, and the activity does not fully align with the previously authorized triggered activities, the following points need to be considered: • The Freshwater Specialist has assessed the receiving environment and surrounding environment, proposed to be disturbed by this impact, and has addressed the level of impact. • The Freshwater Specialist has advised that the new development is acceptable, when implemented with the advised mitigation, which is included in this report, as well as the amended EMPr. • Construction within a watercourse has been addressed in previously authorized triggered activities *(refer to Table 1)*, including activity number 11 and 16 of Government Notice No 544 and 546, respectively, of 18 June 2010 Environmental Impact Assessment Regulations, 2008. • According to the engineering designs and calculations, approximately 9.9m3 of soil will be excavated from the watercourse, during construction (Appendix D2): - Excavation across the watercourse:

		3m x 1m wide x 1,5m deep = 4,5m3 - Gabion mattress: 6m length x 3m width x 0,3m depth = 5,4m3 (can accommodate a reduction in length). Considering the above. We advise that this report and the relevant appendices, for the application for amendment of the original environmental authorization, be sufficient to address the proposed activity, and will not incur an additional, in-depth environmental assessment.

4.2.2 Amendment of Development Description

Table 3: Development Descriptions

Original EA Development Description	*Proposed Amendment - Development Description*
• A Maximum of 378 residential erven comprising of Residential I erven and group housing erven in appropriate density, may be established; • the development will be directly linked to municipal bulk services and will include the construction of associated infrastructure including an internal road network, storm water outlet structures, and reticulation infrastructure for water sewerage, stormwater structures and electricity; • the following instructions shall apply to the proposed development…: - the portion of Erf 131 which falls below the 184 metre contour line is excluded for residential use and must form part of the public open space area; - the development footprint shall be defined by the delineated open space/public areas on said layout plan, including the portion of erf 131 which falls below the 184 metre contour line. - buildings and structures on Erven 88,89,92,94 and 95 must be restricted to an overall maximum of 8 metres above natural ground level.	The development will still entail the construction of residential housing relevant to the care and housing of a retirement community. However, this will also entail the construction of: - higher density residential, assisted living units. - additional community service infrastructure. - Improved frail care services/facilities. Detailed description is as follows: • 299 group housing erven for retirement resort purposes - General Res. Zone II. The sizes of these erven will vary from 210m² to 634m² to accommodate a variety of housing types that will be erected on these erven. • 1 erf will be developed as assisted living flats and home-care facilities - Community Zone III. The size of this property is approximately 3,4753ha and it is proposed to make provision for 256 units(assisted living & home nursing) at a density of 77 units per ha in a double storey building with a coverage of 35%. • 1 erf will be developed as a dining area, reception and administration as well as parking - Community Zone III. The property size will be 1,1842ha. • Inclusion of an administration building, cafeteria, and parking, on a separate erven. • 1 erf will be zoned as Business Zone II and the proposed size is 0,4624ha. The proposed entrance gate will be located within this Erf as indicated on the proposed lay-out plan. • 2 erven as private open space - Open Space Zone II. Allowances for approximately 26% of the property to be proposed as open space. The one erf for purposes as mention before and the other erf to make provision to accept

	storm water from a future development on the adjacent property. • The streets inside the proposed development will all be private streets - Transport Zone III. • 1 erf for public street purpose - Transport Zone II. This erf is required for future widening of Glenwood Avenue.

4.2.3 Amendment of EA Conditions

Table 4: Amendments to EA Conditions

Reference for Condition of the Environmental Authorization	***Description***	***Amended to***
Section G; Page 3 of 16; Condition 3 (3.1 – 3.2)	The Environmental Authorization is for Alternative three (3) which entails the transformation of Portion 3 of the Kraaibosch 195 from agricultural use to Residential use with associated infrastructure and Public Open Space. The project will be undertaken as follows: • A Maximum of 378 residential erven comprising of Residential I erven and group housing erven in appropriate density, may be established; • the development will be directly linked to municipal bulk services and will include the construction of associated infrastructure including an internal road network, storm water outlet structures, and reticulation infrastructure for water sewerage, stormwater structures and electricity; - open space/public areas on said layout plan, including the portion of erf 131 which falls below the 184 meter contour line. buildings and structures on Erven 88,89,92,94 and 95 must be restricted to an overall maximum of 8 metres above natural ground level.	The Environmental Authorization is in support of the amended layout dated November 2019, submitted with the application for amendment of the environmental authorization on (date to be determined). The Scope of works will be in support of improved frail care services for the elderly community, as well as higher density residential housing within the single development. The project will be undertaken as follows: • 299 group housing erven for retirement resort purposes - General Res. Zone II. The sizes of these erven will vary from 210m² to 634m² to accommodate a variety of housing types that will be erected on these erven. • 1 erf will be developed as assisted living flats and home-care facilities - Community Zone III. The size of this property is approximately 3,4753ha and it is proposed to make provision for 256 units(assisted living & home nursing) at a density of 77 units per ha in a double story building with a coverage of 35%. • 1 erf will be developed as a dining area, reception and

		administration as well as parking - Community Zone III. The property size will be 1,1842ha. • Inclusion of an administration building, cafeteria, and parking, on a separate erven. • 1 erf will be zoned as Business Zone II and the proposed size is 0,4624ha. This erf will be located partially inside and partially outside the proposed entrance gate as indicated on the proposed lay-out plan. • 2 erven as private open space - Open Space Zone II. Allowances for approximately 26% of the property to be proposed as open space. The one erf for purposes as mention before and the other erf to make provision to accept storm water from a future development on the adjacent property. • The streets inside the proposed development will all be private streets - Transport Zone III. • 1 erf for public street purpose - Transport Zone II. This erf is required for future widening of Glenwood Avenue.
Section G; Page 3 of 16; Condition 3.3	The following restrictions shall apply to the proposed development. The layout plan prepared by W.M De Kock Associates (dated July 2010) submitted as an addendum to the Final Basic assessment Report ("BAR"), dated September 2010 compiled by Mr A West of Andrew West Environmental Consultancy serves as reference: 3.3.1.) The portion of Erf 131 which falls below the 184 metre contour line is excluded for residential use and must form part of the public open space area; 3.3.2) The development footprint shall be defined by the delineated open space/public areas on said layout plan, including the portion of erf 131	The following restrictions shall apply to the proposed development. The layout plan prepared by Formaplan.cc Town and Regional Planners (dated November 2019), submitted as an addendum to the Application for Amendment of the Environmental Authorization, (see appendix C.2), dated xxx 2020, serves as reference: As per the aquatic specialists findings the buffer area has been zoned, and the proposed housing developments will be situated outside of the buffer area.

	which falls below the 184 metre contour line. 3.3.3) Buildings and structures on Erven 88,89,92,94 and 95 must be restricted to an overall maximum of 8 metres above natural ground level.	
Section G; Page 4 of 16; Condition 6 (6.1 – 6.1.1.)	The mitigation and rehabilitation measures as detailed in the Basic Assessment Report dated September 2011prepared by Mr, Andrew West must be adopted and implemented. In addition, hereto the following mitigation measures must specifically be incorporated into the operational phase – 6.1. Resource conservation measures ("RCM") must be provided for in the design or layout of the residential units, and must include *inter alia* 6.1.1. the collection of rainwater from the roofs and storage thereof in tanks to use for outdoor requirements or other appropriate use. 6.1.2. water saving devices and technologies, *inter alia* the use of low-flow showerheads and double flush toilets; and 6.1.3. electricity saving devices and technologies, *inter alia* the use of solar hot water systems and the use of low voltage or compact fluorescent lighting.	The mitigation and rehabilitation measures as detailed in the Basic Assessment Report dated September 2011prepared by Mr, Andrew West, in conjunction with the Amendment of Environmental Authorization Report dated March 2020, prepared by Sharples Environmental Services. cc, must be adopted and implemented. In addition, hereto the following mitigation measures must specifically be incorporated into the operational phase – 6.1. Resource conservation measures ("RCM") must be provided for in the design or layout of the residential units, and must include inter alia 6.1.1. the collection of rainwater from the roofs and storage thereof in tanks to use for outdoor requirements or other appropriate use. 6.1.2. water saving devices and technologies, inter alia the use of low-flow showerheads and double flush toilets; and 6.1.3. electricity saving devices and technologies, inter alia the use of solar hot water systems and the use of low voltage or compact fluorescent lighting.
Section G; Page 4 of 16; Condition 6 (6.2 – 6.1.3.)	The mitigation measures proposed in the Heritage Impact Assessment Report ("HIA")(dated January 2011) by Mr Stephan de Kock of Perception, inter alia – 6.2.1. a comprehensive architectural design manual, including details in relation to exterior lighting to be used as well as measures to be implemented on reducing of the overall nocturnal footprint of the proposed development; and 6.2.2. a comprehensive landscaping plan for the proposed development; , taking cognisance of the design informants identified as part of the HIA, be compiled and submitted for	The mitigation measures proposed in the Freshwater Habitat Impact Assessment for the Proposed Residential Development of Portion 3 Of The Farm Kraaibosch No. 195, George (dated 24th October 2019) by Mrs Debbie Fordham of Sharples Environmental Services, cc. must be incorporated and implemented throughout the various phases of development.

	approval to the relevant authorities prior to the commencement of the development;	
Section G; Page 5 of 16; Condition 7	The draft Environmental Management Programme ("EMP") submitted as part of the application for environmental authorization must be amended…	The Environmental Management Programme ("EMP") submitted as part of the application for amendment of the environmental authorization must be implemented by the developer and monitored by the approved ECO.

5. AVAILABILITY OF MUNICIPAL SERVICES FOR NEW DEVELOPMENT

5.1. External Civil Services

- *Inputs from Neil Lyners and Associates (RF) (Pty) Ltd Technical Report for Civil Engineering Services.*
- *External services: GLS Consulting Engineers was appointed by George Municipality to assist the Municipality as Water Services Authority with the master planning for water and sewer services in the George area.*
- *BDE Consulting Engineers (Pty) Ltd undertook the electrical report for the proposed development (See annexure D.3).*

Water:

The local authority appointed GLS as the master planning consulting engineers for the water infrastructure. The availability of potable water will be from the South via an existing 200 mm diameter pipe along the main access road, Glenwood Avenue. New internal 160 mm diameter pipelines will connect to the existing 200 mm diameter supply pipeline. The new 160 mm diameter pipelines will also make provision for future developments to the east of this development as indicated by GLS (See Annexure B of Appendix D.1. of this report).

The total annual average daily demand will therefore be 368.80 Kl/day (4,3L/s) with a peak demand of 13 l/s. The George Municipality confirmed in writing that sufficient water resources at the treatment plants will be available (See Annexure G of Annexure D.1. of this report). **Letter needs to be updated.**

The following water saving devices will be employed:

- 2 500 litre rain water tanks at each unit;
- Low flow shower heads;
- Small capacity toilet cisterns.

Sewage:

The proposed sewage discharge for the development will be 277 Kl/day (3,2 L/s) which equates to 75% of the water demand with a peak flow of 9,6 L/s, calculated as per the red book principles. In addition, an allowance will be made in the outfall sewer line capacity for the sewage from a portion of Portion 21/195 Kraaibosch from the west and a portion of Portion 62/195 Kraaibosch from the east.

The George Municipality confirmed in writing that the proposed sewage discharge from a medium density development can be accommodated and that sufficient effluent treatment capacity at the treatment plant will be available (See Annexure G of Appendix D.1 of this report) and this by the end of 2022/2023 when the current upgrades to the Outeniqua WWTW should be completed.

As per the previous services report (Annexure F of Appendix D.1 of this report) the following proposed bulk sewer is still required until an outfall sewer connection is available on the east side on Portion 62/195 Kraaibosch as per the GLS Masterplan. Due to the following reasons connecting to an outfall sewer on Portion 62/195 Kraaibosch as per GLS proposal has been discussed with George Municipality and was found to not be practical at this time:

- The preliminary designs of the sewer system for Portion 62/195 Kraaibosch (See Annexure E of Appendix D.1 of this report) shows pump stations picking up the sewerage versus the masterplan gravity outfall sewer line (See Annexure B of Appendix D.1 of this report) that would have to be installed too high because of rock cliffs located on the south-east end of the erf making the installation of a gravity sewer impractical there;
- The time schedule for the development on Portion 62/195 Kraaibosch is too far behind that of Portion 3/195 Kraaibosch, and Portion 3/195 Kraaibosch would therefore have to handle their own sewerage via an own pump station and rising main pumping to the existing outfall sewer of Groenkloof Retirement Village on Portion 57/195 Kraaibosch (See Annexure C & D of Appendix D.1 of this report).

Therefore, the preferred recommendation for the handling of the sewer outfall of Portion 3/195 Kraaibosch, is therefore outlined below (See Annexure C & D):

- Internal outfall sewer of Portion 3/195 Kraaibosch to accumulate at the lowest point of the site which is at the north eastern corner of the site;
- A new pump station will then pump the sewage from this lowest point along the eastern site boundary across Glenwood Avenue and will connect to the existing outfall sewer of Groenkloof Retirement Village on Portion 57/195 Kraaibosch ;
- The capacity of this pump station will be designed to, besides the peak sewage flow from Portion 3/195 Kraaibosch , also accommodate relevant portions of Portion 21/195 Kraaibosch and Portion 62/195 Kraaibosch in future and thus be able to act as a regional pump station;
- A diesel-powered generator will be provided at the proposed sewer pump station as backup in case of power failures;
- The new pump station will pump to Portion 57/195 Kraaibosch (Groenkloof Retirement Estate) until the development on Portion 62/195 Kraaibosch to the east may install a main outfall sewer to receive this development's sewage as per the GLS masterplan (See Annexure B of Appendix D.1. of this report).
- If the development on Portion 62/195 Kraaibosch chooses to rather install a private sewer pump station (Annexure E of Appendix D.1. of this report) than the proposed GLS gravity outfall sewer (Annexure B of Appendix D.1. of this report) then the pump station on Portion 3/195 Kraaibosch will continue to permanently pump to the existing outfall sewer of Groenkloof Retirement Village on Portion 57/195 Kraaibosch .

The 200mmØ uPVC gravity sewer pipeline and 110mmØ uPVC rising main is proposed to complete the sewer network within this site.

The 200mmØ uPVC gravity sewer pipeline, as referenced above, forms the internal sewer network of the proposed development. It will be located just north of the proposed residential housing, gravitating from the North-Western border of the site, toward the proposed pump station located in the North East. This pipeline will traverse the aquatic habitat and watercourse.

- The 110mmØ uPVC rising main will begin at the proposed sewer pump station in the North-East, and the sewage will be pumped South, along the eastern boundary of the site, across Green Avenue, toward the proposed sewer connection at an existing manhole, contributing to the existing external sewer network.

The long-term option would be for the George Municipality to take over the proposed sewer pump station on Portion 3/195 Kraaibosch as a regional pump station as soon as portions of Portion 21/195

Kraaibosch and/or Portion 62/195 Kraaibosch connects to the pump station. This would then become an alternative to the outfall sewer proposed by GLS on Portion 62/195 Kraaibosch (Annexure D of Appendix D.1. of this report) and has been accepted by George Municipality to be included in Service Agreements with the developers.

Access:

Permanent access to this development will be from Glenwood Avenue, on the south side of the development. During the construction phase, construction vehicles will also enter the site via the existing Glenwood Avenue Road on the southern side of the site.

Stormwater management:

The overall natural drainage direction of the site is towards the Klein Swart River to the north and will be incorporated in the internal network's detail design phase where erosion protection measures are also described.

Electrical Services

The development is within the licensed electricity distribution area of George Municipality. The existing main infrastructure in the area consists of 11kV overhead line networks and underground cables. It has been confirmed that there is adequate capacity at the point of supply to accommodate the development.

With the implementation of the electrical master plan for the area, the municipality has confirmed that adequate capacity will be available for the development. The development will be supplied from the exiting 185mm² Aluminium 11kV cable between Glenwood 66/11 kV substation and the ring main unit that supply Kraaibosch Ridge (Erf 26012).

The complete electrical distribution network shall comply with the Municipality's standard requirements, and technical specifications. On completion, the electrical distribution network will be handed over to the Municipality, which will then be responsible for the maintenance of the network.

5.2. Internal Civil Services

Water

The internal water reticulation system will consist of uPVC pipes varying in size between 90 mm and 160 mm diameter with the necessary provision made for isolating valves, pressure reducing valves, fire hydrants as required erf connections and water meters. George Municipality will take over the water reticulation.

Sewerage

A conventional gravity sewerage system will be installed and it is recommended that 160 mm ø uPVC (Class 34) pipes be used as sewer collectors with 110 mm diameter erf connections to the individual erven. The sewer system will consist of the necessary underground pipes, manholes and bulk erf connections to each individual property. George Municipality will take over the internal sewer reticulation and external outfall sewer.

Stormwater

The storm water drainage will be designed in accordance with the philosophy of providing for a minor and major system. Careful attention will be given to the layout of the road reserves to drain captured and overland storm water away from the proposed development. This storm water can then be utilised to supplement the irrigation.

The major system will consist of roads and open channels to ensure overland escape routes for the larger storm run-offs. The minor system will consist of kerb inlet catch pits and underground storm water pipes.

The minor system will be designed to accommodate the 1 in 2-year return period run-offs and the major systems for the 1 in 20 year run-offs. The minimum pipe diameters will be 450 mm for longitudinal runs and catch-pit connections as per the George Municipality's standards. The storm water run-off from most of the area will drain towards a low point (valley) on the North side of the erf. At this point and other major outlet points, structures which will make provision for energy dissipation and erosion protection will be provided where required.

During construction, special attention will be paid to the use of silt traps at storm water inlets and at natural low points to prevent silt and rubbish to be deposited in the river. The required bulk earthworks on the site must be planned as a total project and must incorporate the storm water management for this development.

Solid Waste

The development will be incorporated in the existing municipal waste infrastructure and the municipality will collect the waste at 2 approved collection points. At a rate of 2 kg/person per day and 2 persons per unit and 4 persons per 100m² of admin/business zones, the approximate mass of waste that will be generated by the development will be 2,92 tons per day.

Electricity

- Consumption metering

Individual metering of the residential units will be done with the standard municipal prepayment metering system. The Business zone, Reception, Administration, Dining-hall, Parking, Standby Flats & Frail care unit etc. will be metered separately.

- Medium voltage network

The development will be supplied from a main 11kV feeder cable between the existing Glenwood 66/11 kV substation and future Groenkloof substation.
Prior to the establishment of Groenkloof substation, the ring system through the development will be closed by connecting to the existing 11kV overhead power line which follows the main road adjacent to the proposed development.
The medium voltage network will consist of a 11kV ring cable system which supply mini substations. The mini substations will be strategically positioned within the development to optimise electrical distribution and to eliminate possible damage by vehicles.

- Low voltage network

The low voltage distribution system will be supplied from the mini substations via underground low voltage cables supplying strategically positioned distribution kiosks.

- Street lighting

Public road streetlights shall meet Municipal requirements and will, after completion, be taken over by the Municipality for operation and maintenance.
The electricity consumption, maintenance and operation of streetlights inside gated communities and along private roads shall be the responsibility of the homeowner's association or body corporate, even if the developer chooses to install custom streetlights.

- Luminaires will be of the low level, low glare type.
- Mercury vapour, high pressure sodium, fluorescent or incandescent lights shall not be considered.
- Energy efficient LED type luminaires will be utilised.

The development will have no negative effect on the electrical operating costs of the supply authority, since the complete electrical infrastructure required for the development will be supplied, installed and maintained by the developer. Electricity sales to the new customers will in fact contribute to the profits made by the supply authority.

The entire internal electrical distribution network will be carefully designed to blend in with the development as well as the natural environment. All structures, equipment and switchgear will be low profile, following natural contours. The environmental management plan for the development will form an integral part of the specification and requirements for the electrical installation construction work.

Energy savings will be optimised with an energy efficient design approach as well as the utilisation of alternative energy sources. Area and street lighting will be done with energy efficient LED technology.

Roads

In general, all roads are between 3,0 m and 6,8 metres wide as per requirements for the residential developments.

The following pavement structures are envisaged, but are subject to final design:

➢ *Bituminous surfacing*

- 13,2/6,7 mm double surface treatment (or alternative).
- 150 mm G4 crushed stone base.
- 150 mm G5 crushed stone subbase.
- 150 mm G7 upper selected material.
- 150 mm G7 lower selected material.

➢ *Brick paving*

- 80 mm Brick paving (Brick and/or cobble pavers).
- 150 mm C4 crushed stone base.
- 150 mm G7 upper selected material.
- 150 mm G7 lower selected material.

The alterations and upgrading of the external and internal road infrastructure will be according to the authorities' requirements and specifications.

6. RECEIVING ENVIRONMENT: NEW PROPOSED DEVELOPMENT

Following the application of the Department of Environmental Affairs online Screening Tool, the proposed site did rank very high in terms of Aquatic Biodiversity and Terrestrial Biodiversity sensitivity themes. However it is known that actual on-site analysis by an EAP with many years' experience probably plays a more important role in determining what specialist studies should be completed. Therefore, a Freshwater Impact Assessment was undertaken in October 2019, to address the current site sensitivity.

A Heritage Impact Assessment was completed along with the original Basic Assessment Report (BAR), and therefore integrated in the EA conditions of 2011. On initiation of this current amendment application, an NOI was drawn up andsent to Western Cape Heritage, on the 04th of November 2019. A response was received from Heritage Western Cape, on 22nd of November 2020, confirming that there would be no further action required in terms of Section 38 of the National Heritage Act (Act 25 of 1999) (See Appendix A3).

In 2010 an ecological assessment was completed for this site, by Regalis Environmental Services, cc. In this report it is noted that while the vegetation of the affected area has been mapped as "Garden Route Shale Fynbos" by Mucina et al (2005), in a more fine-scale study Vlok et al (2008) mapped the vegetation as " Wolwedans Grassy Fynbos", with the national conservation status being Critically Endangered, however he has noted that most of the vegetation on this property was transformed to establish pastures for intensive agricultural purposes. He further notes that the majority of the area consists of alien grass species such as Kikuyu (*Pennisetum clandestinum*) and Paspalum (*Paspalum dilatatum*). Furthermore, it was identified that only a portion of the Groot Brak River and floodplain vegetation, north of the George-Saasveld road, is still in a near-pristine condition. Here, typical riverine trees dominate the vegetation, with some invasions of alien trees species, mostly *Acacia mearnsii* and *Acacia melanoxylon*, but not to the point that the vegetation lost most of its biodiversity. He did confirm that this area may still function as an ecological corridor.

The identification of the importance of the aquatic biodiversity on this site, spurred the need for an intensive Freshwater Impact Assessment, this was completed on the 24th of October 2019, and does support the ecological report findings, in terms of the dominance of alien vegetation along the proposed development portion of the site. Furthermore, with regard to the ecological reports reference of the alien species dominance along the drainage line, it has been noted that a fire event in October 2018 affected this property, along with others and left most of the trees burned. These trees were subsequently cut down, resulting in largely unvegetated slopes. During the 2019 site visit Black wattle (*Acacia mearnsii*) could be seen re-establishing on the slopes.

Given the identification of alien species dominance throughout the proposed developed portion of the site, and confirmation from Heritage Western Cape, no ecological report or heritage assessment was initiated for this amendment, as the Freshwater Impact Assessment did cover the existing ecological state of the site.

The state of the existing site is pictured below:

Figure 3: Outeniqua Mountains, Facing East

Figure 4: Existing Farm Infrastructure, Looking North West

Figure 5: Remnant infrastructure and vegetation looking East

Figure 6 Groenkloof Retirement Village North

Figure 7: Vegetation and dam, looking West

Figure 8: Wetland vegetation adjacent to dam

6.1. Conservation Status

The Western Cape Biodiversity Spatial Plan (Pool-Stanvliet *et al.*) was refined in 2017. This document provides guidelines towards maintaining biodiversity patterns and ecological processes, and the ecosystem services derived from these, since it is generally acknowledged that protected areas alone will never be adequate to conserve a representative sample of biodiversity and maintain ecosystem functioning (Pool-Stanvliet *et al.* 2017).

The Western Cape Biodiversity Spatial Plan (WCBSP) assigns areas as either Critical Biodiversity Area 1 or 2 (CBA), Ecological Support Areas (ESA) 1 or 2, Other Natural Area (ONA), No Natural Remaining (NNR) and Protected area. Each of these categories have desired management objectives in order to ensure that the ecological functioning and services are maintained. The following areas have been mapped within the development footprint of the proposal:

Critical Biodiversity Area 1: Aquatic/Wetland
The Swart River is classified as a CBA1 river. The data does not indicate any strictly aquatic areas within the property. However, water resource protection is provided as a reason for classifying parts of the property as important biodiversity areas. No wetland habitat was found on site.

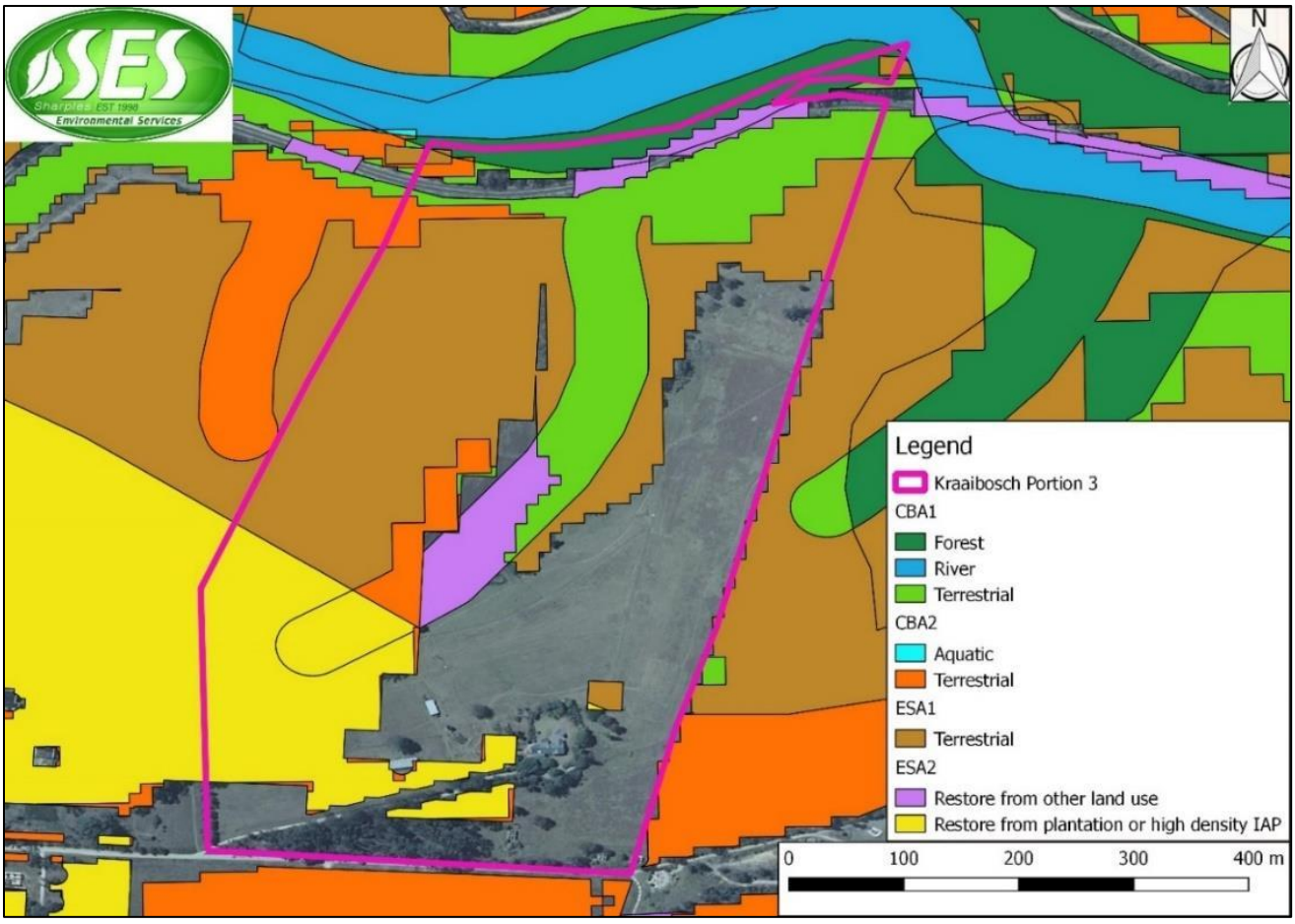

Figure 9: Identified areas relating to the Western Cape Biodiversity Spatial Plan

Critical Biodiversity Area 1: Terrestrial
From Figure 9 above it can be observed that there is a terrestrial CBA that runs in a narrow corridor from the east down the mid-section of the site. The Swart River is classified as a CBA1 river. The area north of the Seven Passes Road (old Saasveld Road) is classified as Forest CBA1, with the small drainage area of the property mainly being terrestrial CBA1. The majority of the property is terrestrial ESA1

Critical Biodiversity Area 2:
Two small patches on the proposed development property have been delineated as Terrestrial CBA 2, meaning that this area on the site is potentially degraded or represents secondary vegetation.

Ecological Support Area 1 and 2:
Most of the site is categorised as an ecological support area, either terrestrial or restoration area. ESAs are not essential to meet biodiversity targets, but play an important role in supporting protected areas and CBAs and ESAs are often critical in providing ecosystem functions. As mentioned in the Freshwater Habitat Assessment Report (Appendix E1) The data does not indicate any strictly aquatic areas within the property. However, water resource protection is provided as a reason for classifying parts of the property as important biodiversity areas. Contours reveal a drainage area that forms a small tributary of the Swart River.

6.2. Aquatic Habitat

Based on the Freshwater Habitat Assessment in (Appendix E1) delineates a tributary stream that occurs on the site. The catchment is predominantly covered in grass species such as alien Kikuyu (*Pennisetum clandestinum*) and indigenous *Stenotaphrum secundatum*. The dense cover in these areas prevents erosion by slowing runoff. The north facing slopes, however, are much more sparsely vegetated as a result of the recent fire that left the vegetation burnt. These slopes are largely bare and vulnerable to erosion. Figure 10 shows the physical location of the aquatic resources located on the site.

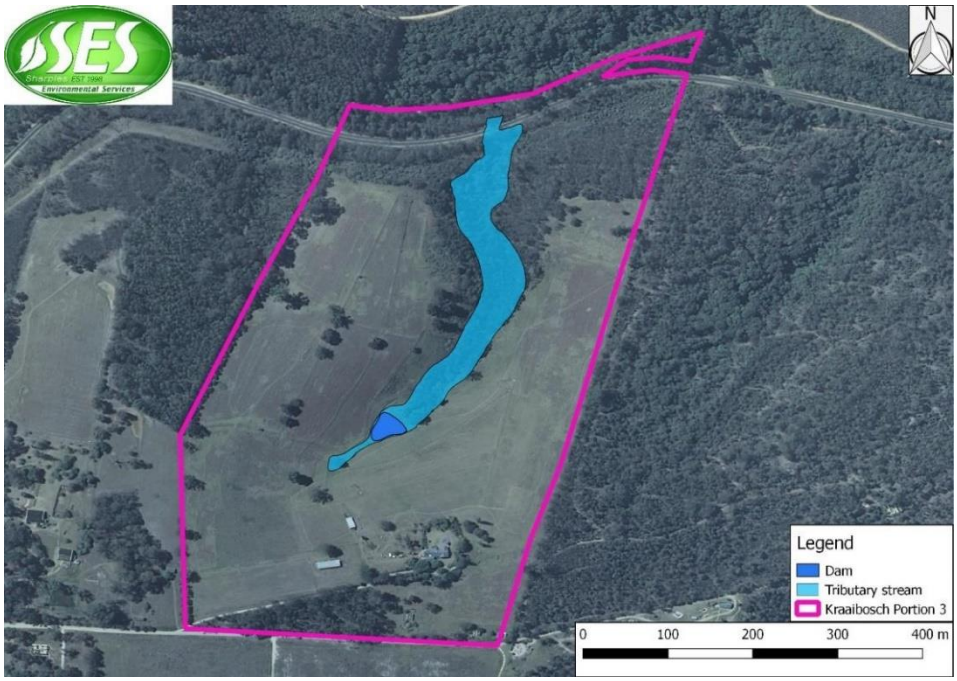

Figure 10: Aquatic Habitat

In the upper reach, the dam has caused headward erosion forming a narrow gully approximately half a meter deep. Terrestrial vegetation, such as native *Conyza scabrida* and *Paspalum urvillei*, invasive bracken fern (Pteridium sp.) and alien bugweed (*Solanum mauritianum*), are dominant in the area. The

dam itself is covered in waterlily (*Nymphaeceae sp*.) with sedges such as *Cyperus sp., Juncus sp. and Typha* capensis reeds. Historically, before agriculture modified the habitat, it is likely that the watercourse extended higher up, upslope of the dam.

Below the dam wall, a combination of alien and indigenous species occurs along the banks of the stream. Alien vegetation are dominant as a result of the level of disturbance in the surrounding area. Indigenous vegetation includes Camphor tree, *Rhus chirindensis*, *Gymnosporia buxifolia* and ferns. Black wattle (*Acacia mearnsii*), Syringa tree (*Melia azedarach*), Rooikrans (*Acacia cyclops*) and *Rubus cuneifolius* are some of the alien species present. The stream becomes an eroded gully as it progresses down towards the Swart River. The size of the gully is approximately 9 x 2 m mid reach. It increases in size as the valley becomes deeper in the direction of the Swart River.

A small patch of indigenous forest remains above the Seven Passes Road. It has species typical of Temperate Southern Montane forest and provides good habitat for birds. This forest vegetation probably used to cover the entire slope and only transitioned to Fynbos on top of the hill. Currently, most of the slope in this area is unvegetated, with only a few burnt, cut-down stumps of alien trees (presumably Black wattle and Pines) remaining. The alien species are re-establishing in the burnt area, but efforts to control this are evident.

7. NEED AND DESIRABILITY

According to the *Integrated Environmental Management Guideline on Need and Desirability (2017)* the determination of need and desirability is determined through consideration of a community's needs and interests reflected in the IDP, SDF and EMF of a certain area, and as determined by the EIA if applicable. To ensure alignment with this guideline the Western Cape's section for need and desirability has been extracted to determine the need and desirability.

1. Is the development permitted in terms of the property's existing land use rights?	~~YES~~	**NO**	**Please explain**
According to the Town Planning report, the property is currently zoned as Agricultural Zone I. At present, however the property is currently used only for residential purposes (dwelling house). Reference is made to the Deed of Transfer (No T 53615/2016), which is applicable to the property. In terms of this title deed, there are no conditions that are restrictive in terms of the proposed development.			
2. Will the development be in line with the following?			
(a) Provincial Spatial Development Framework ("**PSDF**").	**YES**	~~NO~~	**Please explain**
As per the Town Planning Report, with regard to the Provincial Spatial Development Framework. The aims and objectives of the PSDF must always be taken into account and be incorporated into such a municipal SDF. The policy objectives to achieve the goals of the PSDF, are: - To protect and enhance sense of place and settlement patterns - To improve accessibility at all scales - To promote an appropriate land use mix and density in settlements - To ensure effective and equitable social services and facilities - To support inclusive and sustainable housing			

Their relevance and applicability of the aforementioned goals, to this proposed development, include:

a) Policy S1. Protect & Enhance Sense of Place and Settlement Patterns

Point 1) Prevent encroachment into agricultural areas, scenic areas.

- The proposed development complies with point1 above as the proposed development will take place on land that is not earmarked for agricultural purposes.
- The proposed development is situated close to the Saasveld Road which can be regarded as a scenic route. A small portion of the site is visible from the road, and is approximately 50m from the Saasveld road. The developers plans to utilize indigenous tree species, upon this 50m strip of land, leading to the establishment of a natural screen over time, to reduce visibility from the Saasveld Road.

Point 2) Contain urban sprawl.

- The property is situated inside the urban edge and will as such not lead to urban sprawl. The density of the proposed development can also be considered as densification if compared with the density of the development previously approved on this property.

Point 3) Enhance an economically, socially and spatially meaningful settlement.

- The proposed development adheres to the issues mentioned in this point. The development is not restricted to any group of people although lower income group will most probably not be able to afford to buy into this development especially due to the additional services rendered in a Retirement Resort.

Point 4) Use heritage resources.

- This point is not applicable to the proposed development. There are no historical resources on the property.

Point 5) Conservation strategies, place-specific guidelines and development guide lines.

- The development will compliment this point.
- The valley on the property as previously described, is a prominent feature on the property and will be retained as it creates an important open space corridor for all to enjoy. Furthermore, the developers have specific detailed design guidelines for development of their properties.

b) Policy S2. Inter and Intra Regional Accessibility

- Relevant to this development.
- Developments must where possible be directed in areas to enhance public transport systems. The proposed development will support this objective especially when the GoGeorge bus route is extended to the Kraaibosch area.

c) Policy S3. Land Use and Density

- Not entirely relevant to this development, however, it must be noted that Municipal SDF's should include growth management tools to achieve Spatial principles mentioned in SPLUMA, like a densification strategy and urban edge to protect agricultural land of high potential and contain settlement footprints as well as incentives to promote integration.

These growth management tools have been included in the George MSDF and this development complies with the spatial strategies and supporting of the MSDF.

d) Policy S4. Facilities and Social Services

- This is not relevant to the proposed development.

e) Policy S5. Sustainable, integrated and inclusive housing in formal and informal markets

- Fifteen points are listed in the PSDF to achieve this policy. All of these points are directed at the provision of a wide choice housing typologies and opportunities in areas that must be identified strategically keeping in mind aspects such as affordability, integration zones and inclusionary forms of development, accessibility and higher densities.
- It is important to note that this development does make provision for more than one income group and that nobody will be excluded from owning a property in this development. Where applicable, this development adheres to the Policy.

(b) Urban edge / edge of **built environment** for the area.	**YES**	~~NO~~	~~Please explain~~

According to the Town Planning report, the property is earmarked for development, and is located within the urban edge of the George Municipality.

(b) Integrated Development Plan and Spatial Development Framework of the Local Municipality (*e.g.,* would the approval of this application compromise the integrity of the existing approved and credible municipal **IDP and SDF**?).	~~**YES**~~	**NO**	~~**Please explain**~~

George I.D.P.

The George Municipal Vision as put forward in its I.D.P. (2017 0- 2022) is for a City for a sustainable future. A few strategic goals are identified in the I.D.P. The I.D.P. commits George Municipality to "live high values, focus on the citizens of the city, to work smart and act like owners". The I.D.P. further commits George to contribute to the development objectives of the National & Provincial governments.

The I.D.P. identified a number of objectives for the 3 most important of the strategic goals as mentioned above. Most of these objectives are not applicable to this development proposal. What is relevant though, is that two of the objectives of the I.D.P. is to create and facilitate an enabling environment for economic development in George and to ensure that infrastructure planning and development keeps pace with the growing city.

Read in conjunction with the MSDF (which is actually an integral part of the I.D.P.) and wherein the area (Kraaibosch) is earmarked for development (as mentioned before), it is clear that the I.D.P. is in support of orderly development in general and therefore also of this development proposal.

George MSDF

George Spatial Development Framework (MSDF) which was approved earlier last year, is applicable to this area. The MSDF is the document that provides the long-term spatial framework for decisions to be made i.r.o. development applications. Many spatial strategies and supporting policies have been

identified and mentioned in the document, not all of which are applicable to the development proposal for the subject property.

Proposed development applicability to the MSDF:

- Urban Edge – densification

A very important point of departure in the MSDF, was the identification of an urban edge for George. It is mentioned that inside the proposed urban edge, adequate land is available to fulfill in the needs for the provision of housing in George for at least the next 5 years and even beyond that. It is therefore not necessary to make George spatially bigger and the urban edge can therefore be maintained. Existing properties inside the urban edge should be used more efficiently. The target is to increase the density of George to an average of 25 units per ha. It is therefore very important to make sure that any new development proposals are in line with this density policy.

As already mentioned previously in this report, the subject property is situated inside the urban edge of George and the proposed density of the development will be 23.03 units per ha of the available developable land (1 in 4 slopes etc. excluded). It can be said that the proposed development complies with the objective of densification of available land inside the urban edge.

- Apartheid Urban Form

Another important factor identified in the MSDF is the slow transformation of the apartheid urban form. In the MSDF many areas were identified inside the town where densification of vacant and underutilized land can take place. These areas are targeted mainly for housing opportunities for the poorer households. These identified areas are concentrated and located in such a manner as to optimize existing social facilities and are within walking distance of these facilities and the workplace and where applicable within walking distance of public transport.

The subject property does not fall in the above category. There is no bus route or planned bus route close to the property. The development will however create many job opportunities (different kinds such as construction workers, doctors, nurses, cleaners, painters etc.). These workers will either make use of their own transport and those who do not have their own transport, will make use of taxis or transport provided by the retirement resort itself. Although the retirement resort definitely does not exclude any person from buying into the development (age dependant), it must be emphasized that only people who can afford it, will be able to buy a property here. It is also clear that this property (or the area) does not fall under the category of providing accommodation facilities for poorer households specifically due to its location far from any social facilities or bus routes.

It could be argued that although the objective of urban transformation is supported, this property is not ideal to support this objective of the MSDF.

- Enhance Public Transport

The densification zones and housing projects as identified in the MSDF, are located within walking distance of existing and planned bus routes. This makes sense as these areas are mainly focused on the poorer households who are in need of public transport as set out in the policy regarding public transport.

The subject property does not support the current public transport as there is no bus route operating in the area. However, this does not mean that the property cannot be developed. Many other properties in this area are already been developed and further development of the area may at some stage in future justify an introduction of a bus route to this area. According to the Town Planning report (Formaplan, 2020), a verbal discussion was undertaken with personnel of GoGeorge, during this discussion it became clear that a route is planned to serve the Kraaibosch area. It is at this stage, however, not confirmed when the service will be available.

- Open Space System

Integrated open space linkages are proposed for George. The proposed linkages do not affect this property. However, approximately 26% of the property will be zoned as open space which is considered sufficient.

- Infill Development

In the MSDF many land portions have been identified as land where infill development (vacant as well as under-utilized land) can take place. Kraaibosch is one of these areas that was identified. It is also emphasized that no new housing projects should be located on the periphery of George. This policy guideline supports the statement made in paragraph 5.3.3.1.1.2 above namely that the subject property is not suitable for housing for the poor.

Taking into account the policies mentioned in the MSDF, it is clear that this development is in line with, and is in fact supported by, the SDF.

(d) An Environmental Management Framework ("**EMF**") adopted by this Department. (*e.g.,* Would the approval of this application compromise the integrity of the existing environmental management priorities for the area and if so, can it be justified in terms of sustainability considerations?)	~~YES~~	**NO**	~~Please explain~~
Not applicable. An EMF has not been adopted for this area.			
(e) Any **other** Plans (*e.g.,* Integrated Waste Management Plan (for waste management activities), *etc.*)).	**YES**	~~NO~~	**Please explain**

Western Cape Biodiversity Spatial Plan (2017)

The WCBSP, states desired management objectives allocated to the various categories of biodiversity areas i.e. protected areas CBA 1, CBA 2, ESA 1 ESA 2, with the aim being to keep the natural state of the area and to improve the state of biodiversity.

According to the WCBSP (Pence 2017), the proposed site is comprised of CBA1, CBA2, ESA1 and ESA2 habitats. The Swart River is classified as a CBA1 river. The area north of the Seven Passes Road (old Saasveld Road) is classified as Forest CBA1, with the small drainage area of the property mainly being terrestrial CBA1. The majority of the property is terrestrial ESA1. Therefore, most of the site is considered to be in natural or at least functional condition, however certain areas in need of restoration remain. The data does not indicate any strictly aquatic areas within the property. However, water resource protection is provided as a reason for classifying parts of the property as important biodiversity areas. Contours reveal a drainage area that forms a small tributary of the Swart River. (Extracted from the Freshwater Habitat Assessment).

This is achieved through the adoption of the mitigation measures set out by the various specialists, that are included in this report (refer to Appendix E for specialist reports).

3. Is the land use (associated with the project being applied for) considered within the timeframe intended by the existing approved SDF agreed to by the relevant environmental authority (in other words, is the proposed development in line with the projects and programmes identified as priorities within the credible IDP)?	**YES**	~~NO~~	**Please explain**
The property is located within the urban edge of the George Municipality and has been earmarked for residential development in the George Municipality's Spatial Development Plan.			
4. Should development, or if applicable, expansion of the town/area concerned in terms of this land use (associated with the activity being applied for) occur on the proposed site at this point in time?	**YES**	~~NO~~	**Please explain**
The proposed site is located within the urban edge and has been earmarked for development.			
5. Does the community/area need the project and the associated land use concerned (is it a societal priority)? (This refers to the strategic as well as local level (*e.g.,* development is a National Priority, but within a specific local context it could be inappropriate.)	**YES**	~~NO~~	**Please explain**
Although this is a private development, the IDP and SDF have identified the need for housing supply in the George area. According to the George Draft IDP 2017 – 2022, the demand for housing is still much more than the supply. In addition, this document makes reference to the spatial development framework, which details 5 development objectives, one of which includes the densification of Urban Areas, and the provision of Housing & Public Facilities. Retirement villages are common to the George area, and the demand for private housing for this purpose, has been steadily growing. The Town Planning report makes mention that the developers, (Groenkloof), already have a waiting list of 121 names of people interested to invest in this proposed development - to be known as Groenkloof Eden. Property sales in the existing developments of Groenkloof for the last 3 years, are as follows: March 2016 to Feb. 2017 = 84 units March 2017 to Feb. 2018 = 118 units March 2018 to Feb. 2019 = 165 units This further supports the need societal demand for housing, at a local scale.			
6. Are the necessary **services** available together with adequate unallocated municipal capacity (at the time of application), or must additional capacity be created to cater for the project?	~~YES~~	**NO**	**Please explain**
New service infrastructure has been proposed for this development. However, in terms of water, George Municipality has issued a letter on the 2nd of February 2007, confirming that sufficient water resources will be available at the treatment plants. In terms of sewer, the George Municipality has confirmed in writing that the proposed sewage discharge can be accommodated in the next few years, and that sufficient effluent treatment capacity at the treatment plant will be available by mid-2022/23. This development will take some time to approve through all the legislative processes. Then the actual installation of services will take a number of months so it is not impossible that the WWTW has capacity by the time the first houses are built and are ready for occupation.			

7.Is this project provided for in the **infrastructure planning** of the municipality and if not, what will the implication be on the infrastructure planning of the municipality (priority and placement of services and opportunity costs)?	**YES**	~~NO~~	**Please explain**

Water:

The local authority appointed GLS as the master planning consulting engineers for the water infrastructure. The availability of potable water will be from the South via an existing 200 mm diameter pipe along the main access road, Glenwood Avenue. New internal 160 mm diameter pipelines will connect to the existing 200 mm diameter supply pipeline. The new 160 mm diameter pipelines will also make provision for future developments to the east of this development as indicated by GLS (See Annexure B of the Technical Report for Civil Engineering Services, Appendix D.1 of this report). The George Municipality confirmed in writing, on the 02nd of February 2007, that sufficient water resources, would be available at the treatment plants.

Sewage:

The proposed sewage discharge for the development will be 277 Kl/day (3,2 L/s) which equates to 75% of the water demand with a peak flow of 9,6 L/s, calculated as per the red book principles. The George Municipality confirmed in writing that the proposed sewage discharge can be accommodated and that sufficient effluent treatment capacity at the treatment plant will be available by the year 2022/23.

8. Is this project part of a **national programme** to address an issue of national concern or importance?	~~YES~~	**NO**	~~Please explain~~
No, this is a private development.			
9. Do location factors favour this land use (associated with the development proposal and associated listed activity(ies) applied for) at this place? (This relates to the contextualisation of the proposed land use on the proposed site within its broader context.)	**YES**	~~NO~~	**Please explain**
The property is located within the urban edge of the George Municipality and has been earmarked for residential development in the George Municipality's Spatial Development Plan.			
10. Will the development proposal or the land use associated with the development proposal applied for, impact on sensitive natural and cultural areas (built and rural/natural environment)?	**YES**	~~NO~~	~~Please explain~~

While the existing site is zoned as agricultural, there is an existing residential dwelling situated on the property, while the rest of the site remains undeveloped, but highly transformed, by previous agricultural disturbance.

With the exception of the steep slopes, almost all the vegetation on the property has been completely transformed to establish pastures for agricultural purposes. Farming activities have however ceased some time ago. The majority of property consists of alien grass species. A few years ago, the property was almost completely bare of any vegetation when a runaway bush fire swept through the property. After this fire when most of the alien vegetation on the property was burnt down, it was clear to see that there was no indigenous forest on the property.

The site holds no cultural significance.

11. Will the development impact on people's health and well-being (*e.g.,* in terms of noise, odours, visual character and 'sense of place', *etc.*)?	**YES**	~~NO~~	~~Please explain~~

The proposed development will have both a negative and positive impacts on people's health and well-being.

However, it must be noted that negative impacts are foreseen to be temporary, and can be mitigated through effective planning, implementation and maintenance during the various stages of the project. Potential impacts upon human heath and well-being during construction may pertain to:

- The propagation of dust.
- Elevated noise.
- Increase in traffic activity.
- Possible damage to the road surface due to the movement of heavy machinery.
- Visual impacts.

All of which have the potential to affect the sense of place.

Positive impacts on people's health and well-being are foreseen to be long-term, as once the construction subsides, noise, odour, visual, traffic and dust impacts will improve.

Furthermore, other positive impacts which can have an impact upon people's health and well-being in the long-term, as a result of this development, include:

- The provision of open space, areas of natural visual and physical stimuli.
- Maintenance and integration of the natural landscape for construction and development, resulting in less earthworks, dust and noise creation.
- The provision of care facilities to cater to the unique needs of the people of the retirement village.
- Higher density residential developments:
    - More people, encourages socializing, and the creation of a sense of community within this development.
    - Considering the age group and unique needs of the elderly community, there can be psychological benefits including a sense of security, creation of friendships/relationships/companionships, and common ground.
- The provision of multiple community services, including a business zone, a dining area, reception, parking and service infrastructure.

12. Will the proposed development or the land use associated with the proposed development applied for, result in unacceptable opportunity costs?	~~YES~~	**NO**	~~Please explain~~
No, it will not result in unacceptable opportunity costs.			

8. ASSESSMENT OF IMPACTS RELATING TO THE PROPOSED CHANGE

The previous authorisation was related to a lower density development, also pertaining to retirement housing, with the associated infrastructure and open space. Considering the new proposal will entail higher density retirement housing infrastructure, along with assisted living units and frail care, a business and commercial zone, parking area, associated infrastructure and open space, it is considered to be a significant change in the development proposal. The following specialist studies were conducted:

- Freshwater Impact Assessment (Appendix E1)
- Freshwater Impact Statement (Appendix E2)
- Town Planning Report (Appendix E3)
- Heritage NID

The following reports were supplied by the Engineers:

- Civil Services Report (Appendix D1)
- Stormwater Management Plan

8.1. Description of Impacts Related to the Proposed Change

The following impacts related to the proposed change have been identified:

8.1.1. Construction Phase

- **Aquatic Impact: Loss of Aquatic Vegetation and Habitat**

According to the results of the Freshwater Impact Assessment (Appendix E 2), this refers to the direct physical destruction or disturbance of aquatic habitat caused by vegetation clearing, encroachment and colonisation of habitat by invasive alien plants. While the existing site constitutes very little indigenous vegetation, due to an infestation of dense alien invasive tree species and pastures of alien grass species which will be the responsibility of the, the current layout does not necessitate clearance of any aquatic habitat. However, due to the occurrence of excavations and the topography of the site, indirect burial of aquatic vegetation downslope, may occur.

- **Aquatic Impact: Erosion and Sedimentation**

According to the Freshwater Impact Assessment (Appendix E1), vegetation clearing and exposure of bare soils within and upslope of the aquatic habitat during construction will decrease the soil binding capacity and cohesion of the upslope soils and thus increase the risk of erosion and sedimentation downslope. This may cause the burying of aquatic habitat and aquatic faunal fatalities. 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 might also occur. This increase in volume and velocity of runoff increases the particle carrying capacity of the water flowing over the surface. These impacts are the biggest threat to the system since the steep slopes will enhance and increase the likelihood of the impact occurring. Furthermore, the construction will include extensive "cutting and filling" which increases the soils vulnerability to erosion.

- **Aquatic Impacts: Water Pollution**

According to the Freshwater Impact Assessment (Appendix E1), 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. Sudden drastic changes in water quality can also have chronic effects on aquatic biota in general and result in localised extinctions. Hydrocarbons including petrol/diesel and oils/grease/lubricants associated with construction activities (machinery, maintenance, storage, handling) may potentially enter the system by means of surface runoff or through dumping by construction workers. Raw cement might enter the systems through incorrect batching procedure and/or direct disposal. The incorrect positioning and maintenance of the portable chemical toilets and use of the surrounding environment as ablution facilities may result in sewage and chemicals entering the systems.

- **Aquatic Impacts: Flow Modification**

According to the Freshwater Impact Assessment (Appendix E1), possible ecological impacts to the flow modification include land clearing and earthworks, upslope of the watercourse which will reduce infiltration rates and increase the surface runoff volume and velocity. These changes in surface roughness and runoff rates may lead to some rill and gully erosion. Altered water inputs from upslope disturbances as well as modified water distribution and retention patterns will ultimately affect the hydrological integrity of the stream.

- **Proposed Sewer Pump Station**

Construction of a sewer pump station and generator, along the North Eastern boundary of the site will entail the clearance of vegetation, and extensive earthworks. Exposed soils and lack of bunded stockpiles, can lead to erosion and sedimentation events, that can impact upon the forest vegetation downslope of the development, causing disturbance to any fauna or flora residing in this area.

The sewer pump station location is proposed along North Eastern edge of the proposed development, identified as ESA 1 (identified by the Western Cape Biodiversity Spatial Plan). According to the freshwater impact assessment it has been confirmed that the site is mostly transformed, with predominantly alien grass species Kikuyu (*Pennisetum clandestinum*) and Paspalum (*Paspalum dilatum*), with few indigenous species and low biodiversity remaining.

- **Proposed 200mm Diameter uPVC Gravity Sewer Pipeline**

The gravity sewer pipeline will traverse the aquatic habitat and watercourse, behind the development setback and buffer zone.

This will result in the loss and disturbance of aquatic vegetation, within the riparian zone. It should be noted that in terms of the Freshwater Impact Assessment, the riparian vegetation has been cleared, with only a few trees on the 1m high banks of the eroded channel. A combination of alien species (including Black wattle (*Acacia mearnsii*), Syringa tree (*Melia azedarach*), Rooikrans (*Acacia cyclops*) and Rubus cuneifolius)), and indigenous species (including Camphor tree (*Cinnamomum camphora*), Rhus chirindensis, Gymnosporia buxifolia and Bracken fern (*Pteridium aquilinum*)), occur along the banks of the stream, which is dominated by alien species.

Excavations through the riparian zone and within the watercourse would lead to erosion and sedimentation events, impacting upon the aquatic habitat and inhabitants, downslope. It should be noted that at present, the stream becomes an eroded gully as it progresses down slope towards the Swart River, in addition the freshwater impact assessment has indicated that the crossing will not have a detrimental impact due to such a small portion of the watercourse being traversed.

Furthermore, the construction has the potential to hinder flow within the channel, temporarily. It has been indicated, within the Freshwater Impact Assessment, that the stream has an ephemeral flow pattern which entails flows for very short periods of time after high rainfall.

- **Visual Impact and Impact on Sense of Place**

Construction activities will have visual impacts, as well as impacts on the sense of place, as the site will change from undeveloped, to developed. As identified in the Town Planning Report, only a small portion (an approximate 50m strip) of the construction site will be visible from the Saasveld Road, which can be regarded as a scenic route. The surrounding community will be exposed to typical visual construction activity impacts, however these are temporary and will be removed once construction concludes.

- **Traffic and safety Impacts**

Consideration must be given to the transportation of materials to and from site, the extent of the development is vast, therefore significant amounts of materials, as well as machinery and vehicles, are expected to be transported to, stored on, and removed from the site on, sometimes, a daily basis. Trucks and vehicles traversing the shared community roads, multiple times, can lead to significant traffic, affecting road capacity, safety and leading to congestion, as well as road surface damage, are possible impacts expected to occur during construction, which will be temporary (duration of construction). Construction vehicles have already used this road for a number of years to construct Groenkloof and Groenkloof Annex and therefore the impacts should be similar to that which has already occurred.

It should be noted that the Town Planning Report makes mention of access being from the extended Glenwood Avenue, past the Groenkloof development. Access to the proposed development of the property can be regarded as good and will in future also benefit the public transport system of George as the development is connected to Knysna road. This area and all the adjacent developments have already been taken into consideration in the Kraaibosch Roads Master Plan.

- **Increased levels of noise and dust**

Typical construction phase impacts associated with the development are likely to be present, including elevated noise levels and dust, from the site establishment activities, construction activities (including earthworks and excavations, poorly protected stockpiles from wind disturbance, etc) and the presence of construction labourers. These nuisances would be of a temporary duration (i.e. for duration of the construction phase).

- **Socio-Economic Impact - Creation of business and employment opportunities**

A number of temporary job opportunities will be created for locally sourced skilled and unskilled labour, as well as encouraging specialist input, which contributes to the environmental baseline knowledge of the area.

- **Social: Security/Theft**

With the commencement of construction, there can be an increase in crime due to construction activities attracting opportunists prone to criminal activities. However, this is a security issue and various measures are already in place to deal with the various security threats.

- **Land Disturbance, Erosion and Sedimentation**

The site will be subject to earthworks and construction activities that will result in the removal of vegetation (very little indigenous vegetation, pre-dominant presence of alien vegetation tree and grass species), resulting in exposure of soils to natural elements, which can lead to dispersal and nuisances for the surrounding area. Construction activities including insufficient stockpiling, can lead to mixing of soils and therefore unsuccessful reinstatement, topsoil loss, injuries and spillage due to collapsed stockpiles. The

occurrence of rainy and windy conditions can compromise these bare/exposed soils and material, influencing erosional and sedimentation events.

- **Job opportunities (positive socio-economic impact)**

It is clear that to avoid continuing unrest and civil disobedience, the Government needs to enable the private sector to create jobs and associated wealth. Note that Governments do not create wealth, they merely enable or disable the creation of wealth and jobs. This gives them immense power but also responsibility. For if each arm of Government in SA does not actively encourage job creation it will eventually run out of money to spend, as is already happening in many areas in South Africa, and a downward spiral of the standard of living will ensue.

In the local context there are substantial job providers in addition to Groenkloof, especially in the building sector. Groenkloof has provided approximately 1000 direct and indirect jobs over the last 10 years and it is likely that this development will do the same. These 1000 jobs provide a lifeline to at least 5 dependants each and with the job losses predicted to be in the 3 to 5 million range as a result of COVID 19, this type of development in terms of job creation is sorely needed.

In terms of capital expenditure the total cost will be nearing on a Billion Rand.

8.1.2. Operation Phase

- **Aquatic impact- Loss of aquatic vegetation and habitat**

According to the Freshwater Impact Assessment (Appendix E1), the project will 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. It is however unlikely that many sensitive species remain within the degraded areas. The stormwater infrastructure of the housing and associated road network will increase and concentrate flows. This may lead to erosion in the system that compromises remaining vegetated habitat. There is also the risk of certain garden plants establishing in riparian areas and outcompeting indigenous vegetation.

- **Aquatic Impact - Sedimentation and Erosion**

According to the Freshwater Impact Assessment (Appendix E1), 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 and outside of the study area. The increase in hardened surfaces by the development will be considerable and, if not mitigated against, will result in further erosion/sedimentation. Surface runoff and velocities will increase, and flows might be concentrated by stormwater infrastructure. The steep slopes of the study area necessitate specific consideration of these impacts.

- **Aquatic Impact - Water Pollution**

According to the Freshwater Impact Assessment (Appendix E1), the increase in vehicles on the property due to the development increases the potential for pollutants to enter the systems. During maintenance of the development there could be water pollution impacts, similar to those encountered in the

construction phase. It is assumed that wastewater will not be treated on the property. However, should any onsite wastewater treatment infrastructure fail, and result in raw sewerage entering any watercourses, it may impact the water quality of the system. Water pollution could impact the downstream Swart and Kaaimans River, depending on whether the polluting activity coincides with sufficient rain to wash the pollutants down.

- **Aquatic Impact: Flow Modification**

The Freshwater Impact Assessment makes mention of the SANRAL (2006) report, which states that urbanisation typically increases the runoff rate by 20 - 50%, compared with natural conditions. Hardened/artificial infrastructure will alter the natural processes of rain-water infiltration and surface runoff, promoting increased volumes and velocities of storm water runoff, which can be detrimental to the rivers receiving concentrated flows off of the area. Increased volumes and velocities of storm water draining from the development and discharging into down-slope aquatic habitat can alter the natural ecology of the system, increasing the risk of erosion and channel incision/scouring and back-flooding. The stream is expected to get increased water inputs more regularly than under natural conditions.

- **Proposed Sewer Pump Station_**

During the operational phase the pump station has been designed so that should the electricity fail, a back-up generator will kick in. Should this generator fail a signal is sent to the entity responsible so that action can be taken to rectify the situation. The pumpstation also has spare holding capacity to ensure that, should the generator stop, the pumpstation does not overflow. If the pumpstation did overflow this would lead to contamination of the land surface and vegetation, affecting the downslope forest vegetation and fauna. There is a watercourse identified at the to the north (downslope) of the proposed positioning of the sewer pump station. The specifications of the pumpstation will be as per the engineering guidelines and the plans will be signed off by the Municipality. This pumpstation will be similar to many other pumpstations in and around George and any failures will be dealt with in the same manner as the existing pumpstations.

Also the pumpstation has the potential to cause issues related to odour, during operation but the pumpstatoin and ventilation system is designed with the proposed housing units in mind.

- **Proposed 200m Gravity Sewer Pipeline – Pollution and Erosion**

During the operational phase the pipeline where it crosses the water course, will be located below ground level, with a gabion mattress situated up stream of the pipeline, levelled with the bed of the stream. The potential of high and erratic rain events can lead to disturbance within the bed of the stream, and disturbance to the gabion mattress but this is extremely unlikely if constructed as per the engineering specifications.

Should the pipeline experience a breakage/leak within this area, it has the potential to contaminate the aquatic habitat, including the soils, fauna and flora. The contamination can be carried downslope to the Swaart River.

Sewer manholes will also be established within the aquatic buffer zone, potential for blockages and therefore overflow of raw sewage within this area, has the potential to cause contamination downslope, as well as emit foul odours, if not well maintained.

- **Open Space Management**

The designated private open space needs to be managed efficiently, and a natural state retained. Open space will provide a natural element to the development. The central portion of the site identified as private open space creates a barrier between the stream and the development, and should be maintained as thus, to encourage natural fauna and flora to flourish, and natural ecosystems to develop.

The specialist has advised that walkways can be accommodated following the contours through fynbos vegetation or a bird hide near the indigenous forest for bird viewing and to take in the scenic landscape are potential uses in this specific project. Signage displaying birdlife supported by indigenous vegetation can be erected to stimulate interest in and use of the recreational space. These uses are unlikely to impact on the stream and would rather assist it by making it valuable to the residents in the immediate area. It promotes the use of the open space area that contains freshwater habitat for recreational activities and advocates the adoption of a buffer zone.

- **Visual Impact: Change from an Undeveloped Site to a Developed Site**

The property has been earmarked for residential development, therefore it will undergo a change of character from undeveloped to developed. However, as stated in the Town Planning Report, there are no significant negative visual impacts foreseen for this development.

Visual changes will be observed, as the site will be transformed from extensive alien tree and grass species, to housing and administrative buildings, with appropriate infrastructure, including roads, electrical/communications infrastructure above ground, etc, as well as increased hardened surfaces, and an increase in artificial lighting at night (ie: light poles, residential housing lights, etc, from a previously undeveloped site), which will be observed by the surrounding community. As the project is situated within the urban edge of the property this will not cause a significant negative impact. An approximate 50m strip of development will be visible from the Saasveld Road, until the establishment of the vegetated screen of different indigenous tree species planned for this area.

- **Traffic & Safety Impact:**

There will be an increase in traffic as a result of the development. However, once the Kraaibosch Roads Master Plan has been fully implemented, there will be adequate capacity to accommodate the traffic to and from the proposed development. There will no longer be heavy machinery movement to and from the development.

- **Property Values of Surrounding Development (Positive Impact)**

Values of real estate are driven by various factors, among others supply and demand, interest rates, the contraction or expansion of the local economy, population growth rates and changes in disposable income to debt ratios. With the increase in facilities it is likely that surrounding properties values may increase due to their proximity to these facilities. Attracting the attention of other prospective retirees, therefore increasing the demand for housing and care facilities of this nature, and increasing the number of housing within the urban edge.

In addition, this can result in an increase in small scale businesses, to provide services for the growing population, such as laundry, grocers, etc. providing further opportunity for employment.

- **Potential Increase in Demand for Services**

The George Municipality has confirmed the availability of infrastructure in terms of water and sanitation although this will be in the year 2022/23. The eventual increase in demand for housing and development within this area, will lead to an increase in the need for services and bulk infrastructure, that will need to be integratedin the future bulk infrastructure services plans for George Municipality. This is the role of GLS which pre plans for the eventual development of all the properties in the area up to a certain density.

- **Broaden the rates base (Positive impact)**

The development will result in an increase in the rates base. In addition, the proposed development would also generate revenue for the local municipality from the consumption of water and electricity. It is

expected that the socio-economic impact in terms of broadening the rates base will be more positive in the new development proposal, compared to the approved development because of the fact that the new development proposal has a greater density of housing, and improved facilities, more lighting, etc.

- **Job Opportunities (Positive impact)**

The development will attract various personnel from various career levels and industries, to tend to the day-to-day running of the facilities, grounds and retirees. Jobs created during the operational phase will include, but not be limited to: medical personnel, administrative staff, technical staff, maintenance, food preparation/chef, gardeners, domestic workers, etc. For the lucky few job seekers who are employed, the impact is massive and very significant. It means one more person who has not only got an opportunity to support themselves and their family but also able to contribute to the economy.

- **Availability of Housing Within the Urban Edge of the George Municipality**

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. The property will then cater for retired people who are looking for somewhere to stay which is more secure and easier to live in terms of catering for the older generation. Many older people are moving into the George area as the rest of the Municipalities in South Africa struggle to get the basics right in terms of services and infrastructure. The demand is very great and the developers cannot keep up with demand and have a waiting list of people who want to move into Groenkloof.

8.2. Impact Significance and Mitigation

The tables below are a summary of the impact significance of the previously approved layout VS the new proposed layout and they list the measures to ensure avoidance, management and mitigation of impacts associated with such proposed change, as described above.

8.2.1. Construction Phase

Table 5: Aquatic Impact - Loss of Aquatic Vegetation and Habitat

According to the results of the Freshwater Impact Assessment (Appendix E 2), this refers to the direct physical destruction or disturbance of aquatic habitat caused by vegetation clearing, encroachment and colonisation of habitat by invasive alien plants. While the existing site constitutes very little indigenous vegetation, due to an infestation of dense alien invasive tree species and pastures of alien grass species which will be the responsibility of the, the current layout does not necessitate clearance of any aquatic habitat. However, due to the occurrence of excavations and the topography of the site, indirect burial of aquatic vegetation downslope, may occur.		
Layout	**Approved layout**	**Amended layout (current)**
Nature of impact:	Negative	Negative
Extent and duration of impact:	Local and long term	Local and long term
Probability of occurrence:	Highly probable	Highly Probable
Degree to which the impact can be reversed:	Partly reversible	Partly reversible
Degree to which the impact may cause irreplaceable loss of resources:	Marginal loss of resources	Marginal loss of resources
Cumulative impact prior to mitigation	Medium	Medium
Significance rating of impact prior mitigation:	Medium	Medium
Degree to which the impact can be mitigated:	Can be mitigated	Can be mitigated
Proposed mitigation:	General	

	• Establish buffer zone, identify or demarcate with a physical barrier, ie: danger tape/fencing, extent of development footprint closest to the sensitive aquatic vegetation. • Construction personnel, equipment and materials must be limited to the minimal practical working area. • Unauthorized construction workers and vehicles must be prevented from entering the aquatic zone. Vegetation • No aquatic vegetation or surrounding natural vegetation should be disturbed unnecessarily. If any vegetation is intended for removal that has not been covered in this assessment, it must be brought to the attention of the responsible ECO to address. • Removal of alien invasive species within the buffer area is permitted to control the spread of the alien invasive species, however this activity must be restricted to a few personnel, and monitored. Stormwater Control • Silt fences must be erected between the construction activities and the aquatic habitat to prevent sediment-laden storm water from entering the this area. • Erosion control measures including silt fences, low soil berms and/or shutter boards must be put in place around the stockpiles to limit sediment runoff from stockpiles. Alternatively, the exposed slopes must drain into small temporary stormwater and silt traps/ponds. • Appropriate stormwater measures must be implemented, as well as a stormwater management plan. • All equipment and materials storage areas must be located at a minimum distance of 50 m from the buffer zone or drainage lines (if practically possible). The appointed ECO must be consulted in this regard. • Construction must be avoided during rainy days, to prevent excessive turbidity. • Manual labour must be favoured over mechanical methods. Heavy machinery may only be used as a last resort if manual methods are not feasible or practical. • Construction work must be well-planned and well-managed so that construction work proceeds quickly and efficiently, thus minimising the duration of disturbance. • Adequate erosion control measures must be implemented as per this EMPr to minimise sediment containing run-off from entering the river system.	
Cumulative impact post mitigation:	Low	Low

Significance rating of impact post mitigation:	Low (-)	Low (-)

Table 6: Aquatic Impact - Erosion and Sedimentation

According to the Freshwater Impact Assessment (Appendix E1), vegetation clearing and exposure of bare soils within and upslope of the aquatic habitat during construction will decrease the soil binding capacity and cohesion of the upslope soils and thus increase the risk of erosion and sedimentation downslope. This may cause the burying of aquatic habitat and aquatic faunal fatalities. 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 might also occur. This increase in volume and velocity of runoff increases the particle carrying capacity of the water flowing over the surface. These impacts are the biggest threat to the system since the steep slopes will enhance and increase the likelihood of the impact occurring. Furthermore, the construction will include extensive "cutting and filling" which increases the soils vulnerability to erosion.		
Layout	**Approved layout**	**Amended layout (current)**
Nature of impact:	Negative	Negative
Extent and duration of impact:	Local - Regional	Local - Regional
Probability of occurrence:	Highly likely	Highly likely
Degree to which the impact can be reversed:	Partly reversible	Partly reversible
Degree to which the impact may cause irreplaceable loss of resources:	Marginal loss of resources	Marginal loss of resources
Cumulative impact prior to mitigation	Medium(-)	Medium(-)
Significance rating of impact prior mitigation:	Medium(-)	Medium (-)
Degree to which the impact can be mitigated:	Can be partly mitigated	Can be partly mitigated
Proposed mitigation:	General: • Establish buffer zone, identify or demarcate with a physical barrier, ie: danger tape/fencing, extent of development footprint closest to the sensitive aquatic vegetation. • Construction personnel, equipment and materials must be limited to the minimum practical working footprint. • All equipment and materials storage areas must be located at a minimum distance of 50 m from the wetlands or drainage lines (if practically possible). The appointed ECO must be consulted in this regard. • Construction must be avoided during rainy days, to prevent excessive turbidity. • Manual labour must be favoured over mechanical methods. Heavy machinery may only be used as a last resort if manual methods are not feasible or practical. • Construction work must be well-planned and well-managed so that construction work proceeds quickly and efficiently, thus minimising the duration of disturbance. Vegetation: • No aquatic vegetation or surrounding natural vegetation should be disturbed unnecessarily. If any vegetation is intended for removal that has not been covered in this assessment, it must be	

	brought to the attention of the responsible ECO to address. • Removal of alien invasive species within the buffer area is permitted to control the spread of the alien invasive species, however this activity must be restricted to a few personnel, and monitored. Stormwater Control • Silt fences or similar measures must be erected between the construction site and the wetland to prevent sediment laden storm water from entering the watercourse. • Berms or similar measures must be implemented to slow down the speed of storm water flows into the watercourse. • Erosion control measures including silt fences, low soil berms and/or shutter boards must be put in place around the stockpiles to limit sediment runoff from stockpiles. Alternatively, the exposed slopes must drain into small temporary stormwater and silt traps/ponds. • Only the minimum required excavations must be undertaken. No excessive excavations must be allowed. • No dumping of soil and / or any other material within close proximity of the aquatic habitat. • Disturbed areas must be rehabilitated once construction has been completed. • Appropriate stormwater measures must be implemented. • Stockpiles must be demarcated, and bunded, to avoid accidental spillage and runoff. • Stockpiles should not be excessively high, particularly stockpiles sediment, these should not exceed 2m's in height.	
Cumulative impact post mitigation:	Medium	Medium
Significance rating of impact post mitigation:	Medium (-)	Medium (-)

Table 7: Aquatic Impacts - Water Pollution

According to the Freshwater Impact Assessment (Appendix E1), 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. Sudden drastic changes in water quality can also have chronic effects on aquatic biota in general and result in localised extinctions. Hydrocarbons including petrol/diesel and oils/grease/lubricants associated with construction activities (machinery, maintenance, storage, handling) may potentially enter the system by means of surface runoff or through dumping by construction workers. Raw cement might enter the systems through incorrect batching procedure and/or direct disposal. The incorrect positioning and maintenance of the portable chemical toilets and use of the surrounding environment as ablution facilities may result in sewage and chemicals entering the systems.

Layout	**Approved layout**	**Amended layout (current)**
Nature of impact:	Negative	Negative
Extent and duration of impact:	Local	Local

Probability of occurrence:	Probable	Probable
Degree to which the impact can be reversed:	Partly reversible	Partly reversible
Degree to which the impact may cause irreplaceable loss of resources:	Marginal loss of resources	Marginal loss of resources
Cumulative impact prior to mitigation	Medium	Medium(-)
Significance rating of impact prior mitigation:	Medium	Medium (-)
Degree to which the impact can be mitigated:	Can be mitigated	Can be mitigated
Proposed mitigation:	General • Establish buffer zone, identify or demarcate with a physical barrier, ie: danger tape/fencing, extent of development footprint closest to the sensitive aquatic vegetation. • Ensure this zone, is taken into account whilst planning activities and designating storage areas, as well as stockpiling material. • Construction personnel, equipment and materials must be limited to the minimum practical working footprint. • Manual labour must be favoured over mechanical methods. Heavy machinery may only be used as a last resort if manual methods are not feasible or practical. • Construction work must be well-planned and well-managed so that construction work proceeds quickly and efficiently, thus minimising the duration of disturbance. • Construction must be avoided during rainy days, to prevent excessive turbidity. Stormwater Control • Appropriate stormwater measures must be implemented. • Adequate erosion control measures must be implemented as per this EMPr to minimise sediment containing run-off from entering the river system. Hazardous wastes • Fuels and potentials pollutants must be stored and managed strictly as per the respective Materials Safety Data Sheets. • Hazardous storage and refuelling areas must be bunded with an impermeable liner to protect groundwater quality. The bunding shall be capable of handling a volume 150% the volume of the container storing the substance. The Contractor shall submit a method statement to the Engineer for approval. • Vehicles must be inspected in a daily basis to check for leaks. • Adequate hazmat spillage cleaning kits must be readily available in the event of oil and hydraulic spills. • Vehicle repair must be undertaken in a designated area within the site camp, on an	

	impermeable surface. Waste should be collected and disposed of at a registered site. Ensure any runoff is restricted from accessing any natural areas. • Contaminated soil must be removed for disposal at an appropriately licensed hazardous disposal site, disposal slips must be obtained as proof. • Storage areas containing hazardous substance / materials must be clearly labelled, using appropriate signage and signboards. Ablution facilities • All equipment and materials storage areas must (if practical, reasonable and feasible) be located at a minimum distance of 50m from the watercourse. The appointed ECO must be consulted in this regard. • The Contractor must provide the necessary ablution facilities for all his personnel prior to the commencement of work and must ensure that his personnel make use of the facilities. • Toilet facilities must be supplied by the Contractor for the workers at a ratio of at least 1 toilet per 30 workers in areas approved by the ECO, separate toilets must be supplied as per gender. • The facilities must be maintained in a hygienic state and serviced regularly. Toilet paper shall be provided. • Temporary/ portable toilets must be secured to the ground to prevent them toppling due to wind or any other cause, to the satisfaction of the ECO. • Discharge into the environment and burial of waste is strictly prohibited. The Contractor must ensure that no spillage occurs when the toilets are cleaned or emptied and that the contents are removed from the site, disposal/cleaning slips must be filed in the Environmental File, to ensure that these are available for review. • Toilets shall be emptied before the Contractors' holidays or any other temporary site closure.	
Cumulative impact post mitigation:	low	low
Significance rating of impact post mitigation:	Low (-)	Low (-)

Table 8: Aquatic Impacts - Flow Modification

According to the Freshwater Impact Assessment (Appendix E1), possible ecological impacts to the flow modification include land clearing and earthworks, upslope of the watercourse which will reduce infiltration rates and increase the surface runoff volume and velocity. These changes in surface roughness and runoff rates may lead to some rill and gully erosion. Altered water inputs from upslope disturbances as well as modified water distribution and retention patterns will ultimately affect the hydrological integrity of the stream.

Layout	**Approved layout**	**Amended layout (current)**
Nature of impact:	Negative	Negative
Extent and duration of impact:	Local and long term	Local and long term

Probability of occurrence:	Highly probable	Highly probable
Degree to which the impact can be reversed:	Partly reversible	Partly reversible
Degree to which the impact may cause irreplaceable loss of resources:	Marginal loss of resources	Marginal loss of resources
Cumulative impact prior to mitigation	Low-Medium	Medium(-)
Significance rating of impact prior mitigation:	Medium	Medium (-)
Degree to which the impact can be mitigated:	Can be partly mitigated	Can be partly mitigated
Proposed mitigation:	General • Establishment of a buffer area /and a no-go areas. • All equipment and materials storage areas must (if practical, reasonable and feasible) be located at a minimum distance of 50m from the buffer zone. The appointed ECO must be consulted in this regard. • Construction personnel, equipment and materials must be limited to the minimal practical working area. • Construction must be avoided during rainy days, to prevent excessive turbidity. • Construction work must be well-planned and well-managed so that construction work proceeds quickly and efficiently, thus minimising the duration of disturbance. Vegetation: • Removal of alien invasive species within the buffer area is permitted to control the spread of the alien invasive species, should be closely monitored. Stormwater Control • Silt fencing must be erected between the construction activities and the watercourse to prevent sediments-laden storm water from entering the watercourse. • Appropriate stormwater measures must be implemented. • Adequate erosion control measures must be implemented as per this EMPr to minimise sediment containing run-off from entering the river system. Hazardous Materials • Soil contaminated by spilled oil/ fuel/ lubricant must be excavated and disposed of in the hazardous waste bin. Ensure disposal slips are obtained for clearing of these bins.	
Cumulative impact post mitigation:	low	low
Significance rating of impact post mitigation:	Low (-)	Low (-)

Table 9: Proposed Sewer Pump Station and Generator

Construction of a sewer pump station along the North Eastern boundary of the site will entail the clearance of vegetation, and extensive earthworks. Exposed soils and lack of bunded stockpiles, can lead to erosion

and sedimentation events, that can impact upon the forest vegetation downslope of the development, causing disturbance to any fauna or flora residing in this area.

The sewer pump station location is proposed along North Eastern edge of the proposed development, identified as ESA 1 (identified by the Western Cape Biodiversity Spatial Plan). According to the freshwater impact assessment it has been confirmed that site is mostly transformed, with predominantly alien grass species Kikuyu (*Pennisetum clandestinum*) and Paspalum (*Paspalum dilatum*), with few indigenous species and low biodiversity remaining.

Layout	**Approved layout**	**Amended layout (current)**
Nature of impact:	Negative	Negative
Extent and duration of impact:	Local and permanent	Local and permanent
Probability of occurrence:	Definite	Definite
Degree to which the impact can be reversed:	Irreversible	Irreversible
Degree to which the impact may cause irreplaceable loss of resources:	Marginal loss of resources	Marginal loss of resources
Cumulative impact prior to mitigation	Medium (-)	Medium (-)
Significance rating of impact prior mitigation:	Medium (-)	Medium (-)
Degree to which the impact can be mitigated:	Can be partly mitigated	Can be partly mitigated
Proposed mitigation:	General • Fence off working corridor, to ensure that the labour is aware of the extent of works, considering the pump station is at the furthest point of the development footprint. • Construction personnel, equipment and materials must be limited to the minimal practical working area. • Construction must be avoided during rainy days, to prevent runoff of loose material and erosion. • Construction work must be well-planned and well-managed so that construction work proceeds quickly and efficiently, thus minimising the duration of disturbance. • Disturbed areas must be rehabilitated once construction has been completed. Stockpiles • Stockpiled materials should be located South of the pump station development, closer to the developed portion. • Stockpiles should not exceed more than 2m's in height, and should be bunded. • Stockpiles should not be left exposed, particularly loose material. Vegetation: • Removal of alien invasive species must be undertaken on an on-going basis. Stormwater Control • Silt fencing must be erected between the construction activities and the open area to the	

	north of the site, to prevent sediment-laden storm water from flowing downslope. • Appropriate stormwater measures must be implemented. • Adequate erosion control measures must be implemented as per this EMPr to minimise sediment containing run-off from entering the river system. Hazardous Materials • Soil contaminated by spilled oil/ fuel/ lubricant must be excavated and disposed of in the hazardous waste bin. Ensure disposal slips are obtained for clearing of these bins.	
Cumulative impact post mitigation:	Low - medium	Low - medium
Significance rating of impact post mitigation:	Low - medium (-)	Low - medium (-)

Table 10: Proposed 200mm Diameter uPVC Gravity Sewer Pipeline within the Aquatic Habitat and Watercourse

The gravity sewer pipeline will traverse the aquatic habitat and watercourse, behind the development setback and buffer zone.

This will result in the loss and disturbance of aquatic vegetation, within the riparian zone. It should be noted that in terms of the Freshwater Impact Assessment, the riparian vegetation has been cleared, with only a few trees on the 1m high banks of the eroded channel. A combination of alien species (including Black wattle (*Acacia mearnsii*), Syringa tree (*Melia azedarach*), Rooikrans (*Acacia cyclops*) and Rubus cuneifolius)), and indigenous species (including Camphor tree (*Cinnamomum camphora*), Rhus chirindensis, Gymnosporia buxifolia and Bracken fern (*Pteridium aquilinum*)), occur along the banks of the stream, which is dominated by alien species.

Excavations through the riparian zone and within the watercourse would lead to erosion and sedimentation events, impacting upon the aquatic habitat and inhabitants, downslope. It should be noted that at present, the stream becomes an eroded gully as it progresses down slope towards the Swart River, in addition the freshwater impact assessment has indicated that the crossing will not have a detrimental impact due to such a small portion of the watercourse being traversed.

Furthermore, the construction has the potential to hinder flow within the channel, temporarily. It has been indicated, within the Freshwater Impact Assessment, that the stream has an ephemeral flow pattern which entails flows for very short periods of time after high rainfall.

Layout	**Approved layout**	**Amended layout (current)**
Nature of impact:	Negative	Negative
Extent and duration of impact:	Local and permanent	Local and permanent
Probability of occurrence:	Definite	Definite
Degree to which the impact can be reversed:	Irreversible	Irreversible
Degree to which the impact may cause irreplaceable loss of resources:	Significant loss of resources	Significant loss of resources
Cumulative impact prior to mitigation	Medium (-)	Medium (-)
Significance rating of impact prior mitigation:	Medium (-)	Medium (-)
Degree to which the impact can be mitigated:	Can be partly mitigated	Can be partly mitigated

Proposed mitigation:	General • Identify working corridor and demarcate to limit disturbance to the surrounding vegetation. • Utilize only manual labour and hand tools when traversing within the aquatic buffer zone, no heavy construction machinery should be allowed into this area. • Construction must be planned beforehand, and attention must be paid to rainy periods. Attempts must be made to complete the crossing prior to the rainy season, to avoid interference with flows. • Construction along or close to slopes, particularly within the aquatic buffer zone, should be panned ahead, so as to not have exposed soils and exposed stockpiles, during rainy days, to prevent runoff of loose material and erosion. • Construction work must be well-planned and well-managed so that construction work proceeds quickly and efficiently, thus minimising the duration of disturbance. • Disturbed areas must be rehabilitated immediately after construction has been completed, within that area, particularly within the aquatic buffer zone. • Allocate specific team of labourers to this area, inform them of the following: - No heavy machinery allowed within this area. - Maintain demarcated working corridor. - various vegetation species, and identify aliens as opposed to indigenous species. - No littering, loitering, smoking or waste disposal within this area. - Rehabilitation needs to commence immediately. Stockpiles • Stockpiled materials should be located away from slopes, and should not be left exposed within the aquatic buffer zone, for prolonged periods of time. • Stockpiles should not exceed more than 2m's in height, and should be bunded. • Stockpiles should not be left exposed, particularly loose material, and should not be positioned close to the stream. Vegetation: • Removal of alien invasive species must be undertaken on an on-going basis within this area. • Utilize indigenous vegetation for rehabilitation within this area, as advised by a Specialist or by the ECO.

	• Source vegetation from local nurseries. • A walk through of the route within this area, should be completed prior to construction, although it's is scarce, any indigenous vegetation within the construction corridor should be temporarily transplanted on site, and re-established during rehabilitation, along with new vegetation. Stormwater Control • Silt fencing must be erected along the downslope working corridor barrier, between the construction activities and the aquatic habitat downslope, to prevent sediment-laden storm water from flowing downslope. • Appropriate stormwater measures must be implemented. • Adequate erosion control measures must be implemented as per this EMPr to minimise sediment containing run-off from entering the river system. • Implementation of the approved stormwater management plan (Appendix D3) must be incorporated. Hazardous Materials • It is advised that no machinery or hazardous materials should be brought into the aquatic buffer zone. Waste Disposal • The labour must be inducted on appropriate behaviour and manner in this area. • No eating, waste disposal, smoking or other personal activities should be allowed within this area.	
Cumulative impact post mitigation:	Low - Medium	Low - Medium
Significance rating of impact post mitigation:	Low – Medium (-)	Low - Medium (-)

Table 11: Visual Impact and Impact on Sense of Place

Construction activities will have visual impacts, as well as impacts on the sense of place, as the site will change from undeveloped, to developed. As identified in the Town Planning Report, only a small portion (an approximate 50m strip) of the construction site will be visible from the Saasveld Road, which can be regarded as a scenic route. The surrounding community will be exposed to typical visual construction activity impacts, however these are temporary and will be removed once construction concludes.		
Layout	**Approved layout**	**Amended layout**
Nature of impact:	Negative	Negative
Extent and duration of impact:	Local, short term	Local, short term
Probability of occurrence:	Definite	Definite
Degree to which the impact can be reversed:	Low	Irreversible

Degree to which the impact may cause irreplaceable loss of resources:	Low	Low
Cumulative impact prior to mitigation	None	None
Significance rating of impact prior mitigation:	Medium	Medium
Degree to which the impact can be mitigated:	Low	Can be barely mitigated
Proposed mitigation:	General: • Only the area required to accommodate the construction and access to the construction site must be cleared of vegetation. Unnecessary/excessive clearing of vegetation must be avoided. • Construction must be well-planned and well-managed so that work proceeds quickly & efficiently, thus minimising the disturbance time. • Use of lighting (if required) must be take into account surrounding residents and land users> Contractor must ensure that it presents little or no nuisance. Downward facing, spill-off type lighting is recommended. • The site camp may require visual screening via shade cloth or other suitable material. Special attention must be given to the screening of highly reflective material. • Utilize shade cloth along the fencing, around the extents of the site, except at access points. • Initiate proposed indigenous tree screening establishment, as soon as possible. • Ensure indigenous vegetation has been sourced, if not moved to site, to be established as soon as construction activity has concluded, and re-grassing of natural surfaces, ie: grassed road reserves, pathways, etc, commence as soon as possible. • Alien vegetation monitoring and clearance must be implemented daily.	
Cumulative Impact post mitigation	Low	Low
Significance rating of impact post mitigation:	Low	Low

Table 12: Traffic and Safety Impacts

Consideration must be given to the transportation of materials to and from site, the extent of the development is vast, therefore significant amounts of materials, as well as machinery and vehicles, are expected to be transported to, stored on, and removed from the site on, sometimes, a daily basis. Trucks and vehicles traversing the shared community roads, multiple times, can lead to significant traffic, affecting road capacity, safety and leading to congestion, as well as road surface damage, are possible impacts expected to occur during construction, which will be temporary (duration of construction). It should be noted that the Town Planning Report makes mention of access being from the extended Glenwood Avenue, past the Groenkloof development. Access to the proposed development of the property can be regarded as good and will in future also benefit the public transport system of George as the development is connected to Knysna road. This area and all the adjacent developments have already been taken into consideration in the Kraaibosch Roads Master Plan.		
Layout	**Approved layout**	**Amended layout**

Nature of impact:	Negative	Negative
Extent and duration of impact:	Local and Short Term	Local and Short Term
Probability of occurrence:	Likely	Likely
Degree to which the impact can be reversed:	Partly reversible	Partly reversible
Degree to which the impact may cause irreplaceable loss of resources:	Minimal loss of resources	Minimal loss of resources
Cumulative impact prior to mitigation	- Construction vehicles could cause unnecessary traffic congestion or might even lead to road accidents, other road users lives can be at risk. - Possible damage to public roads due to the movement of heavy machinery.	- Construction vehicles could cause unnecessary traffic congestion or might even lead to road accidents, other road users lives can be at risk. - Possible damage to public roads due to the movement of heavy machinery.
Significance rating of impact prior mitigation:	Medium	Medium
Degree to which the impact can be mitigated:	Can be partly mitigated	Can be partly mitigated
Proposed mitigation:	General • All construction vehicles must adhere to traffic laws when travelling to and from the site. • Appropriate signage/flags, etc. should be erected to warn other road users about the presence of construction vehicles, particularly at the point where construction vehicles enter/ exit the site from the main • Speed of construction vehicles and other heavy vehicles must be strictly controlled to avoid dangerous conditions for other road users. • Construction vehicles must adhere to the load carrying capacity of road surfaces and adhere to all other prescriptive regulations regarding the use of public roads by construction vehicles. • The Contractor must ensure that any large or abnormal loads (including hazardous materials) that must be transported to/ from the site are routed appropriately, and that appropriate safety precautions are taken during transport to prevent road accidents. • Where possible, construction traffic that may obstruct traffic flow on the surrounding roads should be scheduled for outside of peak traffic times. • Construction vehicle drivers must be briefed, and instructed to adhere to speed limits, understand their route, and turning requirements, be mindful of other drivers on the road and to report any incidents immediately. • Where possible, heavy machinery should be parked within a secure demarcated area within the footprint of the site instead of moving the machinery to and from the site each day. • 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.	
Cumulative impact post mitigation:	Low	Low - Medium

Significance rating of impact post mitigation:	Low	Low - Medium

Table 13: Increased Levels of Noise and Dust

Typical construction phase impacts associated with the development are likely to be present, including elevated noise levels and dust, from the site establishment activities, construction activities (including earthworks and excavations, poorly protected stockpiles from wind disturbance, etc) and the presence of construction labourers. These nuisances would be of a temporary duration (i.e. for duration of the construction phase).

Layout	**Approved layout**	**Amended layout**
Nature of impact:	Negative	Negative
Extent and duration of impact:	Local and short term	Local and short term
Probability of occurrence:	Definite	Definite
Degree to which the impact can be reversed:	Reversible	Reversible
Degree to which the impact may cause irreplaceable loss of resources:	Not applicable	Not Applicable
Cumulative impact prior to mitigation	Disturbance to surrounding properties.	Disturbance to surrounding properties.
Significance rating of impact prior mitigation:	Medium	Medium
Degree to which the impact can be mitigated:	Medium	Medium
Proposed mitigation:	General: • The responsibility for implementing such measures should be contained in the draft EMPr. • Implement methods for rainwater collection (below legislated capacities). Noise: • Strict operating hours for heavy vehicles and construction activities should be implemented so as to avoid times of day when noise impacts are more likely to affect adjacent landowners, ie: construction activities, including the movement of vehicle should be limited to between 07h30 and18h00. • No construction related activities should be permitted over weekends. • All vehicles must be tested on a regular basis to ensure that they are road worthy. • Consideration must be given to noise suppression devices for machinery. • Labour must be inducted and informed on acceptable noise levels, and how to maintain them. • Vehicles, machinery and other equipment must be kept in good working order, with noise suppression devices used where necessary, ie: mufflers/ exhaust silencers. • Loud music is not allowed on site. Dust:	

	• The implementation of dust suppression methods must be adhered to, when necessary. • Wetting soils with collected rainwater. • Avoid exposing bare/or loose soils for excessive amounts of time. • Wetting of soils must be considered, if dust dispersal is excessive. • Exposed surfaces must be provided with suitable cover as soon as possible, ie: reinstatement/rehabilitation must occur as soon as possible, utilize shade cloths, etc. • Stockpiles must be protected from wind erosion • Vehicles 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. dustfall may not exceed 1200mg/m2/day).	
Cumulative impact post mitigation:	Low - Medium	Low - Medium
Significance rating of impact post mitigation:	Low - Medium(-)	Low - Medium (-)

Table 14: Socio-Economic Impact - Creation of Business and Employment Opportunities

A number of temporary job opportunities will be created for locally sourced skilled and unskilled labour, as well as encouraging specialist input, which contributes to the environmental baseline knowledge of the area.		
Layout	**Approved layout**	**Amended layout**
Nature of impact:	Positive	Positive
Extent and duration of impact:	Regional and medium term	Regional and medium term
Probability of occurrence:	Definite	Definite
Degree to which the impact can be reversed:	Not applicable	Not applicable
Degree to which the impact may cause irreplaceable loss of resources:	No loss of resource	No loss of resource
Cumulative impact prior to mitigation	• Decrease in unemployment rate. • Direct household income would increase for the unskilled and semi-skilled categories. • Skills training opportunities would be available.	• Decrease in unemployment rate. • Direct household income would increase for the unskilled and semi-skilled categories. • Skills training opportunities would be available.
Significance rating of impact prior mitigation:	Medium (+)	High (+)
Degree to which the impact can be mitigated:	Not applicable	Not applicable
Proposed mitigation:	No mitigation is required as this is a positive impact, particularly for the amended layout proposal, as this will require more labour and skills, considering more infrastructure/facilities and higher density infrastructure are proposed. The following should be noted:	

	• The developer in consultation with the appointed contractor/s should look to employ a percentage of the labour required for the construction phase, from the local area, in order to maximize opportunities for members from the local communities. • Ensure specialist reports and input are available to the public and can be referenced/reviewed for future developments in the surrounding area.	
Cumulative impact post mitigation:	Medium	High
Significance rating of impact post mitigation:	Medium (+)	High (+)

Table 15: Social Security/Theft

Poor social behaviour - With the commencement of construction, there can be an increase in crime due to construction activities attracting opportunists prone to criminal activities. However, this is a security issue and various measures are already in place to deal with the various security threats.		
Layout	**Approved layout**	**Amended layout**
Nature of impact:	Negative	Negative
Extent and duration of impact:	Surrounding area and short term	Surrounding area and short term
Probability of occurrence:	Likely	Likely
Degree to which the impact can be reversed:	Stolen or damaged goods can be replaced at an additional cost.	Stolen or damaged goods can be replaced at an additional cost.
Degree to which the impact may cause irreplaceable loss of resources:	None	None
Cumulative impact prior to mitigation	• Increase in crime. • Possible loss of materials resulting in additional costs • Safety of personal and animals etc. can be compromised if precautionary, established materials, are stolen	• Increase in crime • Possible loss of materials resulting in additional costs • Safety of personal and animals etc. can be compromised if precautionary, established materials, are stolen
Significance rating of impact prior mitigation:	Medium	Medium
Degree to which the impact can be mitigated:	Medium	Medium
Proposed mitigation:	• Generally local labour will be employed. Ensure there is 24hour security on site (if possible). • Ensure no unknown person/s enter site, therefore ensure that there is a register taken, for anyone who enters the site, recording their names, contact details, reason for being on site. • Ensure emergency contact details are available and visible on site. • Ensure fence line and access points are secure. •	
Cumulative impact post mitigation:	None	None
Significance rating of impact post mitigation:	Low (-)	Low (-)

Table 16: Land Disturbance, Erosion and Sedimentation

The site will be subject to earthworks and construction activities that will result in the removal of vegetation (very little indigenous vegetation, pre-dominant presence of alien vegetation tree and grass species), resulting in exposure of soils to natural elements, which can lead to dispersal and nuisances for the surrounding area. Construction activities including insufficient stockpiling, can lead to mixing of soils and therefore unsuccessful reinstatement, topsoil loss, injuries and spillage due to collapsed stockpiles. The occurrence of rainy and windy conditions can compromise these bare/exposed soils and material, influencing erosional and sedimentation events.		
Layout	**Approved layout**	**Amended layout**
Nature of impact:	Negative	Negative
Extent and duration of impact:	Localised and permanent	Localised and permanent
Probability of occurrence:	Definite	Definite
Degree to which the impact can be reversed:	Irreversible	Irreversible
Degree to which the impact may cause irreplaceable loss of resources:	Low	Medium
Cumulative impact prior to mitigation	• Erosion and increase in stormwater runoff due to no vegetation cover. Loss of habitat.	• Erosion and increase in storm water run off due to no vegetation cover. Loss of habitat.
Significance rating of impact prior mitigation:	High (-)	High (-)
Degree to which the impact can be mitigated:	High	High
Proposed mitigation:	General • Strict adherence to buffer areas to preserve aquatic vegetation. • No vegetation, outside of the development footprint should be removed. • Control and monitoring of alien invasive plants as per the EMPr is essential. • On-going alien vegetation control measures must be utilized. • If any topsoil is being utilized for reinstated areas, ensure alien vegetation is removed prior to excavation, so that reinstated soil does not contain alien vegetation. • Demarcation of buffer areas prior to commencement of construction • Revegetation of corridors within the transformed area with indigenous vegetation, where possible. • Construction personnel should be informed of all the no go areas. Stockpiles • Stockpiles must not be located within the buffer zone of the freshwater habitat. The furthest threshold must be adhered to. • Erosion control measures including silt fences, low soil berms and/or shutter boards must be put in place around the stockpiles to limit sediment runoff from stockpiles. • Alternatively, the exposed slopes must drain into small temporary stormwater and silt traps/ponds.	

	Hazardous Waste • Fuels and potential pollutants must be stored and managed strictly as per the respective Materials Safety Data Sheets. • Hazardous storage and refuelling areas must be bunded with an impermeable liner to protect groundwater quality. The bunding shall be capable of handling a volume 150% the volume of the container storing the substance. The Contractor shall submit a method statement to the Engineer for approval. • Vehicles must be inspected in a daily basis to check for leaks. • Adequate hazmat spillage cleaning kits must be readily available in the event of oil and hydraulic spills. • Vehicle repair must be undertaken in a designated area within the site camp, on an impermeable surface. Waste should be collected and disposed of at a registered site. Ensure any runoff is restricted from accessing any natural areas. • Contaminated soil must be removed for disposal at an appropriately licensed hazardous disposal site, disposal slips must be obtained as proof. • Storage areas containing hazardous substance / materials must be clearly labelled, using appropriate signage and signboards. Stormwater Control • Silt fences must be erected to control runoff into the aquatic vegetation downslope of the development. • Erosion control measures including silt fences, low soil berms and/or shutter boards must be put in place around the stockpiles to limit sediment runoff from stockpiles. Alternatively, the exposed slopes must drain into small temporary stormwater and silt traps/ponds. • Appropriate stormwater measures must be implemented, as well as a stormwater management plan. • All equipment and materials storage areas must be located at a minimum distance of 50 m from the buffer zone or drainage lines (if practically possible). The appointed ECO must be consulted in this regard. • Construction must be avoided during rainy days, to prevent excessive turbidity. • Manual labour must be favoured over mechanical methods. Heavy machinery may only be used as a last resort if manual methods are not feasible or practical. • Construction work must be well-planned and well-managed so that construction work proceeds quickly and efficiently, thus minimising the duration of disturbance. • Adequate erosion control measures must be implemented as per this EMPr to minimise sediment containing run-off from entering the river system.	
Cumulative impact post mitigation:	Medium	Medium
Significance rating of impact post mitigation:	Medium (-)	Medium (-)

Table 17: Disturbance of On-Site Fauna

Due to prior transformation, it is unlikely that sensitive fauna will be found on site. Aquatic fauna may be subject to disturbance due to negligent activities and earthworks. Fauna may wonder onto site from the surrounding areas, which can be at risk of injury.

Layout	Approved layout	Amended layout
Nature of impact:	Negative	Negative
Extent and duration of impact:	Localised and short term	Localised and short term
Probability of occurrence:	Low	Low
Degree to which the impact can be reversed:	Unlikely	Unlikely
Degree to which the impact may cause irreplaceable loss of resources:	Medium	Low
Cumulative impact prior to mitigation	• Animals that use this property to cross over, hunt (avifauna), etc. will no longer be able to do this.	• Animals that use this property to cross over, hunt (avifauna), etc. will no longer be able to do this.
Significance rating of impact prior mitigation:	Medium	Medium
Degree to which the impact can be mitigated:	High	High
Proposed mitigation:	• Measures as proposed in the EMPr should be followed. • Ensure the site is appropriately fenced off, to limit access into site. • Ensure all trenches are demarcated appropriately, overnight, or when not in use, to avoid any incidents (human/faunal) from occurring. • Animals encountered on site, should be identified and if sighted must be reported to the appointed ECO. • No animals encountered should be harmed. • Precautions must be taken when implementing alien control measures in the aquatic habitat.	
Cumulative impact post mitigation:	None	None
Significance rating of impact post mitigation:	Very Low (-)	Very Low (-)

8.2.2. Operational Phase:

The operational phase of the proposed development is expected to result in **biophysical, visual**, **traffic** and **socio-economic impacts**, as follows:

Table 18: Aquatic Impact- Loss of Aquatic Vegetation and Habitat

According to the Freshwater Impact Assessment (Appendix E1), the project will 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. It is however unlikely that many sensitive species remain within the degraded areas. The stormwater infrastructure of the housing and associated road network will increase and concentrate flows. This may lead to erosion in the system that compromises remaining vegetated habitat. There is also the risk of certain garden plants establishing in riparian areas and outcompeting indigenous vegetation.

Layout	Approved layout	Amended layout

Nature of impact:	Negative	Negative
Extent and duration of impact:	Local and permanent	Local and permanent
Probability of occurrence:	Likely	Likely
Degree to which the impact can be reversed:	Partly	Partly
Degree to which the impact may cause irreplaceable loss of resources:	Low	Low
Cumulative impact prior to mitigation	Disturbance to aquatic habitat.	Disturbance to aquatic habitat.
Significance rating of impact prior mitigation:	Low	Low
Degree to which the impact can be mitigated:	High	High
Proposed mitigation:	• Removal of alien vegetation. • Monitoring of aquatic vegetation areas, and implementation of the EMPr (operational phase recommendations/mitigation measures). • Maintenance of buffer area. • Awareness training for community, as to the sensitivity of the aquatic vegetation area. • Signage to remind community members of the buffer and sensitivity. • Signage indicating what is prohibited in this area as well as other relevant information must be made available, ie: prohibiting the removal of specific species, description and visual of alien invasive plant species as well as plant name signage for indigenous Fynbos species. Promoting a sense of ownership from the residents of their open space area will benefit them as well as the environment. • Maintenance of the buffer area must include erosion control and alien invasive plant eradication, as well as avoiding the encroachment of any further infrastructure or vehicles must be prevented. • The Home Owners Association could be involved in the on-going monitoring.	
Cumulative impact post mitigation:	None	None
Significance rating of impact post mitigation:	Low (-)	Very Low (-)

Table 19: Aquatic Impact- Water Pollution, Flow Modification and Sedimentation and Erosion

According to the Freshwater Impact Assessment (Appendix E1), 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 and outside of the study area. The increase in hardened surfaces by the development will be considerable and, if not mitigated against, will result in further erosion/sedimentation.

Surface runoff and velocities will increase, and flows might be concentrated by stormwater infrastructure. The steep slopes of the study area necessitate specific consideration of these impacts.

According to the Freshwater Impact Assessment (Appendix E1), the increase in vehicles on the property due to the development increases the potential for pollutants to enter the systems. During maintenance of the development there could be water pollution impacts, similar to those encountered in the construction phase. It is assumed that wastewater will not be treated on the property. However, should any onsite wastewater treatment infrastructure fail, and result in raw sewerage entering any watercourses, it may impact the water quality of the system. Water pollution could impact the downstream Swart and Kaaimans River, depending on whether the polluting activity coincides with sufficient rain to wash the pollutants down.

As mentioned in the Freshwater Impact Assessment Report, according to SANRAL (2006), urbanisation typically increases the runoff rate by 20 - 50%, compared with natural conditions. Hardened/artificial infrastructure will alter the natural processes of rain-water infiltration and surface runoff, promoting increased volumes and velocities of storm water runoff, which can be detrimental to the rivers receiving concentrated flows off of the area. Increased volumes and velocities of storm water draining from the development and discharging into down-slope aquatic habitat can alter the natural ecology of the system, increasing the risk of erosion and channel incision/scouring and back-flooding. The stream is expected to get increased water inputs more regularly than under natural conditions.

Layout	**Approved layout**	**Amended layout**
Nature of impact:	Negative	Negative
Extent and duration of impact:	Local and permanent	Local and permanent
Probability of occurrence:	Highly Likely	Highly likely
Degree to which the impact can be reversed:	Partly	Partly
Degree to which the impact may cause irreplaceable loss of resources:	Low	Low
Cumulative impact prior to mitigation	- Sediment build up in watercourse, hindering flow, and burying aquatic vegetation. - Runoff leading to erosion and disturbance of aquatic vegetation and habitat. - Loss of aquatic vegetation along the edge of the buffer zone.	- Sediment build up in watercourse, hindering flow, and burying aquatic vegetation. - Runoff leading to erosion and disturbance of aquatic vegetation and habitat. - Loss of aquatic vegetation along the edge of the buffer zone.
Significance rating of impact prior mitigation:	Medium (-)	Medium (-)
Degree to which the impact can be mitigated:	Medium	Medium
Proposed mitigation:	• Monitoring as per the EMPr. • Implement effective stormwater drainage measures to ensure the runoff from the development is not highly concentrated before entering the buffer and open space area. The volume and velocity of water must be reduced through discharging the surface flow at multiple locations surrounding the development, preventing erosion. • Consideration must be given to implementing a permanent rip-rap erosion control measure along the outer edge of the aquatic vegetation, to create a multifunctional barrier, to slow down any	

	additional flow from the development portion, as well as creating an aesthetically pleasing barrier indicating the edge of sensitive vegetation. • Constructing water tanks to catch rainwater runoff from the roof for irrigating purposes will reduce stormwater runoff and possible erosion associated therewith. The same system can be put in place at the communal buildings. The runoff can be used for watering open space. • Ensure open areas along slopes are grassed and reduce the number of hardened slope surfaces from the development portion, leading to the aquatic habitat. • The use and maintenance of grease traps/oil separators to prevent pollutants from entering the environment from stormwater are recommended. • Constructing water tanks to catch rain water runoff from the roof for irrigating purposes will reduce stormwater runoff and possible erosion associated therewith. The same system can be put in place at the communal buildings. The runoff can be used for watering open space. • Appropriate wastewater infrastructure must be designed to prevent any such water from entering the surrounding environment.	
Cumulative impact post mitigation:	As above	Low
Significance rating of impact post mitigation:	Low (-)	Low - Medium (-)

Table 20: Proposed Sewer Pump Station

During the operational phase the pump station is subject to failure for any number of reasons, including loss of electricity, pump failure, blockages, and poor maintenance, all of which leading to overflow and contamination of the land surface and vegetation, affecting the downslope forest vegetation and fauna. There is no watercourse identified to the north (downslope) of the proposed positioning of the sewer pump station. This has the potential to cause further issues related to odour nuisances, and compromised air quality, for the elderly residents in close proximity, during operation and especially if failure occurs, particularly considering the vicinity of the pump station to the proposed housing units.		
Layout	**Approved layout**	**Amended layout**
Nature of impact:	Negative	Negative
Extent and duration of impact:	Local and short-long term	Local and short-long term
Probability of occurrence:	Highly Likely	Highly likely
Degree to which the impact can be reversed:	Partly	Partly
Degree to which the impact may cause irreplaceable loss of resources:	Significant loss of resources	Significant loss of resources
Cumulative impact prior to mitigation	- Potential for raw sewerage odour causing disturbance to the surrounding community, and health issues, if facility is being maintained, or there is failure/overflow. - Overflow of raw sewage contaminating soils.	- Potential for raw sewerage odour causing disturbance to the surrounding community, and health issues, if facility is being maintained, or there is failure/overflow. - Overflow of raw sewage contaminating soils.

	- Contamination of downslope vegetation and soils. - Contamination that can prove harmful to fauna found downslope of the development.	- Contamination of downslope vegetation and soils. - Contamination that can prove harmful to fauna found downslope of the development.
Significance rating of impact prior mitigation:	High (-)	High (-)
Degree to which the impact can be mitigated:	High	High
Proposed mitigation:	General: • Monitoring and maintenance of this pump station must be undertaken on an ongoing basis. • The developer and residents will be responsible for the management and maintenance of the sewer pump station. The long-term option would be for the George Municipality to take over the proposed sewer pump station on Portion 3/195 Kraaibosch as a regional pump station and as soon as portions of Portion 21/195 Kraaibosch and/or Portion 62/195 Kraaibosch connects to the pump station. • Fence off pump station, to limit access. • The developer must ensure that a service provider is appointed for scheduled monitoring and/or emergency call outs in case of failure. • Ensure odour control mechanisms/measures are implemented. • Ensure appropriate signage is erected, identifying sewer pump station, with contact details for residents to report issues, if it should occur. • Alert the community of the pump station location, and request that they be aware of any hazardous activities, ie: foul smells, any unauthorized person tampering with the infrastructure, animal encroachment, etc. Engineering proposal design • The pump station sump will be designed with an emergency storage capacity to handle 4 hours of sewer flow. • Two pumps (a duty and standby pump) will be accommodated in case one pump breaks. • A back-up generator will be located on site, in case of a power failure. Stormwater Management: • Implement effective stormwater drainage measures to ensure the runoff from the development is not highly concentrated before entering the vegetated area downslope. • The volume and velocity of water must be reduced through discharging the surface flow at multiple locations surrounding the development, preventing erosion. • Constructing water tanks to catch rainwater runoff from the roof for irrigating purposes will reduce stormwater runoff and possible erosion associated therewith. • Ensure open areas along slopes are grassed and reduce the number of hardened slope surfaces from the development portion, leading to the aquatic habitat. • The use and maintenance of grease traps/oil separators to prevent pollutants from entering the environment from stormwater are recommended.	

	• Appropriate wastewater infrastructure must be designed to prevent any such water from entering the surrounding environment.	
Cumulative impact post mitigation:	Low – medium (-)	Low – medium (-)
Significance rating of impact post mitigation:	Medium (-)	Medium (-)

Table 21: Proposed 200mØ Gravity Sewer Pipeline – Pollution and Erosion

During the operational phase the pipeline where it crosses the water course, will be located below ground level, with a gabion mattress situated up stream of the pipeline, levelled with the bed of the stream. The potential of high and erratic rain events can lead to disturbance within the bed of the stream, and disturbance to the gabion mattress but this is extremely unlikely if constructed as per the engineering specifications.

Should the pipeline experience a breakage/leak within this area, it has the potential to contaminate the aquatic habitat, including the soils, fauna and flora. The contamination can be carried downslope to the Swaart River.

Sewer manholes will also be established within the aquatic buffer zone, potential for blockages and therefore overflow of raw sewage within this area, has the potential to cause contamination downslope, as well as emit foul odours, if not well maintained.

Layout	**Approved layout**	**Amended layout**
Nature of impact:	Negative	Negative
Extent and duration of impact:	Local and long-term	Local and long term
Probability of occurrence:	Probable	Probable
Degree to which the impact can be reversed:	Partly	Partly
Degree to which the impact may cause irreplaceable loss of resources:	Significant loss of resources	Significant loss of resources
Cumulative impact prior to mitigation	- Potential for raw sewage odour causing disturbance to the surrounding community, and health issues. - Overflow of raw sewage contaminating soils from manholes. - Contamination of downslope vegetation, soils and the closest major watercourse, Swaart River (downslope). - Contamination that can prove harmful to fauna found downslope of this area.	- Potential for raw sewage odour causing disturbance to the surrounding community, and health issues. - Overflow of raw sewage contaminating soils from manholes. - Contamination of downslope vegetation, soils and the closest major watercourse, Swaart River (downslope). - Contamination that can prove harmful to fauna found downslope of this area.
Significance rating of impact prior mitigation:	Medium (-)	Medium (-)
Degree to which the impact can be mitigated:	Medium	Medium
Proposed mitigation:	General:	

	• Ensure a service provider is identified for maintenance purposes. • Monitor watercourse crossing during operational phase, particularly after heavy rain events, to ensure there is no disturbance to infrastructure, that can lead to erosion, downslope. • Ensure the route of the pipeline is recorded/updated on the development plans and municipal plans, to ensure that any future maintenance/planning can be accurate. • Ensure that the community is aware of the location of the manholes, (particularly residents in the northern most housing units) should there be any signs of spillage/overflow, ie: overflowing manholes leading to foul sewage odours. Stormwater Management: • Ensure open areas along slopes are grassed and reduce the number of hardened slope surfaces from the development portion, leading to the aquatic habitat. • The use and maintenance of grease traps/oil separators to prevent pollutants from entering the environment from stormwater are recommended. • Appropriate wastewater infrastructure must be designed to prevent any such water from entering the surrounding environment. • Consider creating a bunded structure around the manholes to capture any overflow.	
Cumulative impact post mitigation:	Low – medium (-)	Low – medium (-)
Significance rating of impact post mitigation:	Low – medium (-)	Low – medium (-)

Table 22: Long Term Management and Conservation

The designated private open space needs to be managed efficiently, and a natural state retained. Open space will provide a natural element to the development. The central portion of the site identified as private open space creates a barrier between the stream and the development, and should be maintained as thus, to encourage natural fauna and flora to flourish, and natural ecosystems to develop. The specialist has advised that walkways can be accommodated following the contours through fynbos vegetation or a bird hide near the indigenous forest for bird viewing and to take in the scenic landscape are potential uses in this specific project. Signage displaying birdlife supported by indigenous vegetation can be erected to stimulate interest in and use of the recreational space. These uses are unlikely to impact on the stream and would rather assist it by making it valuable to the residents in the immediate area. It promotes the use of the open space area that contains freshwater habitat for recreational activities and advocates the adoption of a buffer zone.		
Layout	**Approved layout**	**Amended layout**
Nature of impact:	Positive	Positive
Extent and duration of impact:	Surrounding Area and Positive	Regional and short term
Probability of occurrence:	Definite	Definite
Degree to which the impact can be reversed:	Low	Low
Degree to which the impact may cause irreplaceable loss of resources:	Not Applicable	Not Applicable

Cumulative impact prior to mitigation	Not Applicable	Not Applicable
Significance rating of impact prior mitigation:	High-Very High	High-Very High
Degree to which the impact can be mitigated:	Not Applicable	Not Applicable
Proposed mitigation:	• Ensure an efficient EMPr is implemented to manage this open area. • Alien vegetation control must be implemented, planned and monitored. • Ensure signage is erected with information on the buffer area, the identification of alien vegetation and indigenous vegetation.	
Cumulative impact post mitigation:	None	None
Significance rating of impact post mitigation:	High (+)	High (+)

Table 23: Visual Impact - Change from an Undeveloped Site to a Developed Site

The property has been earmarked for residential development, therefore it will undergo a change of character from undeveloped to developed. However, as stated in the Town Planning Report, there are no significant negative visual impacts foreseen for this development.

Visual changes will be observed, as the site will be transformed from extensive alien tree and grass species, to housing and administrative buildings, with appropriate infrastructure, including roads, electrical/communications infrastructure above ground, etc, as well as increased hardened surfaces, and an increase in artificial lighting at night (ie: light poles, residential housing lights, etc, from a previously undeveloped site), which will be observed by the surrounding community. As the project is situated within the urban edge of the property this will not cause a significant negative impact. An approximate 50m strip of development will be visible from the Saasveld Road, until the establishment of the vegetated screen of different indigenous tree species planned for this area.

Layout	**Approved layout**	**Amended layout**
Nature of impact:	Negative	Negative
Extent and duration of impact:	Surrounding properties and long term	Surrounding properties and long term
Probability of occurrence:	Definite	Definite
Degree to which the impact can be reversed:	Irreversible	Irreversible
Degree to which the impact may cause irreplaceable loss of resources:	None	None
Cumulative impact prior to mitigation	While the current character of the site will change, being one of many properties earmarked for development within the urban edge, it will match with the existing residential character of other developments. This impact won't be significant.	While the current character of the site will change, being one of many properties earmarked for development within the urban edge, it will match with the existing residential character of other developments. This impact won't be significant.

Significance rating of impact prior mitigation:	Medium-High	High
Degree to which the impact can be mitigated:	Low	Medium
Proposed mitigation:	• The introduction of the tree line in order to create a vegetated screen between Saasveld Road, and the development, must be initiated as soon as possible. • Residential developments must utilize natural colours where possible, so as to not clash with the surrounding natural environment. • Green spaces/surfaces should be favoured over hardened surfaces, where possible. • Indigenous trees and plan species should be integrated in the design/layout.	
Cumulative impact post mitigation:	None	Low
Significance rating of impact post mitigation:	Low (-)	Low (-)

Table 24: Traffic & Safety Impact:

There will be an increase in traffic as a result of the development. However, once the Kraaibosch Roads Master Plan has been fully implemented, there will be adequate capacity to accommodate the traffic to and from the proposed development. There will no longer be heavy machinery movement to and from the development.		
Layout	**Approved layout**	**Amended layout**
Nature of impact:	Positive	Positive
Extent and duration of impact:	Surrounding and Permanent	Surrounding and Permanent
Probability of occurrence:	Definite	Definite
Degree to which the impact can be reversed:	Not applicable	Not applicable
Degree to which the impact may cause irreplaceable loss of resources:	Not applicable	Not applicable
Cumulative impact prior to mitigation	Not applicable	Not applicable
Significance rating of impact prior mitigation:	High (+)	High (+)
Degree to which the impact can be mitigated:	Not applicable	Not Appplicable
Proposed mitigation:	Not applicable • As the impact represents a positive change to the area, no mitigation is required.	
Cumulative impact post mitigation:	The presence of regular movement of people will create a safer environment.	The presence of regular movement of people will create a safer environment.
Significance rating of impact post mitigation:	Medium(+)	Medium (+)

Table 25: Socio-Economic Impact - Property Values of Surrounding Development (Positive Impact)

Values of real estate are driven by various factors, among others supply and demand, interest rates, the contraction or expansion of the local economy, population growth rates and changes in disposable income to debt ratios. With the increase in facilities it is likely that surrounding properties values may increase due to their proximity. Attracting the attention of other prospective retirees, therefore increasing the demand for housing and care facilities of this nature, and increasing the number of housing within the urban edge. In addition, this can result in an increase in small scale businesses, to provide services for the growing population, such as laundry, grocers, etc. providing further opportunity for employment.		
Layout	**Approved layout**	**Amended layout**
Nature of impact:	Positive	Positive
Extent and duration of impact:	Provincial and Permanent	Provincial and Permanent
Probability of occurrence:	Definite	Definite
Degree to which the impact can be reversed:	Medium	Low
Degree to which the impact may cause irreplaceable loss of resources:	Medium	Medium
Cumulative impact prior to mitigation	Not applicable	Not applicable
Significance rating of impact prior mitigation:	Medium	Medium-High (-)
Degree to which the impact can be mitigated:	Not applicable	Not Applicable
Proposed mitigation:	N/A as this is a positive impact.	
Cumulative impact post mitigation:	N/A	N/A
Significance rating of impact post mitigation:	High (+)	High (+)

Table 26 Socio-Economic Impact: Potential Increase in Demand for Services

Although George Municipality has confirmed the availability of infrastructure in terms of water and sanitation. The eventual increase in demand for housing and development within this area, will lead to an increase in the need for services and bulk infrastructure, that will need to be integrated/considered in the future bulk infrastructure services plans for George Municipality.		
Layout	**Approved layout**	**Amended layout**
Nature of impact:	Positive	Positive
Extent and duration of impact:	Regional and Long term	Regional and Long term
Probability of occurrence:	Likely	Likely
Degree to which the impact can be reversed:	Low	Low
Degree to which the impact may cause irreplaceable loss of resources:	No loss of resources	No loss of resources

Cumulative impact prior to mitigation	Potential for improved services.	Potential for improved services.
Significance rating of impact prior mitigation:	High	High
Degree to which the impact can be mitigated:	N/A	N/A
Proposed mitigation:	The local authority has confirmed that the external services are available, and the proposed development can be accommodated within the current. (See appendix D.1)	
Cumulative impact post mitigation:	None	None
Significance rating of impact post mitigation:	Medium (+)	Medium (+)

Table 27: Socio-Economic Impact - Broaden the rates base (Positive impact)

The development will result in an increase in the rates base. In addition, the proposed development would also generate revenue for the local municipality from the consumption of water and electricity. It is expected that the socio-economic impact in terms of broadening the rates base will be more positive in the new development proposal, compared to the approved development because of the fact that the new development proposal has a greater density of housing, and improved facilities, more lighting, etc.		
Layout	**Approved layout (not previously assessed)**	**Amended layout**
Nature of impact:	Positive	Positive
Extent and duration of impact:	Regional and Long term	Regional and Long term
Probability of occurrence:	Definite	Definite
Degree to which the impact can be reversed:	Not applicable	Not Applicable
Degree to which the impact may cause irreplaceable loss of resources:	No loss of resources	No loss of resources
Cumulative impact prior to mitigation	Better service delivery within the municipal area as a result of the increased revenue.	Better service delivery within the municipal area as a result of the increased revenue.
Significance rating of impact prior mitigation:	High	High
Degree to which the impact can be mitigated:	Not applicable	Not applicable
Proposed mitigation:	The proposed development represents an enhancement measure on its own.	
Cumulative impact post mitigation:	Not applicable	Not applicable
Significance rating of impact post mitigation:	Medium (+)	Medium (+)

Table 18: Socio-Economic Impact – Job Opportunities (Positive impact)

The development will attract various personnel from various career levels and industries, to tend to the day-to-day running of the facilities, grounds and retirees. Jobs created during the operational phase will include,

but not be limited to: medical personnel, administrative staff, technical staff, maintenance, food preparation/chef, gardeners, domestic workers, etc.

It is expected that the socio-economic impact in terms of broadening the rates base will be more positive in the new development proposal, compared to the approved development because of the fact that the new development proposal has a greater density of housing, and improved facilities, more lighting, etc.

Layout	**Approved layout**	**Amended layout**
Nature of impact:	Positive	Positive
Extent and duration of impact:	Regional extent and Permanent	Regional extent and Permanent
Probability of occurrence:	Definite	Definite
Degree to which the impact can be reversed:	N/A	N/A
Degree to which the impact may cause irreplaceable loss of resources:	N/A – This is a positive impact	N/A – This is a positive impact
Cumulative impact prior to mitigation	Low (+)	High (+)
Significance rating of impact prior mitigation:	Low (+)	Medium (+)
Degree to which the impact can be mitigated:	Not applicable	Not applicable
Proposed mitigation:	No mitigation is required, as this is a positive impact. • Job creation will result in opportunities for people of various skill levels, to become employed, and offer a better quality of life for themselves and their families. • Considering the higher density development, and proposed in the amendment, it its guaranteed that more job opportunities will be available during operational phase, as compared to the original layout.	
Cumulative impact post mitigation:	Medium positive	High positive
Significance rating of impact post mitigation:	Medium (+)	Medium - High(+)

Table 29: Socio-economic impact - Availability of Housing Within the Urban Edge

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. The property will then cater for retired people who are looking for somewhere to stay which is more secure and easier to live in terms of catering for the older generation. Many older people are moving into the George area as the rest of the Municipalities in South Africa struggle to get the basics right in terms of services and infrastructure. The demand is very great and the developers cannot keep up with demand and have a waiting list of people who want to move into Groenkloof.

Layout	**Approved layout**	**Amended layout**
Nature of impact:	Positive	Positive
Extent and duration of impact:	Specific and Long Term	Specific and Long Term

Probability of occurrence:	Highly probable	Highly probable
Degree to which the impact can be reversed:	N/A	N/A
Degree to which the impact may cause irreplaceable loss of resources:	N/A	N/A
Cumulative impact prior to mitigation	Low (+)	Medium (+)
Significance rating of impact prior mitigation:	Low (+)	Medium (+)
Degree to which the impact can be mitigated:	N/A	N/A
Proposed mitigation:	No mitigation applies as it represents a positive impact.	
Cumulative impact post mitigation:	Low (+)	Medium (+)
Significance rating of impact post mitigation:	Low (+)	Medium (+)

8.2.3. Summary of Impact Assessment

The table below is a summary of the significance of the potential impacts, after the successful mitigation measures:

Table 30: Summary of Impacts After Mitigation

Construction Phase Impacts	Approved layout (after mitigation)	Amended layout (after mitigation)
Land disturbance, erosion and sedimentation.	Medium (-)	Medium (-)
Aquatic Impact: Loss of aquatic vegetation and habitat	Low (-)	Low (-)
Aquatic Impact: Sedimentation and Erosion	Low (-)	Low (-)
Aquatic Impact: Water pollution	Low (-)	Low (-)
Aquatic Impact Flow Modification	Low (-)	Low (-)
Proposed Sewer Pump Station and Generator	Medium (-)	Low – Medium (-)
Proposed 200mmØ uPVC Gravity Sewer Pipeline within the Aquatic Habitat and Watercourse	Medium (-)	Low – Medium (-)
Visual Impact: Visual scarring as a result of construction work	Low	Low
Dust and Noise Impact	Medium (-)	Low – Medium (-)
Traffic & Safety Impact	Medium (-)	Low – Medium (-)
Social Impact: Security/Theft	Low (-)	Low (-)
Socio-Economic Impact - Creation of employment opportunities	Medium (+)	High (+)
Disturbance of on-site Fauna	Low (-)	Low (-)

Operational Phase Impacts	Approved layout (after mitigation)	Amended layout (after mitigation)
Aquatic impact- Loss of aquatic vegetation and habitat	Low (-)	Very Low (-)
Aquatic Impact- Sedimentation and Erosion	Medium (-)	Medium (-)
Aquatic Impact- Water Pollution	Very Low (-)	Very Low (-)
Aquatic Impact – Flow Modification	Medium	Medium
Proposed Sewer Pump Station_Failure of Pump Station	High (-)	Medium (-)
Proposed 200mØ Gravity Sewer Pipeline – Pollution and Erosion	Medium (-)	Low – Medium (-)
Long Term Management and conservation	High (+)	High (+)
Visual Impact: Change from an undeveloped site to a developed site	Low (-)	Low (-)
Traffic & safety impact	Medium (+)	Medium (+)
Property Values of Surrounding Development (Positive Impact)	High (+)	High (+)
Potential Increase in Demand for Services	Medium (+)	Medium (+)
Broaden the rates base (Positive impact)	Medium (+)	Medium (+)
Job Opportunities (Positive impact)	Medium (+)	Medium-High (+)
Availability of Housing Within the Urban Edge of the George Municipality	Low (+)	Medium (+)

9. ADVANTAGES AND DISADVANTAGES OF THE PROPOSED CHANGE

The table below lists the advantages and disadvantages associated with the proposed layout amendment. These findings are informed by the impact assessment undertaken as well as the findings of the Specialist Reports.

Table 31: Advantages and Disadvantages of the New Development Proposal

Advantages	Disadvantages
• Opportunity to remove existing dominant alien plant and tree species, which are currently creating the following disturbances: • Altered the surface runoff and water inputs to watercourses. • Confining and blocking flows. • Smothering indigenous vegetation. • Decreased water availability. • Alien trees fuel fires increasing fire intensity and duration. • Employment opportunities will be created during construction phase as well as operational phase. • Densification of the urban area as a result of the increased number of units. • Provision is made for better care facilities, as well as community service facilities, ie:	• Increased construction activity, for a longer duration, considering the higher density development, to be established, with additional amenities and care facility. • Higher degree of traffic, , due to: - the higher density of cars predicted during operational phase, as the new development will support a higher population. - Facilities planned to be established such as a higher number of erven, inclusion of frail care and related facilities, and business component, will require the transportation of more and varies types of material, than originally planned.

business zones, cafeterias, administration buildings, telecommunications structures, etc. • More than 25% of the site will be designated as open space, limiting transformation, and preserving the natural environment, with the added advantage of the related maintenance and upkeep to prevent occurrences of alien species invasions, runoff disturbance, etc, can be monitored on an on-going basis. • Revenue to the George Municipality will increase as a result of the increased number of units. • Increase business opportunities for potential entrepreneurs in George contributing to the local economy. • The proposed development allows the municipality to address their existing services, and identify needs for maintenance/upgrades, if necessary. • The proposed development will allow information from the existing site, ie: identification of services, and final installation of services, to be integrated into existing municipal databases and records, for future development or maintenance purposes. • The proposed development will meet the proposal as per the George Municipal Master Plan, taking a step toward achieving the goals set forth by the municipality to meet the infrastructural needs of the existing community and future residents. • There is an existing need for retirement developments, equipped with the appropriate care and recreational facilities required to adequately cater to the elderly community. Which was not relevant to the currently authorized layout plan, as the proposed housing was not specifically for retirement purposes, but rather general residential, along with a lower density housing proposal. • This is need for this specific proposal is evident by the existing waiting list of elderly members of the community who want appropriate accommodation in this area, that is also conveniently located close to the mall and other facilities. • This also shows the development and the capability of the current economy, as this sort of development is usually seen as loss making exercise, therefore, the clear desire for so many retirees seeking retirement in	• Increased demand on municipal services due to higher population to be supported by the new development, as compared to the original layout. • Depending on conduct of construction activity in alignment with mitigation measures, during construction, and related maintenance particularly of the open space areas, along with adequate function of stormwater infrastructure and measures, during operational phase, the potential disturbance includes: - Loss of remaining indigenous vegetation due to land disturbance and erosion. - Downstream water and soil contamination/pollution.

George, enables the support and development of efficiently equipped developments. • The current layout plan provides improved protection to the aquatic area more so than the old layout, while still offering the accommodation of higher density retirement housing. •	

10. GAPS IN KNOWLEDGE / UNCERTAINTIES

According to the Freshwater Impact Assessment, the following assumptions and limitations were identified at the time of the undertaking of the assessment:

- No exact coordinates or spatial data was provided by the client to ensure accuracy of the buffer and aquatic habitat overlay on the layout. The overlay is therefore an approximate and should be verified with georeferenced layout data.
- The location of some proposed infrastructure, such as sewage pipes, are not included in the layout available when this report was compiled. It is therefore assumed that all infrastructure will be outside the watercourse.
- No stormwater management plans, surveyed contours, floodline data, alien tree clearing plans, engineering designs for road/pipe crossings or stormwater infrastructure outlets, construction method statements or proposed alternatives, have yet been provided.
- Aquatic ecosystems vary both temporally and spatially. Once-off surveys such as this are therefore likely to miss certain ecological information due to seasonality, thus limiting accuracy and confidence.
- The clearing of vegetation as a result of the recent fire in the area made delineation increasingly difficult.
- Infield soil and vegetation sampling was only undertaken within a specific focal area around the proposed development, while the remaining watercourse were delineated at a desktop level with limited accuracy.
- No detailed assessment of aquatic fauna/biota was undertaken.
- The vegetation information provided is based on observation not formal vegetation plots. As such species documented in this report should be considered as a list of dominant and/or indicator wetland/riparian species and only provide a very general indication of the composition of the riverine vegetation communities. The botanical report could be consulted for more detail on the general vegetation of the site; however, the reported study was done almost 10 years ago and vegetation has potentially been altered by the recent fire.
- The assessment of impacts and recommendation of mitigation measures was informed by the site-specific ecological concerns arising from the field survey and based on the assessor's working knowledge and experience with similar development projects. The degree of confidence is considered good.

It should be noted that a Freshwater Impact Statement was issued after the initial report was compiled, wherein the following uncertainties were addressed:

- Infrastructure occurring within the watercourse.
- A stormwater management plan was compiled.

Gaps in Knowledge of the EAP:

- Uncertainty on date of commencement of construction activity.
- Uncertainty on duration of construction activity.
- Uncertainty on end date of construction activity.

- While existing services etc. may have been provided by the service providers, it should be noted that during construction activity it is possible to uncover services that were not noted in the information provided, hence the importance of exposing services during construction.

11. ASSUMPTIONS

- It is assumed that the surrounding property values will increase as a result of this development, attracting future, potential buyers.
- The need for retirement developments , equipped with efficient facilities to cater to the health care and recreational needs of a elderly community, have been proven to be an immediate need within George and the Garden Route in general, hence the initiation of this project will further promote the need for this type of development.
- All technical information provided is accurate and complies with the various legislated requirements.

12. CUMULATIVE IMPACTS:

- The new proposal offers greater opportunity and improved care facilities for the elderly community.
- A wide range of employment opportunities will be established as a result of the new development proposal.
- Demand for housing in George municipality is being addressed by establishing denser housing within this development, as compared to the previous development.
- The accommodation of a development of this magnitude will have an impact on existing services, as the demand will increase to accommodate multiple households, which will impact upon the existing service delivery and infrastructure.
- This increase will have a motivating effect on the municipality to integrate this information into their future plans for upgrading of services.

13. RECOMMENDATIONS AND CONCLUSIONS OF SPECIALIST STUDIES:

Freshwater Impact Assessment Report by SES Specialist, Debbie Fordman
Date: 24th October 2019

As per the Freshwater Impact Assessment Report, the specialist's recommendation and conclusion is as follows:

The proposed development of Kraaibosch No. 195 Portion 3 will form part of the expansion of George to welcome more people to the scenic Garden Route. Development can result in an increase in pressure on the environment which, in this case, include aquatic habitat and therefore one of the most valuable resources – water.

Development of this property will impact on an ephemeral stream in the drainage line running down the middle of the property and a small instream dam near the top of the tributary. The tributary stream merges into the Swart River on the property boundary and therefore development will also influence this larger system to a certain extent. Neither the NFEPA nor the WCBSP data identifies the tributary as being of aquatic importance. The stream has been degraded by the impacts of agriculture and alien plant infestation and becomes an eroded gully towards the bottom of the valley. The catchment is mainly comprised of grazing pastures covered in grass species. Alien trees such as Pines and Black Wattle

(*Acacia mearnsii*) cover the steep slopes. Both alien and indigenous flora comprise the riparian vegetation. According to the PES and EIS results the stream is in a fair condition and of low ecological importance.

The potential impacts development will have on the tributary stream were identified as freshwater habitat loss, sedimentation and erosion, water pollution, and flow modification. The impacts of the development were determined to be of Medium significance but could, to a large degree, be decreased to Low if the necessary mitigation measures are implemented. The steep slopes require strict adherence to the No-Go buffer zone as they enhance the impacts of erosion and flow modification. Erosion and sedimentation pose the biggest risk to aquatic habitat and therefore all mitigation measures pertaining to this impact should be strictly adhered to. Monitoring of the site should take place to ensure these mitigation measures as set out in this report and those of the EMPr are followed.

The project is considered to be acceptable from an aquatic perspective. It is recommended that a water use licence in terms of Section 21(c) and (i) of the NWA (1998) be applied for due to the proposed activities triggering these water uses.

Freshwater Impact Assessment Statement by SES Specialist, Debbie Fordman
Date: 17th of January 2020

A 22m aquatic buffer area was recommended which required that some development infrastructure be set back. Layout 2 (the new proposed development layout, Appendix C2), dated November 2019, has since been produced and adheres to the buffer. Since the compilation of the Freshwater report, the civil engineering designs have been completed. It is proposed to construct a bulk gravity sewer line through identified freshwater habitat. Therefore, the purpose of this statement is to comment on the significance of these changes/additions in terms of the conservation of the identified freshwater habitat.

1. Layout 2 (the new proposed development layout, Appendix C2), shows that freshwater habitat has been considered during the planning phase of the proposed development and that changes were made to reduce impacts on the identified buffer zone.
2. The pipeline will cross freshwater habitat, contrary to the assumption in the Freshwater report. The crossing is necessary in order to have a gravity sewer pipeline.
    - The crossing of the watercourse increases impacts on freshwater habitat especially during construction since disturbance will be within the watercourse as opposed to around it.
    - This will likely cause more erosion and sedimentation within the riparian area and loss and disturbance of aquatic vegetation not previously anticipated.
    - Although it is ideal to keep all infrastructure outside of freshwater habitat, the crossing will not have a detrimental impact since only a small portion of the watercourse will be affected and the duration of disturbance is limited.
    - It is recommended that the affected reach be kept to an absolute minimum and rehabilitation be done immediately after construction.
3. A stormwater management plan has been compiled and is deemed adequate (Appendix D.3). The plan includes various mitigation measures, such as those in the Freshwater report, considers SUDS guidelines and contains designs of stormwater outlets.

It can be concluded that from the Freshwater Specialist's findings that the compliance of the proposed layout with the aquatic buffer decreases the impact of the development on freshwater habitat. However, since the sewage pipeline crosses the watercourse, the development will still have an overall largely similar impact. The development is deemed acceptable from a freshwater perspective since no

detrimental impact should occur if the mitigation measures, contained in the Freshwater report and this statement, are adhered to.

Town Planning Statement by FORMAPLAN

The owners of Ptn 3 of Farm Kraaibosch No 195 wish to develop the property as a retirement resort totalling 299 erven as well as 256 assisted living and home nursing units together with the associated facilities. In addition, there will be a business erf as there are no other business erven in the nearby vicinity.

As per the report, it is clear that the proposed development is in line with the relevant planning legislation and will not have a detrimental effect on the area where it is proposed. The property was already in the past rezoned for a residential development and a ROD issued for the development. These approvals have however lapsed some time ago.

We are of the opinion that the property is suitable for the proposed development and can be considered positively by the authorities.

14. PUBLIC PARTICIPATION INFORMATION

The public participation for this amendment application was done in compliance with Chapter 5- section 32 (iv)[i]and [ii] as well as Chapter 6 of GNR 326 of April 2017. In accordance with these chapters the following process was following for the public participation:

1. **Consultation with competent authority**
   No pre-application meeting was conducted for this project.

2. **Notification of amendment and opportunity for comment**
   A Notice of Intent to submit the Amendment Application was drawn up and issued to the DEADP on the 28th of November 2019, and a response was received on the 10th of January 2020 (Appendix A.4).

3. **Public Participation**
   This report and associated appendices are being distributed for public participation from the 03rd of July 2020 – 17th of August 2020. Various means of distribution have been used for the process, and are detailed in the Public Participation Plan (See Appendix G.3), issued to the Department of Environmental Affairs and Development Planning on the 25th of June 2020. These include:
   - An advert was included in the George Herald on the 02nd of July 2020 (See Appendix G.4).
   - Hand delivery of a Background Information Document, distributed to neighbouring properties on the 03rd of July 2020, (see Appendix G.5).
   - An extensive I&AP database has been compiled, which identifies affected adjacent landowners, authorities, organs of state and other affected parties. The original I&Aps who were listed as I&Aps in the initial application will also be given an opportunity to register and comment.
   - Email notification, direct telephonic calls, Whatsapp Broadcasts, are considered appropriate.
   - The documents have been made available on SES website for download, review and comment.

   Furthermore, if we are made aware of any I&AP with illiteracy, disability or other disadvantage we will engage with such I&AP to ensure their issues are noted.

The period for public participation comment commenced on the 03rd of July 2020, and will conclude on the 17th of August 2020.

15. CONCLUSION

Based on the findings of the impact assessment summarised above in **Section 8** as well as the advantages and disadvantages table included in **Section 9**, the impacts of highest concern for the new proposed development include: land disturbance, erosion and sedimentation, during construction, along with aquatic impacts related to flow modification, and the related potential for the sewer pump station failure, during operational phase.

As a means to mitigate these issues, the following recommendations must be implemented during the construction phase, in order to ensure success for both the construction and operational phase:

- Utilize the stormwater management plan, and ensure the correct infrastructure is implemented and is acceptable for its purpose.
- Ensure engineering designs are fully complied with during construction, and an experience, independent ECO, monitors construction activity
- Identify and maintain a working corridor and the established aquatic buffer zone.
- Ensure the EMPr and Environmental Authorization conditions, are fully complied with.

As a means to mitigate issues proposed during the operational phase, the following mitigation has been recommended:

- Ensure strict maintenance and precautionary measures to safeguard the designated open space, are implemented.
- Ensure alien invasive clearance is a part of the maintenance of this site.
- Sewer pump stations have the potential to be sources of pollution, due to their tendency to fail or become blocked, due to poor maintenance/management. Therefore, ensure that a service provider is appointed as a go-to for servicing and maintenance of the pump station, should any incidents occur.

While there are disadvantages related to the new proposed development, predominantly based on the increased density of the development, it is clear that effective mitigation measures exist, and if properly implemented, these impacts can be successfully mitigated and the overall situation improved.

The new proposed development offers improved environmental, by providing greater protection to the identified aquatic zone, and surrounding vegetation, placing responsibility on the developer, to be accountable for the upkeep and management of a sensitive area, that may have been degraded under the implementation of the originally approved housing proposal.

Furthermore, the new proposed development offers far more socio-economic benefits, in the form of higher density retirement housing, with additional care facilities that are expensive but essential to these developments. This meets the existing demand for these types of developments, and further promotes an improved quality and standard of retirement developments, within the George area. In addition, job creation will be greater during both the construction and operational phases of this development, as opposed to the original proposal, making it attractive to people of various skill-sets/levels, and benefiting the surrounding community and local economy.

16. REFERENCES

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